

Policies and Agricultural Development in Ukraine

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Preface by Ivan G. Kyrylenko, *Minister of Agricultural Policy of Ukraine*

Ukraine needs comprehensive, scientifically-based, purposeful and constructive agricultural policy, which in its logic and principles not only complies with the course of the accelerated market transformation of the country's economy, but is rather its leading element and encouraging factor. None of Ukraine's sectors has such favourable preconditions for deep and qualitative reconstruction as agriculture and the other spheres of the Agroindustrial Complex.

Today, the revolutionary changes initiated by the famous Presidential Decree "On immediate measures to accelerate agricultural reform" of December 3, 1999 are taking place in the villages. This document can rightly be called historically fateful. Within a short period of time, work of unprecedented volume, speed and scope has been accomplished – the collective agricultural enterprises were reformed and based on them over 14,000 farms of different types were created, 6.4 mill. citizens received their land share certificates, and 1.5 mill. peasants have already received the state acts for land private ownership. The dream of Ukrainian farmers – to be the real owners of their land – has been realised, therefore. And this is the main benefit of the reforms in 2000.

Thanks to the implementation of the Presidential Decree, the structure of land use has changed considerably and the huge energy of private initiative was freed up, generating first positive results – land began to work for its owners. For the first time since Independence, farmers operated in 2000 without direct state financial support and intervention in the agricultural operations. Despite pessimistic forecasts, for the first time in 10 years Ukrainian gross agricultural output increased (by 9.2%).

It is clear that the creation of the appropriate economic conditions for the formation of new agricultural structures substantially encouraged this good result, mainly due to the improvement of the price mechanism and price liberalisation, the development of agricultural market infrastructure, the creation of a favourable tax system and the implementation of effective mechanisms of farm crediting.

Particularly, Law of Ukraine "On fixed agricultural tax" effectively halved the tax burden and replaced 12 individual taxes and duties that had prevailed earlier for farms. This simplified tax system reduced the annual tax burden for farms by 1.4 bUAH. Furthermore, agricultural producers have been granted privileges on value-added tax and a number of other privileges which encourage investment in agriculture.

The problem with farm indebtedness to the state budget was also resolved. A non-state Agency for Farm Debt Restructuring was established to settle farm commercial debts. This Agency works with credit and guarantee funds, auditor and asset valuation firms, traders of securities and insurance companies. This co-operation should ensure the creation and normal functioning of the debt market.

In the crediting system, a special regime which foresees the partial compensation out of the State budget of Ukraine of the commercial banks' interest rates on credits has been established, and the financial institutions to serve agriculture in accordance with the state program on credit provision to farms have been established. These measures have made agriculture attractive for banks and domestic investors.

The main fundamentals of further state regulatory agricultural policy under the conditions of the formation of market relations were defined by the Law of Ukraine "On stimulation of development of agriculture for 2001-2004", approved by the Verkhovna Rada of Ukraine on January 18, 2001. For the period outlined in this law it is foreseen not to make changes in the current tax system

which could increase the tax burden on agricultural producers. Instead, tax legislation should be improved with the aim of reducing this tax burden. The creation of a system of long-term crediting and credit-guarantee institutions – fund for credit guarantees, a Land- and Co-operative bank – is foreseen.

As regards the insurance system, the compulsory insurance of all crops for state farms and grain and sugar beet for non-state farms has been introduced. Insurance payments for obligatory insurance of crops and perennial plants are partially compensated from the State budget of Ukraine. Price policy in agriculture and income support for agricultural producers based on subsidies plays an important role in the state's regulatory policy. Ceilings on electricity prices for farms have been set.

Having implemented the mechanisms outlined above, the state is simultaneously increasing the responsibility of the agricultural enterprises for their activities and results, prohibiting further write-offs and restructuring of debts for taxes and duties, budget loans and credits under government sovereign guarantees, as well as cancelling the moratorium on farm bankruptcy.

These steps comply with the interests of domestic and foreign investors and represent an important component of the strengthened formation of normal credit relations between input suppliers, banks and farms. The implemented measures and the directions of the state's regulatory agricultural policy will generally encourage the creation of a basis in agriculture for continued profitable farm development, the attraction of investments, and increases in main types of agricultural production.

Thus, gradually the strategic goals of agricultural policy are being realised, which include the formation of real effective land owners, the social and economic development of rural areas, and helping Ukraine's agricultural sector reach an international standard of development. This is the general logic of transformation, which defines the main thrust of agricultural policy in Ukraine today.

Looking at the general state of affairs, and especially with a view to future perspectives, the many-sided German-Ukrainian co-operation in economic, political and scientific spheres is considerable. This helps to broaden mutually beneficial relations between the two countries. Convincing proof is this book, the second in a series, which has been written by German and Ukrainian researchers and is devoted to highlighting the development of agricultural reforms in Ukraine and providing perspectives on the development of Ukrainian agricultural policy.

Preface by Dr. Gerald Thalheim (MP), *Parliamentary State Secretary in the German Ministry of Consumer Protection, Food and Agriculture*

For Germany, Ukraine is an important partner in Europe. Therefore, Germany not only monitors the course of reform in Ukraine with great interest, it actively supports this reform, for example by means of the TRANSFORM-Program.

The goals of the TRANSFORM-Program are to improve the conditions for the creation of a functioning market economy and to strengthen the basis for democracy. The instruments employed to these ends include the provision of policy advice for government and parliament, support for the development of private entrepreneurship, and education and training. Of course, such support can only help those who are trying to help themselves.

We sense that the aid we provide is appreciated as a helpful and effective expression of German solidarity and desire to contribute to the process of restructuring and re-thinking in both the public and private spheres. Our Ukrainian partners within the government, but also others with whom we co-operate in various projects, appreciate our focus on their needs, our ability to provide rapid and flexible assistance, and the fact that we avoid standard, 'one size fits all' solutions.

Germany has financed projects with an agricultural focus in Ukraine since 1992. Based on the experience gathered over the years and in co-operation with representatives of Germany's agribusiness sector, a concept for the development of Ukrainian agriculture was developed whereby publicly financed support is combined with private investment. Since the beginning of 2000 this concept is being implemented in the form of the German-Ukrainian Agricultural Development and Investment Project (DUAP in German). DUAP is meant to be a model for bilateral co-operation in the area of agriculture.

The aim of DUAP is to improve the performance of Ukrainian agriculture and to support the process of transition. Focal points of the project work include the development of an agricultural consultancy service for farms and agribusiness enterprises, the provision of education and training for practitioners and managers in agriculture, and the fostering of co-operation between German and Ukrainian firms. The experience that is gathered in the course of this work contributes to the improvement of the economic and legal environment for agribusiness enterprises in Ukraine.

In its efforts to improve the climate for domestic and foreign investors, the Ukrainian government is supported foremost by the German Advisory Group on Economic Reform with the Government of Ukraine, which represents a further dimension of the TRANSFORM-Programme. This book, compiled by the German Advisory Group, contains analyses of the development of the Ukrainian agricultural and food sector to date, together with numerous recommendations for agricultural policy measures that would improve production, trade and agricultural structures.

I am confident that the bilateral relations between Germany and Ukraine will continue to develop in the coming years. The foundation for this development has been laid at many levels. The German Advisory Group on Economic Reform with the Government of Ukraine will continue to make an important contribution to the deepening of our relations.

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Introduction

1 Policy matters!

Analysis of observed differences in economic performance among the transition countries of Central and Eastern Europe has shown that there is no single factor that ensures successful economic transition. Instead, many factors are of combined importance. These factors include initial conditions, geographic distance from developed economies in Western Europe and elsewhere, the level of education of the population, natural resource endowments and, of course, institutions and policies.

Which of these factors is most important in a quantitative sense? To be honest, we do not know. And even if someone were to provide an answer to this question, our interest would be largely academic. For practical purposes, institutions and policies are by far the most important factors simply because they are the factors that citizens, analysts and policy makers can influence. We cannot change the initial conditions that prevailed in Ukraine in 1991 and we cannot physically move Ukraine closer to the EU. Yes, Ukraine has resources in the form of its famous black soils, but these, too, are largely given. These soils will only contribute to growth and standards of living in Ukraine, if we develop institutions and policies that allow them to do so.

One of the most influential economists of the recent decades, OLIVER E. WILLIAMSON, has stated that it takes a long time – probably more than 100 years – to change societal traditions and norms, and that it takes more than 10 years to change formal rules, i.e. institutions such as a country's judicial system and its bureaucracy.¹ But he has also observed that it takes less than 10 years to change policies. Policy makers can make a tangible and immediate difference: this is the power they wield and the responsibility they bear, and it is why policy matters so much.

2 Why this book?

Two years ago members of the *German Advisory Group* published a first book on the transformation of agriculture and agricultural reform in Ukraine (V. CRAMON-TAUBADEL & STRIEWE, 1999). Why publish a second book only two years later? One important reason is that conditions in Ukrainian agriculture have changed dramatically since our first book appeared. Following the re-election of President Leonid Kuchma in late 1999, a pro-reform government under Prime Minister Viktor Yushchenko was appointed. It is fair to say that the subsequent year 2000 saw more progress in the area of agricultural reform than the preceding eight and one-half years of Independence. We would like to document these changes, and many of the chapters in this book deal with the impact and implications of recent reform steps.

Our second reason for producing a second book in such close succession is that we are eager to showcase the talents of a rapidly growing group of young Ukrainian analysts with whom we have had the pleasure of collaborating in recent years. Accordingly, this second volume contains contributions by ten young Ukrainian agricultural economists, from professors and lecturers to Ph.D. candidates, research associates and students.

Taken together, these two motivations for producing a second book are also grounds for considerable optimism regarding the future of Ukrainian agriculture. Agricultural reform in Ukraine has gained considerable momentum, and a new generation of Ukrainians is emerging that understands the need for this reform and has the skills needed to analyse the policies and forces that are shaping agriculture. Of course, a great deal remains to be done. The reforms that have been initiated in Ukrainian agriculture are incomplete and fragile. This book addresses both the progress that has been made and the steps that remain to be taken.

¹ WILLIAMSON (2000).

It is difficult to produce a book on agriculture and agricultural reform in Ukraine because both are changing very rapidly. Most of the chapters in this book were completed in late 2000 or early 2001. When you, the reader, open this book perhaps in late 2002, much will have changed and many of the facts that are presented here will no longer be up-to-date. We nevertheless hope that this book goes beyond simple facts by highlighting both the economic relationships that underlie these facts and the economic analysis that can be used to understand them. Economics is partly a *descriptive* science, but – in our opinion – *analytical* economics is far more interesting. What matters for the future of Ukrainian agriculture is not so much the current price of land or the current size of the grain crop, for example, but rather the economic forces that will determine land prices and grain crops in the future. In this book we attempt to provide insights into these economic forces and explain how they influence the options available to policy makers.

3 The structure of this book

The strong impact that policies have on agricultural development is reflected in the structure of the book, which is divided into three parts.

Part I: *Economic Development and Agriculture in Ukraine* provides a comprehensive overview on the role of agriculture in economic development and, conversely, the impact of economic development on agriculture. Johan F.M. Swinnen views Ukraine in an international context and analyses how agricultural and food sectors in Central and Eastern Europe have performed in the more than ten years since the fall of the Berlin Wall (chapter 1). According to his analysis, Ukraine has suffered from initial conditions more than other countries. But he concludes that this is no excuse for failing to pursue essential reforms. In chapter 2, Stephan von Cramon-Taubadel and Sergiy Zorya focus on the sequencing of agricultural reforms in Ukraine and conclude that policy failure on a large scale has been responsible for the decline of agriculture. Due to information problems and other difficulties they argue that the issue of sequencing is more of academic than of political interest. They therefore advocate a 'big bang' approach to agricultural reform. In chapter 3 on *Agriculture and Current Account Sustainability in Ukraine*, Sergiy Zorya illustrates the links between agricultural development and macroeconomic stability. Agricultural policy influences overall economic development and *vice versa*, and macroeconomic policies can play an even larger role in the development of agriculture than agricultural policy itself. In chapter 4 Ludwig Striewe, Inna Chapko and Alexander Starikov analyse the development of the rural finance system in Ukraine and its considerable improvement since 1999. They conclude that the policy of 'Extending the Frontier' – i.e. creating a stable legal environment, improving the performance of banks and the creditworthiness of enterprises in rural areas – is the only approach by which Ukraine can catch up to countries in Central and Eastern Europe. Moreover, they advise against government credit institutions and subsidies, measures that have almost always failed wherever they have been implemented. *Towards a More Market-Driven Strategy for Agricultural Reform in Ukraine*, by Don Van Atta, puts Ukrainian agricultural reforms in an historical context (chapter 5). Van Atta states that real agricultural reform must begin by explaining the true state of affairs to those who work in agriculture and have the most at stake. Moreover, policy makers must accept their role as facilitators and resist the temptation to 'manage' the economy.

The second part of the books deals with *Agricultural Policy and Agricultural Markets in Ukraine*. It is devoted to the problems Ukraine has experienced in 'creating' functioning agricultural markets. Konstantin Sirin and Sergiy Zorya challenge the notion that so-called 'price disparity' is at the root of agricultural decline in Ukraine in chapter 6. While they do not deny that agriculture's terms of trade have declined, they point out that all transition countries have faced the same problem, and some have been much more successful at dealing with it. In chapter 7 Stephan von Cramon-Taubadel criticises past government policies on the grain market. According to his diagnosis, government policy has contributed considerably to the volatility of grain prices in Ukraine. Chapter 8 deals with the question of food security in Ukraine. Ludwig Striewe, Victoria Galushko and Stephan von Cramon-Taubadel argue that food security is all too often misused to justify market

intervention. Food security is not just a question of 'strategic reserves', it is a question of income and its distribution. The authors therefore advocate a social policy that concentrates on ensuring that the poor have enough income to purchase food on markets. In chapter 9 on *Import Tariffs and Tariff Rate Quotas for Sugar and Grain in Ukraine*, Ludwig Striewe analyses rent seeking on Ukrainian sugar and grain markets. He calls for more transparent policies for these markets so as to reduce the burden on consumers and limit policy makers' scope for 'fine tuning'. Sergiy Zorya presents a regional trade model for Ukraine in chapter 10. With this model he is able to calculate the impact of marketing inefficiencies and local trade barriers on producers and consumers in Ukraine. Chapter 11 by Sergiy Zorya and Stephan von Cramon-Taubadel provides an analysis of the agricultural policy issues associated with Ukraine's candidacy for WTO membership. The second part of the book closes with chapter 12 by Sergiy Zorya, Maya Betliy and Alexander Kobzev in which a model of international agricultural trade is used to analyse the *Impact of Agricultural Trade Policy on Farms' and Consumers' Welfare* in Ukraine.

The third part of the book is devoted to the problem of *Farm Structures and Farm Management in Ukraine*. It begins with chapter 13 by Mykola Puhachov and Kateryna Puhachova, who provide a detailed overview of the evolution of farms structures in Ukraine through to early 2001. They show how the latest political developments have changed farm structures in Ukraine and why this was a key step for future agricultural development. In chapter 14, Stephan von Cramon-Taubadel and Ludwig Striewe discuss the highly political problem of creating a land market in Ukraine. The authors focus on the economic and political factors that determine land prices and, among other things, point out the costs that could result from not permitting foreigners to purchase farm land in Ukraine. In chapter 15 Christoph Benecke and Stephan von Cramon-Taubadel analyse the present and future profitability of sugar production in Ukraine. They emphasise that the future of sugar production not only depends on the profitability of sugar itself, but on the profitability of other crops as well. According to their analysis, sugarbeet production is not likely to play a major role in crop rotations in Ukraine in the future, with the possible exception of a few especially well-suited regions. The final chapter 16 by Alexander Kobzev and Olena Borodina deals with the development of extension services in Ukraine. By distinguishing between so-called 'public' and 'private' goods, the authors conclude that there is a role for the state to play in the provision of extension services, but that this should not be an exclusive role. Instead, the state can facilitate the development of private extension services, which is the model increasingly being adopted in Western European countries.

4 Outlook and acknowledgements

This book would not exist if we had not received a great deal of support and encouragement. The authors of the individual chapters were diligent, co-operative and (for the most part!) punctual, and as editors we are very grateful for their participation in this project. As members of the *German Advisory Group on Economic Reform with the Government of Ukraine* we would also like to thank the other members of this group and its leaders – Prof. Dr. Lutz Hoffmann and Dr. Lorenz Schomerus – for their support and for their interest in agriculture. Since mid-2000 the *German Advisory Group* has been working together with and contributing to the establishment of the *Institute for Economic Research and Policy Consulting (IER)* in Kyiv, and the members of the *IER* have also helped us in many ways. Finally, the office staff that the *German Advisory Group* shares with the *IER* in Kiev deserves a very large share of any success that we may have. Svitlana Shchokina, Inna Morgun and Kyrill Savin not only work in this office, they 'are' the office, and their competence is a necessary condition for our work.

We are also grateful for flexible support from the *Kreditanstalt für Wiederaufbau (KfW)* and the German Government's *TRANSFORM-Program* for the countries of Central and Eastern Europe that makes our work in Ukraine possible in the first place. Dr. Feist, Dr. Mildner and Dr. von Rabenau from the *KfW* encouraged us to write this book, and made a number of very helpful suggestions regarding its content. Our work in Kiev has also benefited greatly from continuing co-operation with representatives of the German Ministry of Consumer Protection, Food and Agricul-

ture (Dr. Wendisch and Mr. Hegenbart). Of course, the opinions expressed in this book are those of the authors, and do not necessarily reflect those of the KfW, the German Government or any other institution.

Our most sincere thanks go to the Ukrainian policy makers who have shared their valuable time with us over the years, meeting with us, reading our papers, asking questions, discussing and sometimes disagreeing. We appreciate that policy making must be based on more than considerations of economic efficiency alone, and that our work might occasionally make a policy maker's job more difficult than it already is. Nevertheless, we look back on many fruitful exchanges and look forward to continuing this dialog in the future.

In closing, four individuals who have helped us with the 'logistics' of producing this book deserve mention. We would like to thank Christa Körber in Göttingen, who put all the pieces together and co-ordinated the day-to-day work professionally and with great patience. Alexander Kobzev was an invaluable co-ordinator in Kyiv, and Svitlana Zorya and Alexander Starikov made a major contribution to editing the Ukrainian version. All remaining errors are our own, but far more would remain if not for their help.

Stephan von Cramon-Taubadel, Sergiy Zorya and Ludwig Striewe

Göttingen and Kyiv, July 2001

Part I: Economic Development and Agriculture in Ukraine

1 Ten Years of Agricultural Transition in Central and Eastern Europe: Some Lessons for Ukraine

JOHAN F.M. SWINNEN¹

1 Introduction

More than a decade ago the Berlin Wall fell. This signalled the beginning of a vast set of changes throughout the countries of the former Soviet Bloc. Institutional and economic reforms were implemented in the ‘transition countries’, although varying in scope, timing, and intensity. This paper analyses how the agricultural and food sectors in Eastern Europe have responded to the changes and what lessons can be drawn from this. My analysis in this paper relies heavily on work I have done with various co-authors over the past ten years on different parts of the transition process and I refer to these publications for details on some of the issues and arguments which I will present here too briefly to do justice of the complexity of the issues.

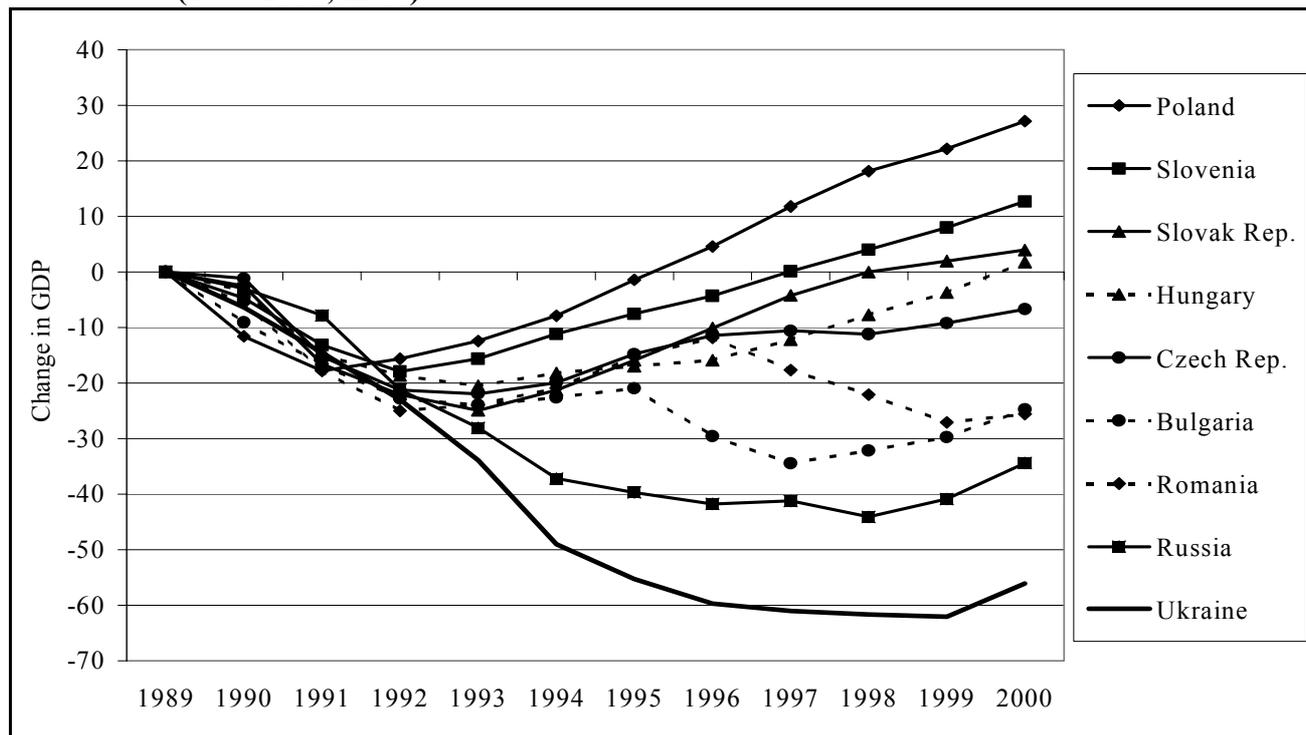
The paper is organised as follows. The first section presents some observations on output and productivity changes during transition. The second section discusses the impact of initial conditions. Then I first discuss the causes of the initial decline and afterwards what caused the variation in transition performances in the second half of the 1990s. The last section concludes and draws implications.

2 Decline and growth during transition

When looking at the transformation of the agro-food sector of Eastern Europe, one observes that output changes are similar in the initial stages of transition but diverge strongly in the second half of the 1990s. Figures 1 and 2 illustrate how all countries went through an initial output decline, both in agriculture and in the general economy. However the figures also illustrate that after the initial decline output evolutions diverge strongly. A striking divergence is obvious from the general economy: while several countries have recorded growth after the initial decline (in particular Poland has recorded spectacular growth rates since 1992), general output in Russia and especially Ukraine continued to collapse until 2000. In agriculture the output fall has bottomed out in the mid-1990s in many Central European countries. Agricultural output started recovering in some countries, but continued to fall in Ukraine and Russia, again until 2000.

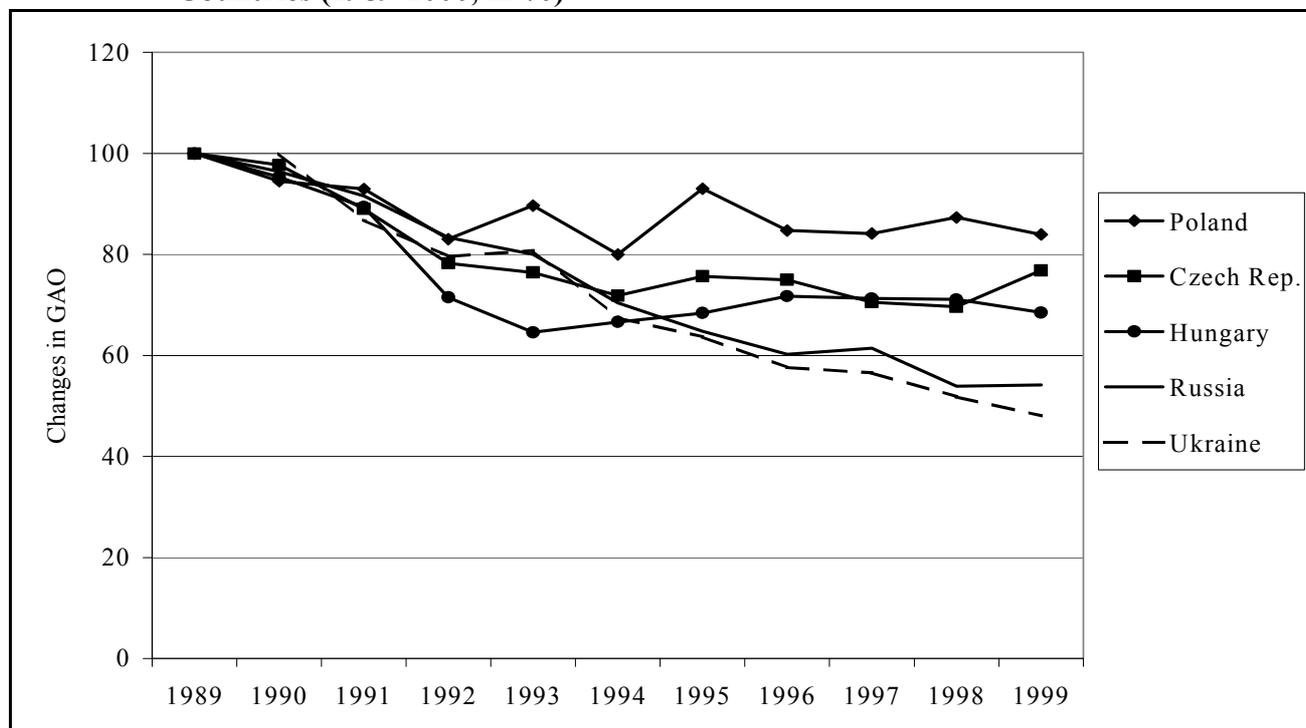
¹ This paper draws strongly on several recent papers, including a paper written for the final conference of the KATO project on “*Understanding transition in agriculture*” in Berlin 2000. I thank Liesbeth Dries and Karen Macours for assistance, and many research collaborators of the past ten years for their insights and critical comments. I am solely responsible for the views expressed in this paper.

Figure 1: Changes in GDP in selected Central and Eastern European Countries (1990-2000, in %)



Source: OECD.

Figure 2: Changes in gross agricultural output in selected Central and Eastern European Countries (1989-2000, in %)

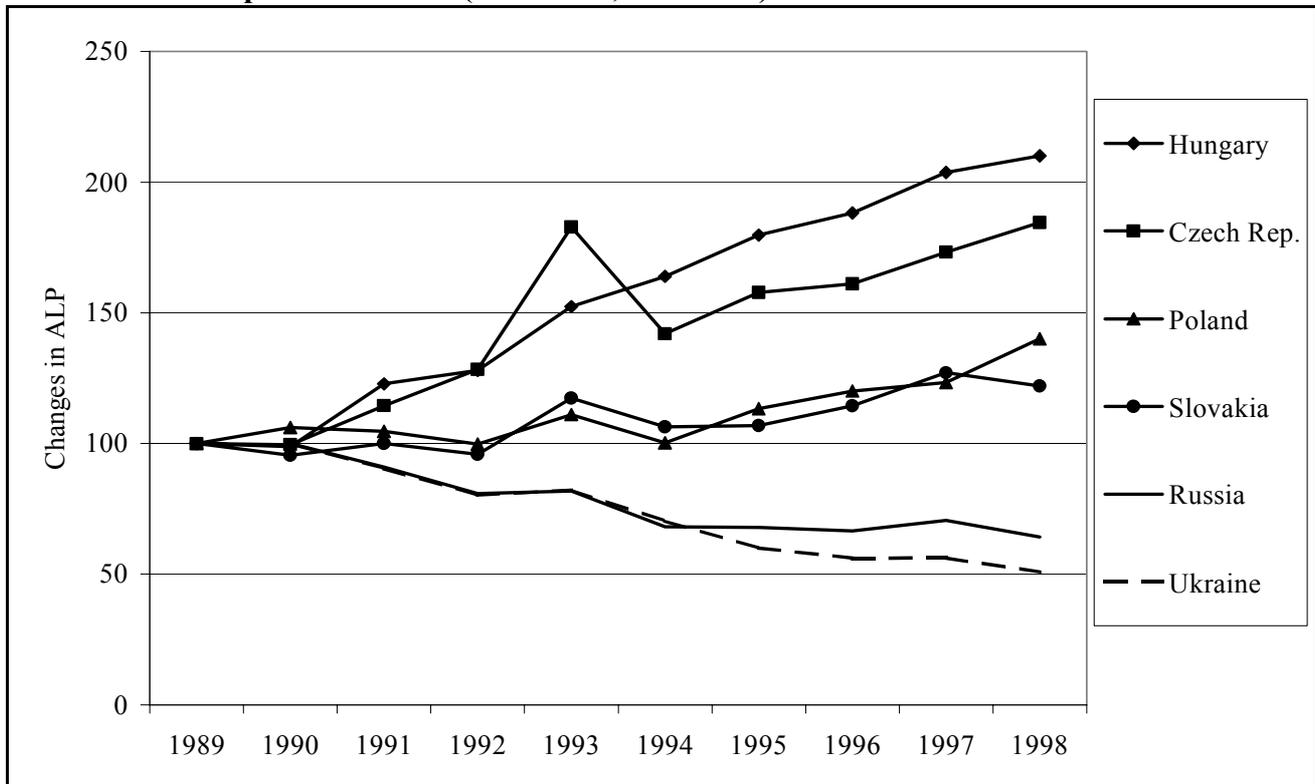


Source: OECD and FAO.

Looking at agricultural output per worker, i.e. labour productivity in agriculture (ALP), yields even more diverging patterns. Output per worker has fallen with output in Ukraine and Russia, while it has increased dramatically in some Central European countries. For example, in Hungary ALP almost doubled over the first transition decade, even while output declined. While part of

these ALP changes are due to statistical adjustments in measuring labour, these adjustments occurred early on and much of the continued growth in ALP reflects real productivity increases.

Figure 3: Changes in agricultural labour productivity in selected Central and Eastern European Countries (1989-1998, 1989=100)



Source: Own calculations based on FAO, OECD, and national statistics.

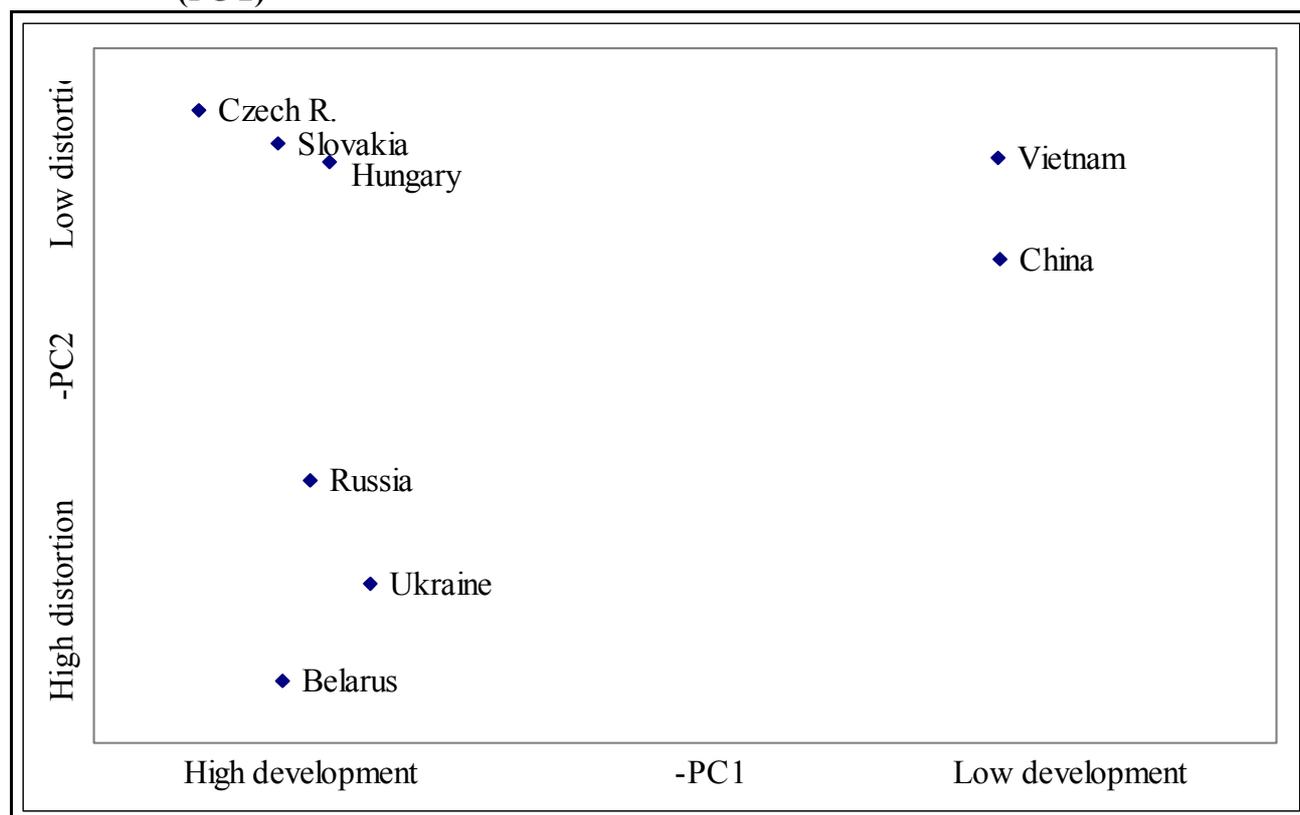
3 The importance of initial conditions

Transition countries differed considerably in their institutional and structural conditions by the end of the 1980s. For example, most of Ukraine and Russia were subject to the Communist system for a much longer time than the countries in Central Europe; the FSU countries were integrated more strongly in the centrally imposed trade system; etc. These factors affected the initial distortions. Furthermore, the capital stock, farm technology, and the industrialisation of the agro-food chain differed among countries. These so-called initial conditions have affected the transition path.

In MACOURS & SWINNEN (2000a) we find a strong correlation between output and labour productivity developments during the first 5 years of transition and initial conditions. This is illustrated in figure 4, where nine countries with very different transition patterns are ranked according to two indicators of initial conditions: a 'development index' and a 'distortion index.' Clearly, the Central European countries are ranked at a lower level of initial distortions than Ukraine and Russia, and, as figure 2 illustrates, this is strongly correlated with their performance during transition.

Initial conditions, such as the existing technology and trading patterns, affected the impact of reforms on restructuring and performance. For example, the initial technology affected the success of the break-up of collective farms. With labour intensive technology, the cost of a break-up of the collective farms in terms of losses of scale economies was smaller, and the gains from improved labour incentives from the shift to family farms were larger (MATHIJS & SWINNEN, 1998). Similarly, the pre-reform trade structure mattered, since most of any recovery in exports has come from companies that exported to the West prior to the onset of transition (REPKINE & WALSH, 1999).

Figure 4: Classification of selected Central and Eastern European Countries by index of initial conditions: pre-reform development (PC 1) and pre-reform distortions (PC 2)*



Note: *PC 1 and PC 2 are principle component variables which capture 85% of the variation in 6 different initial condition indicators. PC 1 reflects pre-reform development levels, and PC 2 pre-reform distortion levels.

Source: MACOURS & SWINNEN (2000a).

Moreover, initial conditions also influenced the choice of the reform strategies itself. For example, the land reform choice was affected by the historical ownership structure, as well as by political strategies, e.g. in the Baltic Republics, to disassociate the economy from Russian-imposed communism (SWINNEN, 1999). More generally, for historical and cultural reasons, there was much broader support in Central European societies for doing away with Communism and moving towards a market-based economy than in countries such as Russia and Ukraine.

While it is important to recognise the higher limitations and burdens imposed by the initial conditions in countries such as Ukraine, initial conditions only explain part of the transition performance. More specifically, our analysis (MACOURS & SWINNEN, 2000a) yields the following conclusion:

Policy Lesson 1: *While initial conditions have importantly influenced transition performance, their influence is mostly on output changes and less on productivity developments. Most importantly, the influence of initial conditions declines relative to that of reform policies as transition progresses.*

Initial price levels, technologies and political environments can be thought of as establishing the boundaries within which the reforms take place. In almost all countries, policy-makers nevertheless had a choice for going fast or slow, for being bold or for being timid. Most importantly, our analyses suggest that the influence of initial conditions is declining over time. Hence, they provide no excuse for poor policy-making in the second half of the 1990s, and certainly not in the future.

In the rest of this paper, I discuss the causes of transition performance – and their implications – in more detail.

4 Causes of the initial output fall

The initial output decline was primarily caused by institutional disruptions. The socialist system left a badly distorted system of input, output, and trade. The reorganisation of this system, and the institutional changes associated with it, caused major disruptions and thereby declines in investment and output. While a variety of models have been developed to explain the mechanism – e.g. some have focused on information problems (BLANCHARD & KREMER, 1997), others on search costs (ROLAND & VERDIER, 1999) and yet others on contract enforcement problems (GOW & SWINNEN, 1998) – all agree that the organisational disruptions negatively affected output and investment during transition. Or, as KORNAI (2000, p. 4) put it more simply: "*Correcting this structure called for creative destruction. Because destruction is rapid, whereas creation proceeds more slowly, the two processes led to a deep recession*". This process is obvious from figure 1: GDP fell in all countries with the disruptions during the initial transition years.

In agriculture, the negative effects of institutional disruptions were reinforced by declining terms of trade caused by price and trade liberalisations and subsidy cuts. Liberalisation had two major impacts on agricultural and food prices. First, all prices rose dramatically. Second, during the period of major price adjustments, not only did nominal prices change dramatically, relative prices changed as well. In most Central and Eastern European countries agricultural input prices increased more than output prices causing declines in terms of trade for agriculture (HARTELL & SWINNEN, 1998; TRZECIAK-DUVAL, 1999).² These terms of trade effects resulted from a combination of cuts in producer and consumer subsidies, price liberalisation, reduced demand with falling incomes, and reduced foreign demand with the collapse of the CMEA trading system. The latter led to trade disruptions in many countries, especially in those where CMEA trade integration was strongest.

The impact of this terms of trade effect was significant. In MACOURS & SWINNEN (2000b) we estimate that this factor caused 40-50% of the decline of crop output over the 1989-1995 period.

5 What caused the (or lack of their) recovery in the medium term?

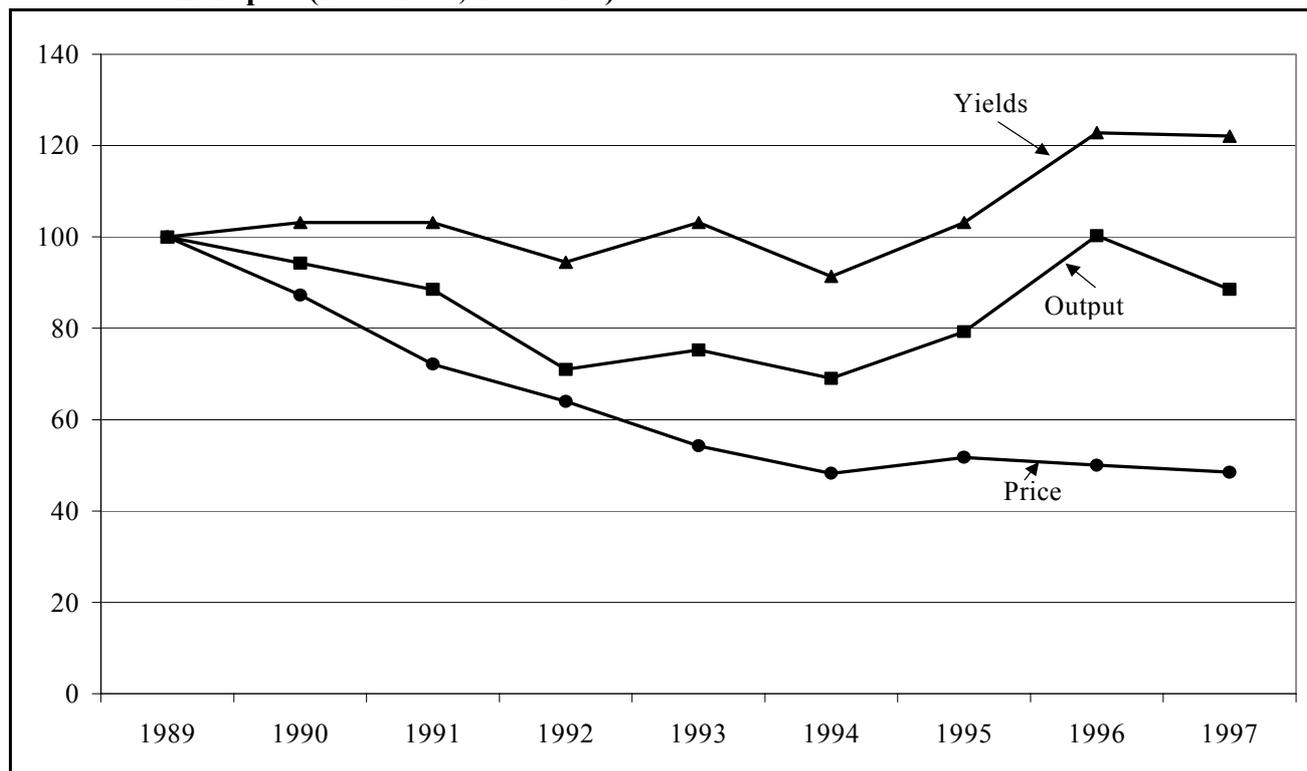
While there is little difference among countries in output developments between 1989 and 1992, the trends clearly diverge afterwards. Differences in growth after the mid 1990s are mostly due to differences in reform policies.

An important first conclusion is that recovery is not driven by price effects, but by productivity increases. For example, figure 5 illustrates, based on data for the sugar market, how output recovery in Central Europe is driven by increases in productivity. While the initial decline in sugar output is caused by declining prices (and institutional disruptions), the recovery after 1993 is largely productivity driven: yields increased strongly in the second half of the 1990s in Central European transition countries. This conclusion not only holds for the sugar market but also for other agricultural and food markets.

The question is then why productivity increases have occurred in Central European countries such as Hungary and the Czech Republic, and not in Ukraine and Russia (figure 6). The answer lies in the different reform strategies that these countries have pursued. The difference is both in the general reforms and in the agricultural reforms. I will discuss these now in turn.

² See chapter 6 on *Can the Crises in Ukrainian Agriculture Be Attributed to Price Disparity?*

Figure 5: The Evolution of output, relative prices* and yields of sugar beet in Central Europe (1989-1997, 1989=100)**

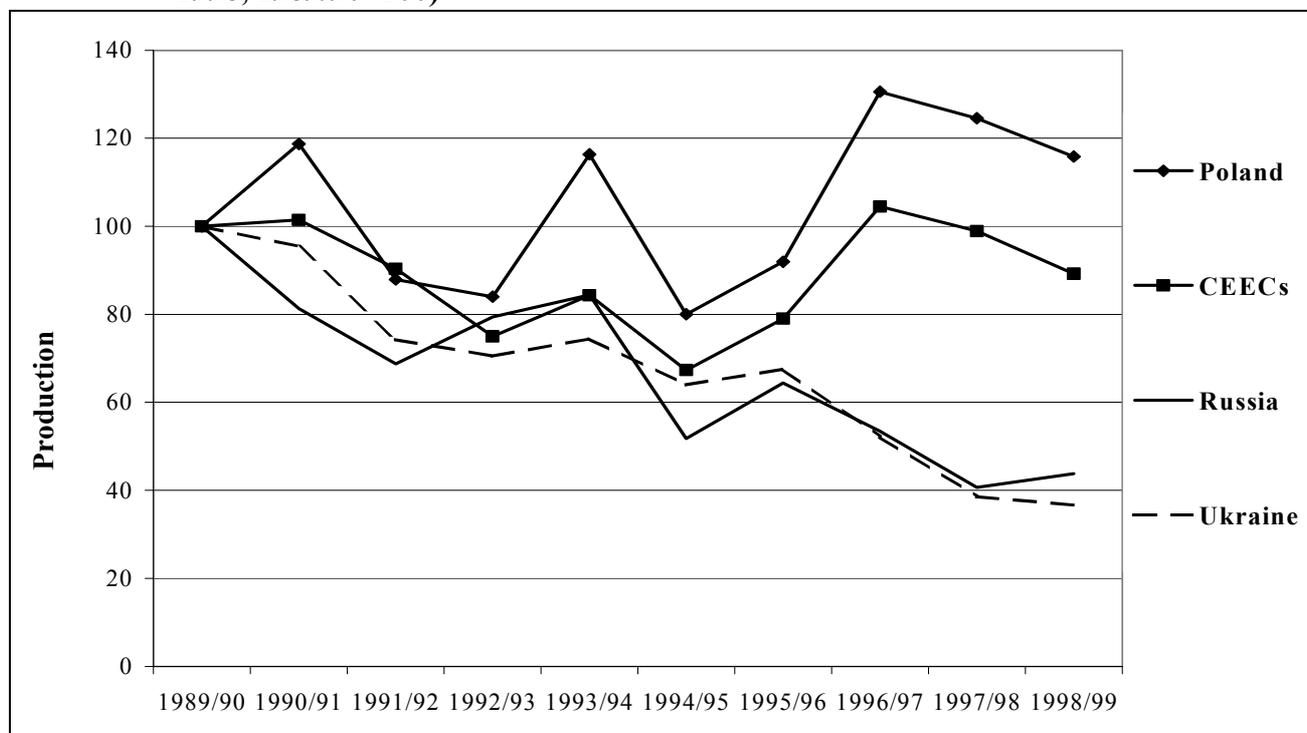


Note: * 'Price' measures the ratio of output over input prices for sugar beet producers

** Central Europe measured as on average of Poland, Hungary, the Czech Republic and Slovakia

Source: SWINNEN, GOW & MAVIGLIA (2000)

Figure 6: Sugar production in selected Central and Eastern European Countries (1989–1998, 1989/90=100)



Source: USDA.

Policy Lesson 2: *In order to have 'creation' follow 'destruction' one needs to implement basic reforms.*

A precondition for sustainable growth is macro-economic stabilisation, including the reform of fiscal and monetary institutions. Rapid overall liberalisation and sustained macroeconomic stabilisation have laid the basis for gradual institutional change in the more advanced transition countries, while stabilisation has been jeopardised by the persistence of soft budget constraints in the less advanced countries (EBRD, 1999).

While such reforms require a fundamental redefinition of the role of the state, they do not imply a withering away of the state. However, in countries such as Ukraine and Russia the state has not taken on a different role, but merely withered away in many important respects. As a result, it has been unable to fulfil some key roles for the development of a market economy (SCHLEIFER, 1997). The state has eroded in establishing the rule of law, in collecting taxes and in establishing the basic conditions for macro-economic stability.

The progress in general reforms and liberalisation is summarised in the ‘liberalisation indices’ in table 1 which are calculated by MARTHA DE MELO and her colleagues at the World Bank. The indicators show three groups of CEECs in terms of reform progress by 1999. The first are Central European countries such as Hungary, Poland, and the Czech Republic which have advanced most; the second group is Romania and Bulgaria (although the latter has made major progress in the last few years), and the slowest reforming group includes Ukraine and Russia.

Table 1: Reform progress in 1999 in selected Central and Eastern European Countries

	Liberalisation index, 1999
Hungary	3.7
Czech Rep.	3.5
Poland	3.5
Slovakia	3.3
Slovenia	3.2
Bulgaria	2.8
Romania	2.7
Russia	2.4
Ukraine	2.4

Source: THE WORLD BANK

Policy Lesson 3: *The Central and Eastern European transition countries that have implemented reforms fastest and most thoroughly have performed best.*³

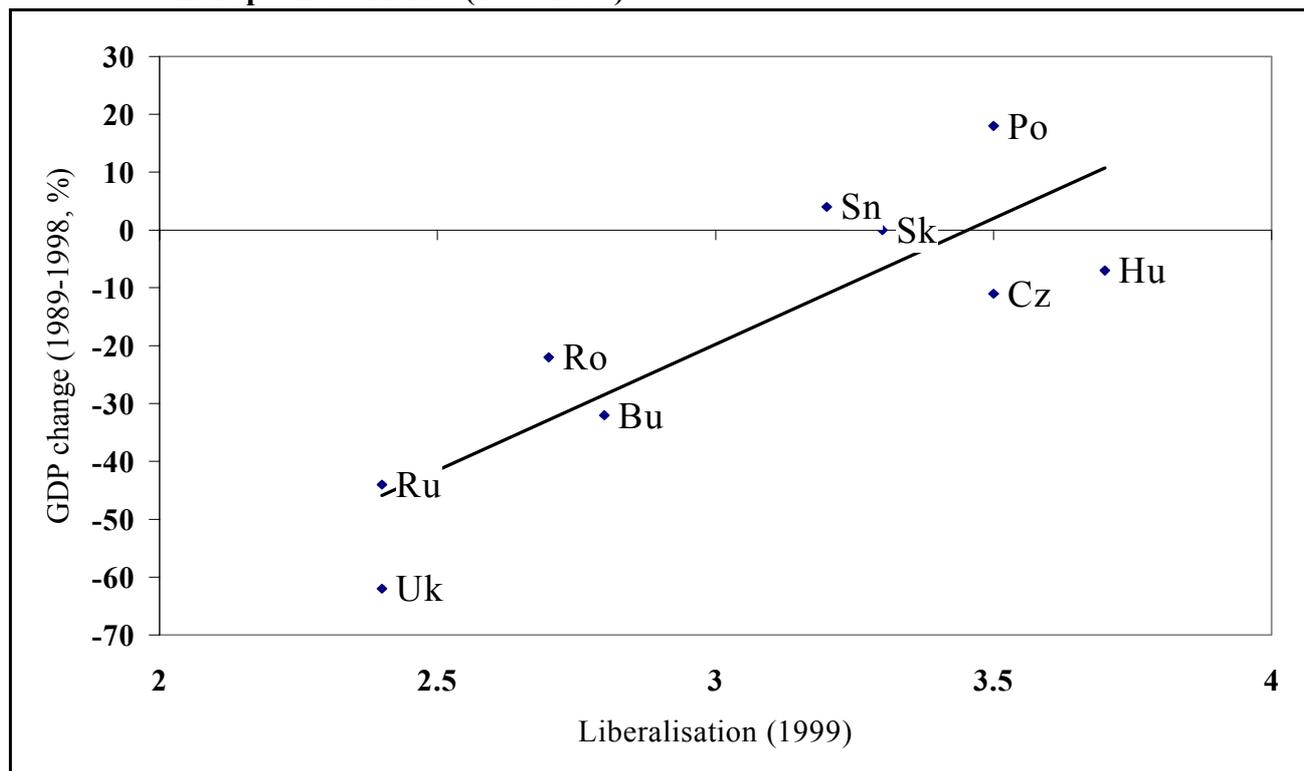
At the outset of transition, there was a large debate on the optimal sequencing of policies, often called the ‘Big-Bang’ versus ‘gradualism’ debate. The gradualists often referred to China as an example of a successful reform strategy, which combined an initial reform of property rights with a gradual liberalisation process and thus created growth without the negative effects of disruptions. Others argued that the initial conditions and the economic structure of China were so different from Central and Eastern Europe that little could be learned from China and that the best policy in those countries was to liberalise and reform everything at once: the so-called ‘Big-Bang’ option.

Several studies comparing economic performance in the non-Asian transition economies seem to support the Big-Bang argument. Taking into account differences in initial conditions and external factors, such as regional conflicts, those countries which reformed earliest and most radically are now doing best (DE MELO & GELB, 1996; FISCHER *ET AL.*, 1996; WYPLOSZ, 2000).

A similar conclusion can be drawn by combining the GDP developments in figure 1 and the reform indicators in table 1. As figure 7 illustrates, there is a strong positive correlation between GDP growth from 1989 to 1998 and the reform progress that has been made during that period.

³ For a discussion to what extent this conclusion also holds for East Asia, including China, see MACOURS & SWINNEN (2000a).

Figure 7: Progress in liberalisation and change in GDP in selected Central and Eastern European Countries (1989-1998)



Source: See figure 1 and table 1.

Policy Lesson 4: *General economic reforms have strongly affected agricultural transition and performance, in particular with regard to creating stability, better access to capital and technology, and privatisation.*

General economic reforms have strongly affected the climate in which agricultural transition has taken place. First, macro-economic stabilisation and general reform progress have not improved access to credit and capital sources for the farms. Credit markets have worked notoriously poorly in transition with disruptions due to privatisation and overall restructuring causing major problems for farms as regards both investment and even working capital (CALOMIRIS, 1993; SWINNEN & GOW, 1999). This has contributed to reductions in output. The recovery in Central Europe is at least partially due to improvements in the general economic climate which improved the working capital situation on farms.

Second, the inflow of foreign investment and the associated inflow of technology, know-how and capital infusion in the agro-food chain have also been most important in countries where progress with general reforms, the macro-economic situation, and, in Central Europe, where the prospect of EU accession have created an environment conducive to foreign investments.

Third, general privatisation procedures had important impacts on agriculture, as they determined the privatisation rules for companies involved in supplying inputs (fertiliser, pesticides, etc.) and credits (banks) to farms as well as for food processing and distribution companies. In a review of the successes and failures of privatisation, KORNAI (2000) concludes that privatisation strategies directed at selling state companies, preferably to majority ownership structures, such as in Hungary, have been more successful than privatisation strategies based on some form of free distribution of property rights among the citizens or employees through vouchers. The latter has mostly led to insider privatisation in which managers have been able to accumulate large shares of the assets, as e.g. in the Czech Republic and more extremely in Russia, while the former has stimulated the emergence of many small enterprises and the inflow of capital, as e.g. in Hungary. This has certainly had a ma-

major positive impact on the performance of the entire agro-food sector in Hungary, also because much of the capital inflow came from foreign companies' investments.

Policy Lesson 5: *An essential ingredient in recovery and productivity increases is the development of institutions for contract enforcement and exchange.*

An important source of increased productivity in Central European agriculture is the emergence of new institutions for information, product exchange and contract enforcement. Pre-transition systems were strongly vertically integrated. The central planner provided the information and enforced contracts between the various agents in the vertical chain. The removal of the central planning and control system, in the absence of new institutions to enforce contracts, distribute information, and provide financial intermediation caused serious disruptions throughout the economy (GOW & SWINNEN, 1998; STIGLITZ, 1999).

New enforcement institutions have come in a variety of forms. Frequently, the most successful ones have depended on private enforcement mechanisms within the framework of specially designed contracts or institutional arrangements. Increasingly, contracts between private agents are acting as substitutes for missing or imperfect public enforcement institutions (MCMILLAN, 1997; GOW & SWINNEN, 2000).

Successful institutions have offered enough flexibility to allow producers, suppliers, and buyers to adjust to the continuously changing environment during transition. For example, while land lease contracts initially often took the form of short (one-season) informal contracts, gradually they have evolved into more formal and longer-term contracts, reflecting reduced uncertainty and improved understanding of the market environment by both owners and tenants. Leasing, not only of land, but also of equipment is another example of an institutional innovation adapted to transition as it mitigates farms' collateral problems in financing new equipment.

Vertical integration in various forms has improved access to capital, inputs, and technology for farms. Beyond supply of capital, agrobusiness firms, in search for guaranteed and high quality raw materials (or product markets), have offered farms a number of arrangements to encourage greater production and marketing and to overcome constraints that have limited economic activity since the onset of transition (GOW *ET AL.*, 2000). For example, food processors have negotiated contracts with banks and input suppliers to provide farms with inputs that enable them to deliver high quality products to their company. Similar, input supply firms have been involved with assisting farms to find guaranteed outlets for their products in order to stimulate farms' demand for the company's products. Foreign companies have played a leading role in these developments (FOSTER, 1999).

Policy Lesson 6: *In the land reform process, the nature of the land rights allocated in land reforms is more important than who gets them. Clear and strong individual property rights have stimulated growth.*

Land reform processes differ significantly among transition countries, with important impacts on the efficiency of the agro-food system (CSAKI & LERMAN, 2000). Experience from various countries, including China, suggest that full ownership rights are not needed to stimulate significant productivity gains in land use. However, clearly defined individual user rights do seem to have a significant effect, at least during an initial phase. In many Central European countries land was either restituted to former owners, distributed to farm workers in delineated boundaries, or leased to new farms (in attendance of sales). The process of land restitution to former owners in particular created major political debates and opposition, because it was argued that restitution would separate ownership from those using the land with devastating consequences.

Looking back now, it appears that although these land reforms were complex and difficult to implement, they resulted in stronger and better defined property rights for new landowners than did the land reforms in several FSU countries, such as Ukraine and Russia. In the latter countries, land

was given to the users of the land, but distributed as paper shares or certificates to workers of the collectives and state farms. However, since individuals can not identify the physical plot of land that belongs to any given share, this process caused weak land rights for individuals and undermined their ability to withdraw land from the large farms. As a result, family farming has emerged only slowly, and large farms have little incentive for meaningful restructuring (LERMAN, 1999).

The transaction costs involved in land exchanges after clearly defined land rights are given to individual owners are, however substantial, considerably less than those involved in accessing land when land rights are incomplete or not defined clearly. While the restitution process has at least satisfied a basic condition for land exchange to develop (although often a lot remains to be done), the land reform process in Ukraine and Russia has not even led to the basic conditions being fulfilled, notwithstanding that formally the land has been given to those presumably most likely to use it.

Policy Lesson 7: *Farm restructuring policies should concentrate on imposing hard budget constraints, low exit costs, and independent management. The extent of effective management reform, rather than the shift to individual farming in itself, is crucial for improving farm productivity.*

After a decade of farm restructuring most transition countries have a mix of farm organisations, such as private co-operative farms, joint-stock companies, family farms and part-time farmers. The most radical restructuring was the break-up of the collective or state farms into individual farms. This ‘farm individualisation’ process was strongest in countries such as Latvia, Armenia, and Albania where there was a near complete break-up of collective farms. In contrast, in Ukraine, as in Russia, the Czech Republic and Slovakia, the share of land used by individual farms was less than 20% five years after the start of the reforms (table 2).

Table 2: The Growth of Individual Farming in selected Central and Eastern European Countries

Country	Farming Individualisation Index*	Year
Latvia	94.7	1997
Albania	94.2	1995
Lithuania	60.4	1996
Romania	60.2	1998
Hungary	51.1	1996
Slovenia	50.0	1997
Bulgaria	44.8	1995/6
Czech Republic	24.0	1998
Ukraine	14.1	1995
Russia	12.1	1995
Slovakia	3.2	1998

Note: * The Farming Individualisation Index measures the increase in the share of individual farming since 1989. It is equal to the share of individual farms in total agricultural land in 1995 minus the same share in 1989, divided by 100 minus the share in 1989, and multiplied by 100.

Source: MATHIJS & SWINNEN (1998).

These differences are not accidental: they reflect differences in incentives and the costs of shifting to individual farming, caused by both policies and structural conditions. For example, the break-up of the former collective and state farms has been strongest in countries where these farms were least efficient and most labour intensive, which reduced the costs of production fragmentation and increased the gains of improved labour governance, and where government policies reduced constraints for individuals to start up their own farms (MATHIJS & SWINNEN, 1998).

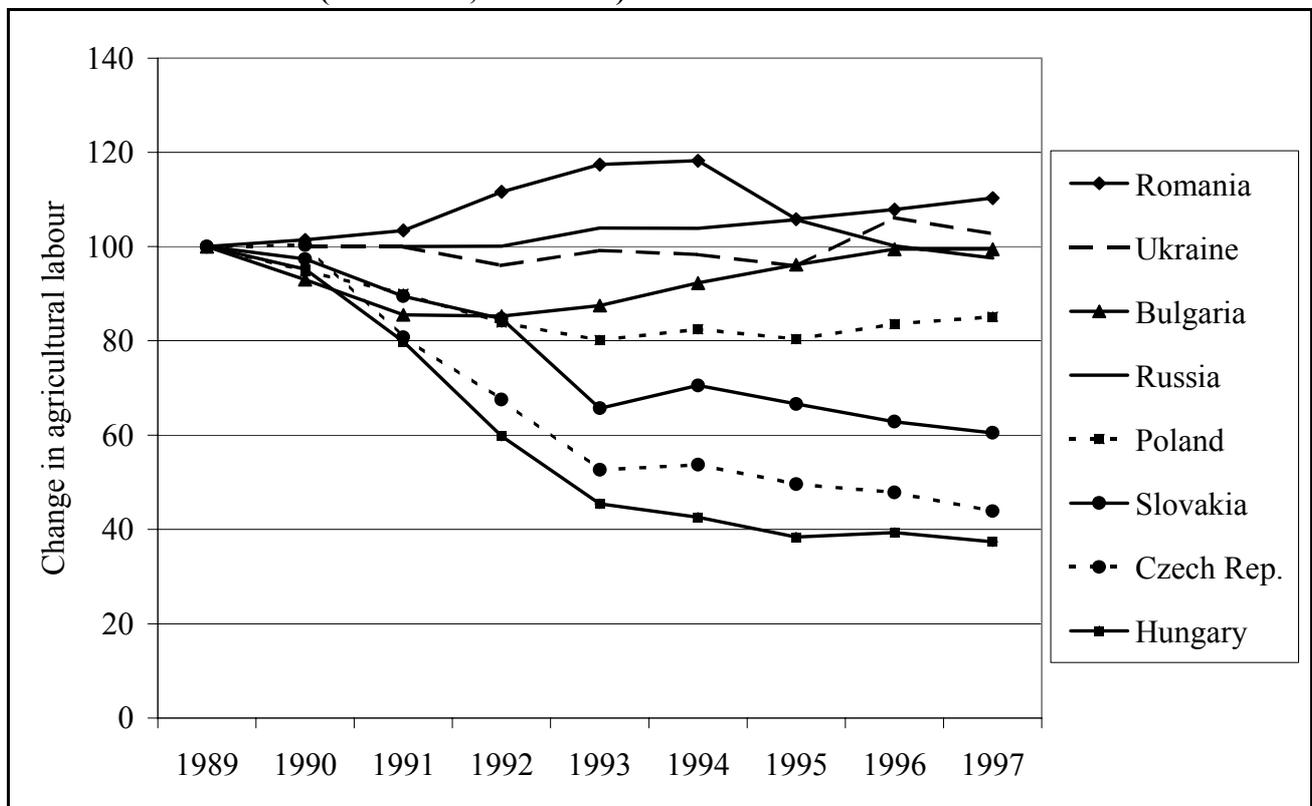
Since farm restructuring is not only determined by government policy, we do not find a simple relationship between the shift towards individual farming and the performance of the agricultural economy. For example, in Hungary and the Czech Republic we observe strong productivity gains in agriculture, while productivity has declined in Ukraine and Russia, despite the fact that all these

countries are characterised by a relatively limited shift to individual farming. The key difference is that in Central Europe, compared to Ukraine and Russia where large-scale farms have continued to dominate, farms in general have undergone effective restructuring, including both management reform and operation adjustments. In contrast, LERMAN & CSAKI (1997) report that, despite some downsizing in restructured farms, internal reorganisation has not produced deep restructuring in Russia and Ukraine and the collective framework has preserved most of its traditional function. As a result of this lack of restructuring, SEDIK, TRUEBLOOD, & ARNADE (1999) measure a decline in farm efficiency during transition in Russia.

These differences in farm restructuring reflect differences in government policy *vis-à-vis* farms. The imposition of hard budget constraints and autonomous farm management had a dramatic impact on farm management in Central Europe. The creation of stronger individual property rights and the removal of restrictions on the creation of individual farms would increase competition for the existing farms and thereby enhance efficiency in Ukraine. Presidential Decree of December 3, 1999 in Ukraine represents a step in this direction and there are indications that it led to increased efficiency on at least some farms.

A clear indicator of the difference in farm restructuring between the large farms in Ukraine and Russia as opposed to those in Central Europe is their labour management. The outflow of labour from agriculture is strongest in countries such as Czech Republic, Slovakia and Hungary where large-scale reformed collective and state farms with independent company management have laid off large numbers of workers, beyond those that voluntarily left the farms for other employment. As a consequence, agricultural employment declined dramatically (around 50% during the first five years of transition) in the Czech Republic, Slovakia, and Hungary (figure 8).

Figure 8: Change in agricultural labour use in selected Central and Eastern European Countries (1989-1997, 1989=100)



Source: ILO, OECD, EUROSTAT and national statistics.

In contrast, agricultural employment actually increased during the first five years of transition in Ukraine and Russia. Poor overall economic conditions, food security concerns, and farm management practices have constrained labour outflow in Ukraine and Russia. Household food se-

curity concerns in some cases even induced an inflow during early transition (THO SEETH *ET AL.*, 1998). However labour restrictions in Ukraine and Russia also take the form of former state farms continuing to provide social services, such as housing and health care, which together with poorly developed housing markets increase the costs of moving to other sectors or regions (BROOKS *ET AL.*, 1996). Moreover in Russia most companies are now paying wages in kind and through fringe benefits rather than cash. Because many goods and services provided cannot be converted into cash, workers cannot finance the costs associated with moving to other regions (FRIEBEL & GURIEV, 1999).

6 Conclusions

We can draw several conclusions and implications for Ukrainian agriculture.

1. Ukrainian reforms have been hampered by unfavourable initial conditions. Even more than in Central European transition countries, the legacy of communism has imposed political economy constraints on introducing reforms and has led to distortions and economic and institutional structures which are especially painful and difficult to reform.
2. While one should recognise these difficult conditions, they are no excuse for not trying to pursue essential reforms. Evidence from other transition processes shows that some reforms are essential conditions for growth. Moreover, this evidence also shows that in European (non-Asian) transition countries the most radical and thorough reform strategies have led to the best outcomes. Essentially, those that have reformed first have turned their economies around first. Hence, there is little evidence that provides support for postponing essential reforms.
3. General economic and institutional reforms are essential to stimulate growth and productivity improvements in agriculture. These reforms include macro-economic stabilisation, overall liberalisation, and the reform of state institutions to create a strong state for imposing market rules, collecting taxes, and establishing basic macro-economic conditions. Reform strategies should also focus on the development of new institutions for contract enforcement and exchange. This can come from public institutions or through the creation of an environment in which private and informal, though legal, institutions for contract innovations can develop.
4. Especially in agriculture, it is essential that government policy creates clear individual property rights for land and other productive assets and reduces the costs and constraints facing individuals who are considering taking their assets from former collective and state farms and employing them in new farming organisations. Simultaneously, the government should separate the social functions of the former state and collective farms from their economic functions. Farm entities should be allowed to make independent production decisions and obliged to face hard budget constraints. Only in this way will they be able to develop into sustainable enterprises and increase their productivity. Both are essential for the future of Ukrainian agriculture.

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2 *Agricultural Policy Reform in Ukraine: Sequencing and Results*¹

STEPHAN VON CRAMON-TAUBADEL & SERGIY ZORYA

1 Introduction

The contrast between perceptions of Ukraine's agricultural potential and the desolate condition of its agricultural sector today, roughly 10 years after Independence, could hardly be more striking. While there are indications that the physical potential of Ukrainian agriculture may have been over-rated in the past, in this chapter we argue that policy failure on a large scale is at the root of this contrast. We explore this issue by first providing an overview of the development of Ukrainian agriculture since Independence in section 2. In section 3 we then trace the development of agricultural policy in Ukraine over the last 10 years.² In section 4 we argue that the way in which agricultural policy is made – in other words the decision making structures, the actors and their interests – is largely responsible for policy outcomes and, hence, the disappointing performance of agriculture in Ukraine. As a result, we are sceptical that problems with the correct sequencing of agricultural reform measures have played an important role: We argue in section 5 that while sequencing is certainly of theoretical interest, in the environment that characterised Ukraine in the years following Independence, its practical importance was (and remains) limited by information constraints and political economic considerations.

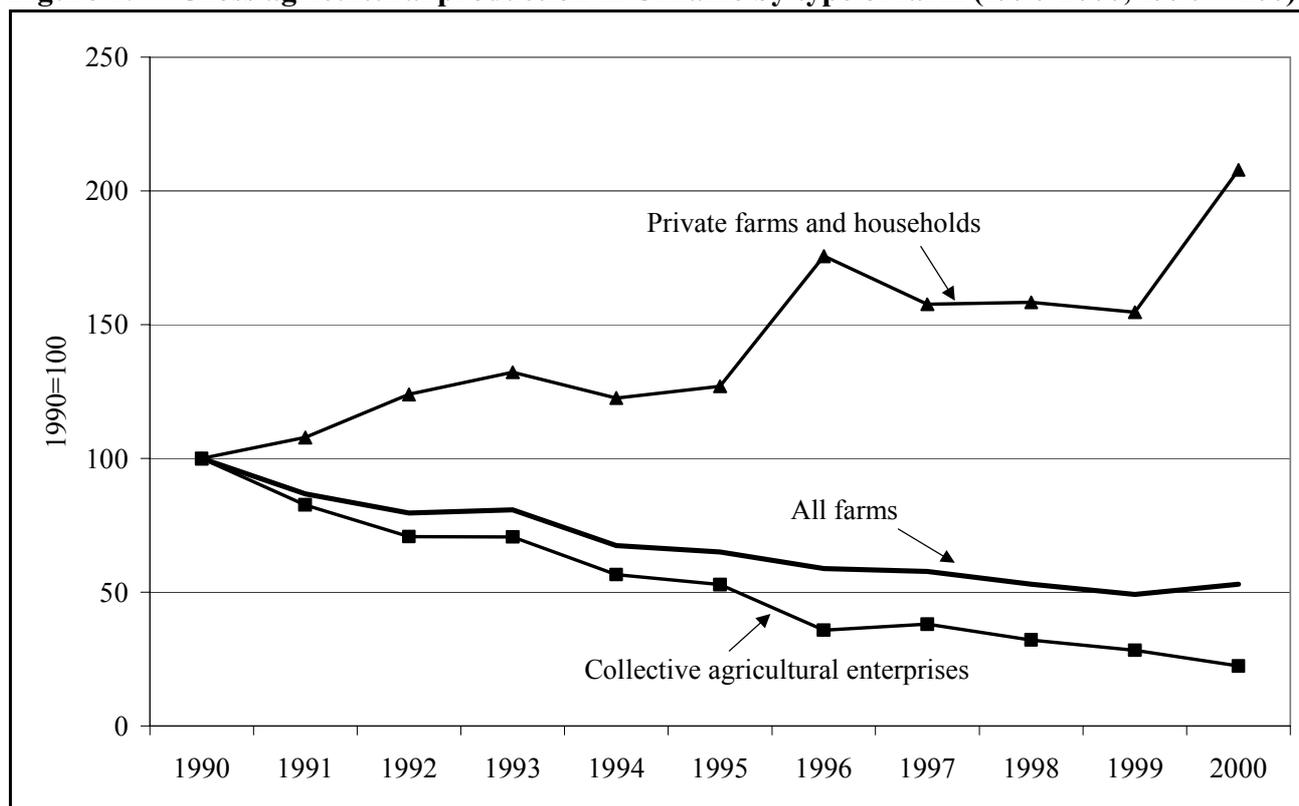
2 Ukrainian agriculture after 10 years of transition

Ukraine has a considerable, physical agricultural potential. It combines a large area (33.3 mill. ha. of cropland and 7.5 mill. ha. of permanent pasture) with fertile soils (roughly 40% of the world's black soils), year-round ice-free ports and proximity to key import markets in the Middle East, Northern Africa and, potentially, the EU. The mention of Ukraine still conjures up visions of boundless fields of grain, of a European breadbasket. As the Berlin Wall fell and the Soviet Union showed signs of disintegration, many observers predicted that agriculture in Ukraine, freed of the fetters of central planning, would soon emerge as a major source of exports on world markets. However, performance has been poor relative to expectations. Agricultural production has been more than halved, and if not for the private farms and especially household plots, this decline would be even more dramatic (figure 1).³ In recent months, Ukraine has been importing grain and sugar. Note that the decline in agricultural production has probably been stronger than the decline in overall economic activity in Ukraine, as agriculture's share of GDP has fallen from roughly 20% in the early 1990 to perhaps 11% today.

¹ Revised version of a paper presented at the XXIV International Conference of Agricultural Economists in Berlin, August 13-19, 2000, Mini-Symposium on *Institution Sequencing and Timing in Transition Economics*.

² Up to March 2001.

³ Of course, official statistics on agricultural production (and just about any economic activity) in Ukraine must be interpreted with caution. JOHNSON *ET AL.* (1997) estimate that the shadow economy amounted to 49% of Ukrainian GDP in 1995. The State Statistics Committee of Ukraine estimated the shadow economy at 20% of GDP in 1999 (see MELOTA, 2001). Of course, not all economic activities are equally well suited to being hidden, and it is reasonable to expect that data on agricultural production is more accurate than, for example, data on automotive repairs or other services. Furthermore, Ukrainian statistics on agricultural production do include allowances for shadow production. Analysts seem to concur that perhaps 2-3 more mill. t of grain are produced annually than are officially recorded. Shadow production of milk and other livestock products – that increasingly takes place on household plots for own consumption and sale on unofficial markets – is also significant.

Figure 1: Gross agricultural production in Ukraine by type of farm (1990-2000, 1990 = 100)

Source: STATE COMMITTEE OF STATISTICS OF UKRAINE (various issues).

Table 1 shows that the decline in production has been common to all products, crop and animal, with the possible exception of sunflower.⁴ As mentioned above, the observed declines in production are especially dramatic in comparison to the predictions of growth for some products that were made in the early years of transition. Some analysts suggested that Ukraine could produce roughly 75 mill. t of grain, some 50% more than was produced in 1990 rather than over 50% less as was actually produced in 2000.

Table 1: Production of selected agricultural products in Ukraine (1985-2000 in mill. t)

Product	1985	1990	1992	1994	1996	1998	1999	2000
Grain	37.9	51.0	38.5	35.5	24.6	26.5	24.4	24.4
Sugarbeet	39.0	44.3	28.8	28.1	23.0	15.3	13.9	13.2
Sunflower	2.3	2.6	2.1	1.6	2.1	2.3	2.7	3.5
Potato	20.0	16.7	20.3	16.1	18.4	15.3	12.8	20.2
Meat	3.7	4.4	3.4	2.7	2.1	2.6	2.5	2.6
Milk	23.0	24.5	19.1	18.1	15.8	13.7	13.4	12.6
Eggs (bill.)	16.6	16.3	13.5	10.2	8.8	8.3	8.8	8.7

Source: STATE COMMITTEE OF STATISTICS OF UKRAINE (various issues).

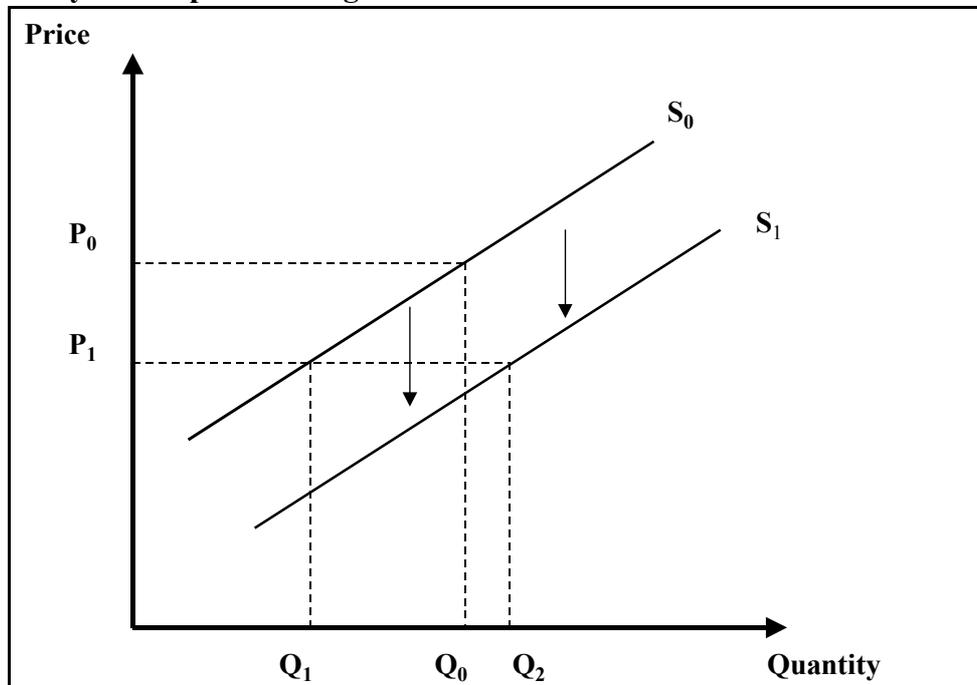
Of course, efficiency is the economically relevant measure of sectoral performance, not production. It could be argued that the fact that agricultural production in Ukraine has fallen represents a welfare enhancing response to new, undistorted price incentives. In this case, production declines would be welcome from an economic point of view rather than evidence of 'disappointing' performance. In figure 2, this is depicted as a reduction in production along the supply curve S_0 from Q_0 to

⁴ See the caveats in footnote 3.

Q_1 as the heavy subsidisation of agriculture in Soviet times is dismantled and real prices fall from P_0 to P_1 .

However, this explanation and possible justification for production declines overlooks the fact that the supply curve that prevailed in 1990 was not derived from a ‘best practice’ production function. It is well known that farming under central planning in the former Soviet Union (FSU) was highly inefficient. Farms were very large and characterised by high labour/land ratios, with the attendant problems of motivating and monitoring workers. Moreover, cost-plus pricing and the fact that state subsidies tended to be directed preferentially towards poor performers implied that there were few penalties, and perhaps even some rewards, for waste (WEGREN, 1998). Finally, farms were burdened with the costs of maintaining a large so-called ‘social sphere’ in the form of infrastructure maintenance, schools and cultural programmes etc. Hence, the supply curve S_0 can be seen as incorporating an ‘inefficiency tax’ due to central planning. Market-oriented restructuring could be expected to reduce this tax, reducing the marginal costs of production and shifting the supply curve in figure 2 down from S_0 to S_1 .

Figure 2: A stylised depiction of agricultural transition in Ukraine



Source: Own presentation.

At least until 2000, however, there were only few indications of market-oriented restructuring and increased efficiency in Ukrainian farming. Farm sizes remain large and management structures remain top-heavy and hierarchical. Labour productivity has fallen by 40% since 1994 as total employment in agriculture has actually increased, despite falling production.⁵ In 1999, almost 90% of all collective agricultural enterprises (CAEs) reported losses despite massive subsidies.⁶ Farm profitability improved in 2000, but there are indications that this is largely due to high prices caused by devaluation and the shift to a net import situation, conditions that are likely to change.⁷

Moreover, farms in Ukraine continue to receive distorted price signals. On the input side, prices for fuel and energy remain lower than on world markets (and costs are even lower because

⁵ See chapter 3 on *Agriculture and Current Account Sustainability in Ukraine*, figure 5, and table 6.

⁶ See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*.

⁷ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*. Furthermore, even in 2000, 52% of all CAE successor enterprises reported net losses.

many farms simply do not pay). Meanwhile, prices for other variable inputs and fixed inputs such as machinery are often considerably higher due to import barriers, monopoly provision and the fact that inputs such as chemicals or spare parts are often practically unavailable at the right time and place. On the output side, markets are fragmented, with farms receiving different prices for the same product depending on whether it is sold, delivered to the state, used to pay employees or exchanged *via* barter. The latter channel is especially opaque and variable. Table 2 illustrates that barter accounted for over 50% of all transactions for several products in 1997 and 1998. The relative importance of barter peaked in 1999 and has declined since.

Table 2: The share of barter transactions in Ukrainian agriculture in 1997 and 1998 (in %)

Product	1997	1998
Vegetable oil	26	23
Sugar	56	47
Sunflowerseed	58	54
Grain	25	33
Potatoes	25	26
Livestock and poultry	13	12
Milk	7	60
Eggs	10	16

Source: STATE COMMITTEE OF STATISTICS OF UKRAINE (various issues).

Hence, we might conclude that while a shift in the supply curve due to increased efficiency is, in principle, to be expected, the necessary market-oriented restructuring is just beginning. The question remains whether this shift, if it continues, would suffice to ‘compensate’ for lower real prices, thus leading to increased production as some have predicted. In figure 2, the shift from S_0 to S_1 does suffice, leading to a net expansion of production from Q_0 to Q_2 . However it may be that the potential of Ukrainian agriculture has been exaggerated. Modern agriculture is a complex, capital and technology intensive activity that depends much less on soils and weather than was the case in earlier times. Furthermore, there are indications that after (at least) nine years of exploitation, Ukraine’s fabled black soils are tired, devoid of humus and key nutrients. These factors would suggest that a smaller relative supply curve shift than depicted in figure 2 might be expected.

In the final analysis, these are questions of fact for which we can, failing hindsight, only provide speculative answers. Whether grain production would rebound to 40, 50 or 75 mill. t, only time can tell. However, that it could rebound from currently under 25 mill. t appears certain.

In summary, the performance of Ukrainian agriculture since Independence has been disappointing, despite recent improvements. While adjustment to declining agricultural term of trade has led to falling production, simultaneous movements towards the production frontier could have been expected to compensate perhaps fully or even beyond. In the following we argue that policy failure is the main reason why such movements are only beginning to take place, slowly, almost ten years after Independence.

3 Agricultural policy in Ukraine since Independence

In the appendix at the end of the book we include a condensed overview of agricultural policy developments in Ukraine since Independence. Note that many areas of general economic policy that have an important impact on agriculture as well (such as the tax and social welfare systems, administrative reform and energy policy) are not included in this overview. However, it is safe to

say that the development of most areas of economic policy in Ukraine has proceeded along lines parallel to those outlined in the appendix at the end of the book and in the discussion that follows.⁸

In the years up to 1994, few steps were taken that could be characterised as market reforms. In 1992, the existing kolkhozes and sovkhoses were transformed into CAEs. This largely formal change led to little real restructuring in the farm sector. Input supply and food processing remained firmly in state hands. In 1991, a law had made private farming possible. By 1994, 32,000 private farms had emerged. This number increased to 38,400 by 2001. However, the private farms have remained, for the most part, small (average 56 ha).⁹ They are also much less potent as a force shaping agricultural policy than the roughly 12,000 CAEs and their successor enterprises. In 1993, export quotas and licensing were implemented.

Altogether, this first phase can be seen as one in which essentially no market-oriented reform occurred. On the contrary, at the micro-level there was little restructuring of farms, and at the macro-level fiscal and monetary imbalances quickly led to crippling hyperinflation (10,155% in 1993) and a very unstable environment for any type of economic activity.

Following Leonid Kuchma's first election as President in 1994, a number of promising reforms were implemented. While these were mainly (and largely successfully) directed towards achieving macroeconomic stabilisation, some important agricultural policy steps were taken as well. In 1994, a legal basis for the distribution of land shares to CAE members was created, and by 1996 most quotas and licensing restrictions on agricultural exports had been eliminated.

Following this promising start, however, agricultural reforms lost momentum, and the years from 1997 to 1999 have often been described as wasted. The CAEs proved to be little more than the old kolkhozes and sovkhoses under new names, and while members theoretically had a right to their individual land shares, they generally had little practical means of exercising this right, as land sale and rental were forbidden and individual land parcels were not demarcated.

In the area of trade policy, the elimination of quotas and licensing restrictions led to little effective liberalisation (VON CRAMON-TAUBADEL & KOESTER, 1998). Trade controls can be seen as valves that make it possible to channel trade flows and any associated rents. While quotas and licences were eliminated to comply with IMF and World Bank conditions in 1996, those who had benefited from these restrictions quickly developed alternatives. For example, so-called 'indicative' and 'recommended' prices (minimum export prices) were implemented for many products.¹⁰ Even when these were not officially binding, local customs officials often insisted on their strict application. To avoid costly delays, traders either had to 'resolve' disputes locally with the customs officials in question, or they had to cultivate high-ranking contacts in Kyiv who could guarantee immunity.

Beginning with the 1996 harvest, a further valve was invented. Some regional (oblast) authorities declared bans on grain exports, ostensibly to secure repayment for inputs that had been delivered in the spring as well as assorted tax debts etc. While the oblasts had no right to impose such bans, the response of the central government in Kyiv was highly ambiguous; repeated statements that such bans were illegal were coupled with references to the need to keep the state reserves well supplied and pressures to collect taxes and debts. In each of the following 3 years (1997-99), regional export bans and confiscation of grain and oilseeds were employed in a similar manner, and in

⁸ Overviews of economic reforms in Ukraine are provided by HOFFMANN & SIEDENBERG (1997) and SIEDENBERG & HOFFMANN (1999).

⁹ See chapter 13 on *Evolution of Farm Structures in Ukraine*, table 4.

¹⁰ The indicative price is the minimum export price for goods subject to export restrictions fixed by the former Ministry of Foreign Economic Relations and Trade and now the Ministry of the Economy of Ukraine. Recommended prices are prices recommended for use in export transactions. If the recommended price is lower than the actual export contract price, the customs officer may suspend export clearing until the resolution of the problem. Many traders report this problem, but officials from the Customs Committee refuse to confirm such cases.

each year, the need to collect payment for earlier input deliveries and debts was the pretence used to justify these measures. Under these conditions, private input suppliers found themselves unable to secure payment for their own deliveries (foreign agricultural chemical firms had accumulated receivables of roughly 200 mUS\$ by late 1999), and as a result, private input supply stagnated at very low levels. Coupled with the government's inability to supply the right inputs at the right time to the right farms, this was one of the main causes of declining crop production in Ukraine in the second half of the 1990s (STRIEWE & VON CRAMON-TAUBADEL, 1999).

In early 2000 (see appendix at the end of the book) the new government announced that it would withdraw from the input supply business and cancelled or restructured all farm debt to the state. These decisions generated considerable optimism in Ukrainian agriculture and in 2000 much more capital flowed into farming than in earlier years. Nevertheless, subsequent decisions, such as Decree No. 832 (June 29, 2000) and Law No. 2238-14 (January 18, 2001) have raised the spectre of export certification, mandatory crop insurance and an enhanced role for the state holding Khliv Ukrainy, all of which cast doubt on Ukraine's commitment to market-oriented reforms in agriculture. The situation on oilseeds markets, where the government first attempted (July 1998, proposed 100% export deposit) and then succeeded (September 1999, 23% export tax) in implementing export restrictions is similar. A recent decision to lower the export tax has yet to be ratified, and since this decision is coupled with another to close a loophole which exporters have been using to avoid the original tax, it might have the paradoxical effect of actually increasing the effective export tax. On markets for products which Ukraine currently imports (for example, raw sugar) high import tariffs have been imposed (July and November 1997), and tariff rate quotas are periodically granted in an opaque and apparently non-competitive manner.¹¹

Two further key areas of agricultural policy concern the processing industry and finance. In the food processing industry, a privatisation mechanism that gives supplying farms and the state 51 and 25% shares, respectively, with the rest going to employees and sales, was introduced in 1996 (see appendix at the end of the book). In so-called 'strategic' cases (for example grain marketing) the state's share is often larger and selected key enterprises have been exempted from privatisation. As a result, much of the food processing and marketing sector remains monopolistic and inefficient. Since many agricultural products are tradable, inefficient processing and marketing (i.e. transportation and storage) translates directly into depressed farm-gate prices. For example, inefficient marketing structures leave Ukrainian farmers with only roughly 40% of the f.o.b. price, instead of 70% in the case of Germany.¹²

The combination of a lack of restructuring and implicit taxation of agricultural prices means that most CAEs or their successor enterprises in Ukraine are still not profitable (see footnote 7). Farms also have little collateral (land can be leased since October 1998 (see appendix at the end of the book), but cannot be used to secure commercial loans) and there was a moratorium on the initiation of bankruptcy procedures in agriculture until 2004. Finally, regular debt write-offs for farms in Soviet times has engendered a very cavalier attitude towards debt repayment. Altogether, therefore, farms are not regarded as being creditworthy and have little access to loans. The result has been low levels of gross investment, and significant negative net investment as agriculture's physical plant in Ukraine deteriorates.¹³

This overview of major developments in Ukrainian agricultural policy suggests that active market-oriented restructuring was, until recently, not a policy priority. Trade policy was not designed with a view to exposing the sector to undistorted prices, input supply and food processing remained largely in state hands, and steps to create a land market, a key to structural change in agri-

¹¹ See chapter 9 on *Who Gains and Loses - Import Tariffs and Tariff Rate Quotas for Sugar and Grain in Ukraine*.

¹² See chapter 10 on *Regional Agricultural Trade Model in Ukraine* and chapter 7 *Price Determination and Government Policy on Ukrainian Grain Markets* for detailed discussions.

¹³ See chapter 4 on *Rural Finance in Ukraine - Extending the Frontier*.

culture not only in transition, were very halting. In the process, commercial agriculture in Ukraine was driven to the brink of collapse. A number of decisions in late 1999 and 2000 improved the situation considerably, although anti-reform forces continue to make their presence felt.

Why has agricultural policy in Ukraine developed in this manner? In the following section we discuss the policy makers and the policy making process in an attempt to answer this question.

4 The causes of policy failure: Who makes agricultural policy in Ukraine, and how?

A glance at the overview of policy developments in the appendix at the end of the book quickly reveals that agricultural policy is made by a variety of different bodies in Ukraine. Parliament, the Cabinet of Ministers (CMU) and the President pass laws, resolutions and decrees, respectively. The Ministry of Agriculture, oblast authorities, customs authorities, various State Committees and state enterprises such as Khib Ukrainy exercise considerable control over the practical implementation of these legislative acts and can themselves take initiatives, as illustrated by the regional export bans discussed above.

A key problem is certainly that co-ordination between these different authorities is very weak. The relationship between the Ministry of Agriculture and the CMU is a case in point. Since the mid-1990s, the average Minister of Agriculture has stayed in office for roughly one year. The Ministry of Agriculture has a staff of well over 1,000 individuals when representatives at the oblast and Rayon (county) level are accounted for. The position of Vice Prime Minister responsible for agriculture in the CMU has also changed hands frequently. The CMU has a staff of roughly 700 employees, including a sizeable agricultural department. After one government re-shuffle, the post of Vice Prime Minister responsible for agriculture was completely eliminated, only to be recreated a few months later.¹⁴ At various times, the positions of Vice Prime Minister and Minister of Agriculture have been held by the same individual. Both the ministry of agriculture and the CMU draft laws for consideration by Parliament, and the Ministry of Agriculture is often responsible for the implementation of resolutions that have been passed by the CMU. However, it is not clear how responsibility for different tasks is divided between these two bodies and the lack of personal continuity has not allowed such a clear-cut, stable working relationship to develop. Altogether there is little apparent justification for the maintenance of what seem to be parallel structures.¹⁵

The Presidential Administration with a staff of 1,000 employees (ÅSLUND, 1999) has a major influence on agricultural policy because the President can issue decrees and assign tasks and associated deadlines to the CMU and the Ministry of Agriculture. The President can also veto laws that have been passed by Parliament and dismiss the Prime Minister and his government as well as Oblast Governors. The President has made extensive use of decrees to implement agricultural policy changes. In December 1999, a decree stipulated that all CAEs distribute land shares and restructure to form new entities by no later than April 30, 2000. In June 2000, a further decree (Decree 832) called for the implementation of a price support system and export certification for grain (see above). It is widely reported that this potentially far-reaching decree was prepared without the knowledge of either the Vice Prime Minister or the Minister of Agriculture, which, if true, would support the contention that the agricultural policy making process in Ukraine is very fragmented.

¹⁴ In other words, there is not always a Vice Prime Minister responsible for agriculture. In April 2001, for example, the position of Vice Prime Minister for Agriculture was vacant, and it was rumoured that this position would be assigned another portfolio in the future. Since July 2001 the Vice Prime Minister for agriculture is Mr. Leonid Kozachenko.

¹⁵ Note that the Ministry of Economics also has an Agricultural Department and that at times in the past the Vice Prime Minister for Economic Policy has also been involved in agricultural policy making. Furthermore, a variety of overlapping co-ordinating committees (such as the Inter-Ministerial Commission for Agricultural Reform or the Commission for Agrarian Policy of the President of Ukraine) have also been engaged.

Beside the multiplicity of structures and poor co-ordination, policy making has suffered from several further disadvantages. First, following Independence, the political establishment in Ukraine was preoccupied with nation building. ÅSLUND (1999, p. 5) compares Ukraine with Estonia and Latvia, where economic reforms were seen as being an integral part of nation building. In contrast, Ukraine's first president, Leonid Kravchuk, was a former Second Secretary of the Communist Party responsible for ideology, with little knowledge of or interest in economics. Thus, under the Kravchuk administration, transforming what had been provincial institutions in Kyiv into national institutions (i.e. creating a National Bank etc.) had highest priority, while "*...various ideas of a special Ukrainian economic model arose. They were not very original and can be described as a mixture of muddled Gorbachevian economic thoughts, that is, the last stage of communist confusion, and surviving statist nationalist economic thinking from the 1930s about the need for a strong regulating state.*" (ÅSLUND, 1999, p. 6).

Second, due to Soviet fear of Ukrainian nationalism, Ukraine had been largely isolated from the outside world. Following Independence, few Ukrainians spoke English, the country had only one, communist dominated economic journal, and there was neither an elite with training in economics, nor a sound appreciation of basic economic issues in the general population.

Third, in Soviet times, policy was made in Moscow and merely implemented in regional capitals such as Kyiv. Ukrainians today can cite many examples of countrymen and -women who attained positions of responsibility in Moscow in Soviet times. However, the other side of this coin is that for decades, individuals with a talent for creative, strategic policy formulation were drawn away from Kyiv, while the requirements of local plan administration tended to select for individuals with a technocratic/bureaucratic attitude towards policy. As SUNDAKOV (1999, p. 113) argues: "*...Ministers and other senior officials in the Soviet period were not selected on the basis of their strategic vision. Rather, they got there through their ability to keep production going, to deliver the funds and the inputs, and to extract outputs from the various enterprises under their control.*" It was from this class that the first generation of reformers in Ukraine had to emerge.

As a result of these post-Independence conditions, an initial window of opportunity for economic reforms was missed. The new nation's leaders had little knowledge of how and why to implement economic reforms; their thinking was, understandably, dominated by the perceived need to reduce dependence on Russia. In the euphoria of nation building, all of the trappings of an inflated bureaucracy and stifling regulation emerged. By 1999, Ukraine had approximately 70 Ministries and State Committees (SUNDAKOV, 1996, p. 5).¹⁶ Combined with the prevailing lack of economic expertise and the fact that the old pre-Independence establishment in Ukraine had remained more or less intact, this created a very fertile environment for rent seeking.

ÅSLUND (1999), lists four dominant forms of rent seeking in Ukraine. One of these involves commodity exports.¹⁷ In 1992, roughly 40% of Ukraine's exports was composed of commodities, the prices of which, due to the regulation of domestic markets, were on average roughly 10% of corresponding world market prices. This means that rents of roughly 4.1 bUS\$, or 20% of Ukrainian GDP in 1992 accrued to those who had access to the goods and export permits. Significant rents were also distributed in the form of budget subsidies, including those to agriculture, and subsidised credits to enterprises. Total budget subsidies amounted to 8.1% of GDP in 1992 and 10.8% in 1993, while subsidised credits amounted to 65 and 47% of GDP in these years, respectively (ÅSLUND, 1999, p. 8). In 1993, when inflation reached 10,155%, state credits were granted at 20% rates of interest and, thus, essentially represented gifts to those who could quickly convert them in to currency or tradable commodities.

¹⁶ State Committees have a somewhat lower status than Ministries, but their chairmen have often enjoyed Ministerial powers.

¹⁷ On rent seeking and trade in Ukraine, see also HAVRYLYSHYN (1994).

In the years following Independence, therefore, a powerful class of rent seekers emerged. If there had been little reason to expect market-oriented agricultural reforms immediately following Independence, such reforms became even less likely as rent-seeking interests became entrenched in later years.¹⁸ The power of these interests is reflected, as outlined in the previous section, in the tenacity and creativity with which true market liberalisation in agriculture has been resisted to date (regional export bans, the oilseed export tax, tariff rate quotas on imports, etc.). Despite the promising steps to liberalise markets taken by the new government since late 1999, other steps such as Decree No. 832 of June 2000, the oilseed export tax and the manipulation of tariff rate quotas suggest that the rent-seekers have not given up yet.

The only significant threat to this system of rent seeking that has emerged is that of collapse due to macro-economic instability. Negotiations on the implementation of stabilisation policies and the extension of IMF and World Bank loans were initiated in late 1994. In the course of 1995-96, inflation was reduced significantly and a new, stable currency, the Hryvnia, was introduced. However, since structural reforms – for example in agriculture as outlined in the previous section, but also in other areas such as energy policy – were not pursued over this period, this macro-economic stabilisation was fragile and vulnerable to exogenous shocks. As the real economy continued to shrink, government expenditure and standards of living in general could only be maintained by increasing net capital inflows. When these suddenly dried up in the wake of the crises in East Asia and subsequently Russia, Ukraine too was drawn into turmoil. While policy makers in Ukraine often refer to a Russian crisis that spilled over into Ukraine, there was little question as early as 1997 that the Ukrainian economy was vulnerable and that a major shock (devaluation, effective default or at least the need for major debt restructuring) was becoming increasingly likely as time went by.

5 The importance of timing and sequencing

Disappointing performance in Ukraine and other transition economies has led to charges that there has been too much emphasis placed (by consultants, advisors and donors) on cookbook recipes (liberalise, get prices right, impose hard budget constraints) and too little on sequencing and institution building (see, for example, NANIVSKA, 1999).

Certainly, we subscribe to the view that investments in human capital, in particular in the form of training for young Ukrainians as future policy makers, have been under-emphasised. Furthermore, it is self-evident that institutions matter and that important policy implications can be derived using insights from institutional economics (see, for example, VOIGT & ENGERER, 1999).

However, we cannot, based on our experience in Ukraine, concur that institution building has been ignored by policy advisors who only have eyes for world market prices and balanced budgets. Issues of corporate governance, management structures and transaction costs within the CAEs, the need to create a land market, as well as the importance of bankruptcy laws, transparent accounting systems and central credit registries for the development of rural finance systems; these topics and others have been central themes of the work of most of the donors and advisory groups in Ukraine that we have observed since at least 1995.

What of sequencing? The development of agricultural policy and the performance of the agricultural sector in Ukraine since Independence leaves us quite sceptical as regards the practical importance of sequencing issues.

First, the informational demands associated with sequencing are daunting. Sequencing involves both the order in which reform measures are to be implemented and the timing or pace of these measures. While it may be possible to develop interesting theoretical models of optimal sequencing, in practice the implementation of specific insights derived from these models will require

¹⁸ For a discussion of this problem in transition economies, see EBRD (1999, p. 102-114).

information on speeds of adjustment, exogenous factors and the incidence of costs and benefits etc. that is not even available *ex post* let alone *ex ante*.

The speed with which ‘optimal’ price liberalisation should occur, for example, is likely to depend, *inter alia*, on nominal and real exchange rate developments and, in the case of tradable goods, on expected world market price developments. Both are essentially unpredictable. At the onset of the transition period in Eastern and Central Europe there was no way of knowing, for example, that grain and oilseed prices on world markets would explode in 1995-1996; and in the midst of this high price phase, few observers predicted that these prices would soon return to historical lows. As regards exchange rates, in 1997/98 we were witness to fascinating debates in economic and policy circles in Ukraine on whether the real exchange rate was under- or overvalued, and on the exchange rate elasticity of the production and trade of Ukrainian goods. Respected analysts could be found arguing that the Ukrainian Hryvnia was not overvalued in real terms and that, in any case, production and exports would not respond to a devaluation. While we now know better, this is of little comfort to anyone who might have been attempting to solve sequencing problems in 1997/98.

Second, the concept of sequencing is based on a rather naive conception of the political economy of transition. In this regard, we would like to raise several issues.

1. The idea of sequencing is disturbingly well suited to the mind-set of the proponents of continued state planning and intervention in transition economies. It is only a short step from ‘sequencing’ to the ‘complex of detailed and interactive normative acts guiding the coordinated action of all organs and levels of state authority’ that these proponents often call for. Appeals for sequencing are often transformed into arguments for the maintenance of a large, intrusive state apparatus. The idea of sequencing might also suggest to some that it is possible to manage some type of ‘third way’ between or even beyond socialism and capitalism for a prolonged period of time.¹⁹ In a sense, we are appealing to something analogous to the recognition that while market failure may provide a *prima facie* case for government intervention, policy failure can result if political economics and the distinction between necessary and sufficient conditions are ignored. It is of practical importance, when evaluating theoretical arguments for sequencing, to consider the (mis)uses to which these arguments might be put.
2. In practice it is unlikely that a government will be able to stick to a sequencing schedule. More precisely, the longer the schedule, the more likely it is that resistance to reform will build as ‘losers’ become aware of the stakes, rent seekers ‘learn the ropes’, and politicians become attuned to the interests of both groups. This suggests that reforms should be implemented quickly. In the case of Ukraine it may have been possible to implement major reforms in the heady weeks and months immediately following Independence; today vocal, entrenched interests make even minor changes difficult. In this vein, BALCEROWICZ has stated: “*The first phase after the political breakthrough is a very important one. ... There’s a special atmosphere and much euphoria. People are willing to accept radical changes. ... [T]his first period is precious, because it can be used to launch as many painful changes as possible. Whenever there’s a window of opportunity, one should use it, because later it may be very difficult or impossible.*”²⁰
3. If this is true, however, it is largely academic to worry about sequencing. The main consideration should simply be pushing as much as possible through a given, narrow window of opportunity.

¹⁹ KORNAI (2000) argues convincingly that, at least so far, a distinctive third way has not emerged.

²⁰ BALCEROWICZ (2000). In the discussion that followed the presentation of this paper, BALCEROWICZ stressed that if he made one mistake during Poland’s so-called ‘big bang’ it was that he did not push through even more major reforms, that he instead worried about exceeding Poland’s capacity to adjust and thus decided that some reforms could wait until later.

4. It has been noted that simultaneity can increase the sustainability of reform (VOIGT & ENGERER, 1999, p. 65). It is a characteristic of many reforms that they lead to significant losses for individual groups and rather diffuse gains for the rest of society. The more reforms are pursued simultaneously, the more these diffuse gains can accumulate to compensate individual groups for their losses.

Another argument for simultaneity is that many reform measures have the character of necessary but not sufficient conditions. The provision of credit to farms in Ukraine, for example, is unlikely to increase unless several conditions are fulfilled simultaneously. Farms must become profitable, which implies that a slate of measures directed at effectively liberalising markets and allowing the market-driven restructuring of farms to occur must be implemented. At the same time, lenders' expectations that farms will repay must be increased, which implies steps to increase trust (a credit registry), transparency (internationally acceptable accounting practices), creditor protection (bankruptcy laws and courts) and the availability of collateral (a functioning land market). The implementation of any partial subset of these steps is not likely to lead to a significant improvement of the current situation; indeed, the implementation of some subsets could put farms under additional pressure, thus increasing their efforts to block reform. For example, lifting the moratorium on bankruptcies in Ukrainian agriculture without simultaneously pursuing effective market liberalisation would quickly lead to the majority of Ukraine's farms being declared insolvent. Effective liberalisation without lifting the moratorium on bankruptcy might increase farm profitability somewhat, but investment activity would remain at a low level.

One oft-cited sequencing guideline for transition economies is the rule that macroeconomic stabilisation is a prerequisite for successful, efficiency-enhancing structural change. Clearly, under conditions of five-digit inflation, entrepreneurs will not be able to make sensible decisions. However, Ukrainian experience between late 1994 and the crisis in 1998 also suggests that preoccupation with macroeconomic stabilisation can detract from the need to also consider whether the 'real' economy is growing or perhaps still shrinking. In other words, macroeconomic stability can only form a thin, fragile crust over an economy that has not undergone meaningful structural change at the market and enterprise levels. Hence, while macroeconomic stabilisation is a precondition for structural reform, it can be argued that even in this relatively clear-cut case, it would be more productive to think in terms of simultaneity rather than sequencing.

6 Conclusions

The contrast between perceptions of Ukraine's agricultural potential and the desolate condition of its agricultural sector today, roughly 10 years after Independence, is striking. It appears that policy failure is largely responsible for this contrast. An overview of agricultural policy developments in Ukraine since Independence indicates that little market-oriented reform took place before late 1999, and that even after that date opponents of reform have been able to score important victories. Initial conditions and the fact that agricultural policy in Ukraine is made by numerous poorly co-ordinated bodies have been major obstacles to successful reform. Since the perceived demands of nation-building were given a higher priority than economic reform in the first years of Independence, a window of opportunity was missed. Powerful rent seeking interests have become entrenched and represent a major barrier to reform. As a result of our diagnosis, we are sceptical that problems with the correct sequencing of agricultural reform measures have played an important role. While sequencing is certainly of theoretical interest, we feel that in the environment that characterised Ukraine in the years following Independence, its practical importance was (and remains) limited by information constraints and political economic considerations.

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3 *Agriculture and Current Account Sustainability in Ukraine*¹

SERGIY ZORYA

1 Introduction

The Soviet Union was always considered a *large* and almost *closed* economy. It was *large* due to its substantial influence on world market prices, and *closed* due to its orientation mainly on inter-republic and CMEA trade. After Independence in 1991, Ukraine became a *small open* economy, in other words, a country that has little influence on international prices, and that imports and exports significant quantities of goods, services and capital.²

There are, broadly speaking, three reasons for discussing the policy implications of an open economy. First, policy makers need to understand the environment in which they operate. An open economy faces various external and internal shocks almost every day. Ukrainian policy makers must come to grips with changes in the world price for oil or world financial crises, just as their colleagues in other countries. Second, policy makers need to make judgements as to where the economy is moving – whether opportunities are opening up or closing down. Third, policy makers need to make decisions. Moreover, these decisions have to be made taking into consideration possible reactions in the rest of the world, for example, investors' sentiments. For each of these reasons, it helps to know something about the main relations and mechanisms of an open economy (DORN-BUSCH, 1988).

The current account plays a central role in the macroeconomics of an open economy. A sustainable current account ensures a 'healthy' environment for the whole economy; an unsustainable current account often leads to financial crises. Ukraine has already suffered from a financial crisis in mid-1998.³ The entire economy and the population were severely affected by this collapse. Slow structural reforms together with weak budget discipline and political instability were considered to be the main roots of that crisis. Agricultural policy, too, was strongly responsible for weakening the sustainability of the current account leading up to that crisis.

There is no simple rule that can help to determine whether or not a current account deficit or surplus is sustainable. ROUBINI & WACHTEL (1998) propose a number of indicators of current account sustainability for transition economies. Moreover, in a range of studies on 'early warning' pre-crisis indicators, and macroeconomic vulnerability current account sustainability plays a very important role. The analysis of current account sustainability in Ukraine in this chapter is built on these studies.

This chapter addresses the issue of the current account sustainability in Ukraine with implications for agricultural policy-making. The goal is twofold: first, to improve the knowledge of policy makers in Ukraine regarding current account sustainability; and second, to explain the importance of sectoral linkages to agricultural policy makers so that their decisions harmonise with economy-wide priorities. The paper is structured as follows. First, the term 'current account' and its sustainability are introduced. Second, methods for the analysis of current account sustainability in transition economies are discussed. In the fourth section, current account sustainability in Ukraine is assessed. Section five deals with the impact of macroeconomic crises on agriculture first, and then, the effects of agricultural policy on the current account's 'health'. The sixth section summarises the resulting suggestions for agricultural policy makers in Ukraine.

¹ I am very grateful to Ulrich Thießen for his helpful comments.

² It is more accurate to say that at the moment capital imports are relatively free in Ukraine, but capital exports are strictly controlled.

³ One could add the mini-financial crisis in the autumn of 1997 as well.

2 The current account, savings and investments

The current account measures the sustainability of the macroeconomic equilibrium and serves as a good indicator of the soundness of macroeconomic policy. The current account measures net receipts (surplus) or net payments (deficit) for goods and services between a country and the rest of the world, including unilateral transfers:

$$CA = NX + NII + NCT \quad (1)$$

where CA is current account;

NX = the excess of exports over imports, (i.e. the net exports of goods and services);

NII = net investment income; and

NCT = net current transfers, usually technical aid.

A current account surplus can also be presented as an excess of private sector savings over investments plus the budget surplus (DORNBUSCH, 1980):

$$CA = (S - I) + (TA - TE) \quad (2)$$

where

S = private savings;

I = private investments;

TA = budget revenues; and

TE = government expenditures.

These equations are critical for understanding the current account. They state:

- A current account deficit reflects an excess of expenditure over income. To correct a deficit, expenditure must be cut or receipts must be increased.
- Improvements in the current account can be brought about only if savings increase relative to investments or if the government budget surplus grows. If policies cannot achieve either of these objectives, directly or indirectly, the current account cannot be expected to improve.
- A deterioration in the budget, unless it is offset by increased savings or reduced investment, will make the current account worse. Usually fiscal imbalances are at the heart of macroeconomic disequilibrium (EDWARDS, 1996).

These statements are important because current account problems are often blamed on trade deficits (DORNBUSCH, 1998, p. 43). Politicians may think, for example, that an export subsidy is a good way to improve the current account. But is that really true, once we look at equations (1) and (2)? Surely not.

A current account deficit must be financed in some way. The possibilities include i) borrowing from banks, foreign governments, or international financial organisations and ii) attracting private capital inflows in form of direct and portfolio investments. Both of these actions generate changes in the capital account. If it is not possible to finance the current account deficit in this way, then the only remaining option available is to run down foreign exchange reserves. Equation (3) defines this balance:

$$\text{Current Account} + \text{Capital Account} = \text{Changes in Foreign Reserves} \quad (3)$$

The stock of net foreign assets (NFA) is equal to all claims by residents on the rest of the world less all claims by foreigners on domestic assets. Therefore, the current account can also be equated with changes in net foreign assets:

$$\Delta NFA = CA \quad (4)$$

which simply states that bills must be paid.

3 Indicators of current account sustainability in transition economies

The current account is an important measure of economic performance for economies in transition, but not in isolation from other key indicators. On the one hand, a current account deficit coupled with stable foreign reserves can reflect the strength of developing economy, insofar as it measures resources coming into the country to finance investment demand in excess of national savings. On the other hand, a current account deficit can reflect dangerous and unsustainable imbalances between national savings and domestic investment and the accumulation of debts that cannot be served. The intriguing aspect of this dichotomy is that it is often difficult to distinguish between current account deficits that are the consequence of growth-inducing capital inflows, and current account deficits that result in unsustainable debt accumulation (ROUBINI & WACHTEL, 1998).

There is no simple rule that can help to determine whether or not a current account deficit or surplus is sustainable. ROUBINI & WACHTEL (1998) propose a number of indicators of the current account sustainability for transition economies. Moreover, a range of studies define ‘early warning’ pre-crisis indicators in which current account sustainability plays an important role (see KAMINSKY, LIZONDO, & REINHART, 1998; GOLDFAJN & VALDES, 1997). KRKOSKA (2000) assesses macroeconomic vulnerability using several such indicators in Central Europe. The following analysis of indicators of current account sustainability in Ukraine is built on these studies.

A first indicator is the **state of the foreign debt to GDP ratio**. A non-increasing foreign debt/GDP ratio is seen as a practical sufficient condition for sustainability: *a country is likely to remain solvent as long as the ratio is not growing*.

A second indicator is the **country’s liquidity**. The recent East-Asian crisis surprised the academic and business communities, mostly because the main features of previous financial crises were by and large absent in Asia. With only moderate overvaluation, balanced budgets, sustainable debts over time and no immediate risk of default, some East Asian countries were nevertheless subject to a spectacular loss of market confidence, which triggered a series of currency crises (BUCHS, 1999). In this regard, it is important to distinguish between *insolvency* and *illiquidity*. Insolvency refers to a borrower who lacks the net worth needed to repay outstanding debts out of future earnings. Illiquidity refers to a borrower who lacks the cash needed to repay current debts, even though he might be perfectly able to honour his debts in the long run. In other words, *a solvent borrower may face a severe liquidity crisis if he is not able to borrow enough to meet current debt service obligations*. The typical feature of a liquidity crisis is that creditors suddenly react on the basis of the other creditors’ actions, and no longer on the basis of the debtor’s fundamentals. DORNBUSCH (2001, p. 2) calls illiquidity a ‘bad balance sheet’ problem which, together with overvalued real exchange rates, are the main roots of modern-style crises. A useful measure of vulnerability to liquidity crisis is a country’s ratio of short-term liabilities to short-term assets. A ratio greater than one is sustainable as long as foreign creditors are willing to roll over their debts, but it does indicate vulnerability to a crisis because foreign creditors know that there is simply not enough foreign exchange available to repay them all.

A third indicator is **the current account to GDP ratio**. MILESI-FERETTI & RAZIN (1996) argue that both theoretical and empirical evidence suggest that, *ceteris paribus*, a current account imbalance is likely to be less sustainable if it is large relative to GDP. Clearly, the larger the income generating capacity of the economy relative to current account, the greater the scope for adjustment to cure any imbalances that might develop.

MILESI-FERETTI & RAZIN also point out that a current account imbalance is less likely to be sustainable if it is due to **reduction in national savings rates rather than an increase in national**

investment rates and/or **national saving rates are low**. Since the current account is equal to the difference between national savings and national investments, a current account deficit can emerge from either a fall in savings or an increase in investment. ROUBINI & WACHTEL (1998) argue that a fall in public savings – i.e. a higher budget deficit – is potentially more dangerous than a fall in private savings because the latter is more likely to be a transitory phenomenon, while a structural public sector deficit is often hard to get rid of. A transitory fall in private saving rates can occur when expectations that future GDP growth will lead to higher permanent income result in increased consumption. In this case, saving rates will recover when future income increases occur. On the other hand, large and persistent structural budget deficits often result in an unsustainable build-up of foreign debt.

The composition of the current account is a fifth important indicator in the analysis of current account sustainability. For a given current account, large and persistent trade deficits may indicate structural competitiveness problems, while large and negative net foreign factor incomes may be an historical remnant of foreign debt incurred in past. Moreover, since a country's ability to service its external debt in the future depends on its ability to generate foreign currency receipts, its ratio of exports to GDP is another important indicator of sustainability.

A sixth indicator of current account sustainability is the **composition of capital inflows**. The intuitively logical view is that volatility differs among different financing instruments, and that foreign direct investments (FDI) and long-term loans are less volatile than portfolio flows and short-term loans. FDI is more costly to reverse, and thus responds more to fundamentals than to short-term interest rates, whilst portfolio flows are far more responsive to short-term changes in interest rates. Furthermore, portfolio investors can sell their existing stock of paper from a particular country far more easily than foreign investors can (DRABEK & GRIFFITH-JONES, 1998). Moreover, CHUHAN *ET AL.* (1996) provide strong empirical evidence that short-term flows are 'hotter' than FDI. An important study in this context is FRANKEL & ROSE (1996), which shows that the larger the proportion of FDI in total capital inflows, the smaller the probability that the recipient country will suffer a foreign exchange crisis. KRKOSKA (2000) states that a **growing gap between current account deficit and foreign direct investments** has been the most useful early warning indicator in the transition economies of Central Europe. Moreover, ROUBINI & WACHTEL (1998) state that IMF financing does not necessarily make a current account deficit more sustainable. Instead, large IMF loans can signal that an unsustainable current account imbalance has led to a crisis that makes official intervention unavoidable, or that the country in question has severe economic problems and has lost access to foreign private capital. DORNBUSCH (2001, p. 11) states that debates on the appropriateness of IMF programs continue, and that many researchers and politicians argue that IMF support often makes a bad situation even worse.

The real exchange rate (RER) is also an indicator of current account sustainability (DORNBUSCH, 1988; EDWARDS, 1988). Real overvaluation may cause a loss of competitiveness and structural worsening of the trade balance, which makes the current account less sustainable. A fixed nominal exchange rate regime under a free movement of capital can make a country more vulnerable because of the corresponding danger of RER misalignment. The RER absorbs all important internal and external shocks in the economy and serves as a sort of barometer of the general macroeconomic climate.

The soundness of the **domestic financial systems**, particularly the banks, also influences a country's ability to sustain a current account deficit or surplus. A lack of confidence in the banking system will decrease the willingness of foreigners to finance a current account deficit by participating in the domestic economy. In such a case, the largest burden of financing the current account will fall on the domestic banks.

Last but not least, a ninth indicator of current account sustainability is **political stability and certainty regarding the economic environment**. ROUBINI & WACHTEL (1998) state that political instability or mere uncertainty about the course of economic policy will have much the same conse-

quence as banking sector instability. The threat of an economic regime that is not committed to sound macroeconomic policies can reduce the willingness of the international financial community to finance a current account deficit. Moreover, political instability can lead to larger budget deficits that, in an open economy, add to the current account deficit.

This list of the important indicators of current account sustainability is summarised in table 1. The next step is to analyse the current account sustainability in Ukraine.

Table 1: Key indicators of current account sustainability in transition economies

No.	Indicator	Danger
1	The ratio of foreign debt to GDP (solvency)	A growing ratio of foreign debt to GDP (threat to ability to service debt)
2	The ratio of short-term liabilities to short-term assets	A high ratio of liabilities to assets (vulnerability to liquidity crisis)
3	The ratio of the current account to GDP	A high ratio of the current account to GDP (limited scope for adjustment)
4	The composition of and changes in national savings and investment	Potentially most dangerous is a fall in public (as opposed to private) savings
5	The composition of the current account	Negative net factor income less danger than a large, persistent trade deficit (competitiveness)
6	The composition of capital inflows	Dependence on portfolio flows and short-term loans as opposed to FDI (danger of volatility)
7	The misalignment of the real exchange rate	Overvaluation (deterioration of the trade balance due to loss of international competitiveness)
8	The strength of the domestic financial system	Lack of confidence in domestic banks, weak regulatory environment, undercapitalisation
9	Political stability and certainty regarding the economic environment	Instability and the threat of changes in the economic regime, backtracking on reforms

4 Current account sustainability in Ukraine

Before analysing the current account sustainability, the development of the current account in Ukraine since 1994 is discussed. Figure 1 shows that the current account was in deficit at the average rate of 3% of GDP until 1999. After financial crisis in August-September of 1998, the current account balance improved significantly, showing the first surplus since Independence (2.7% of GDP at the end of 1999⁴ and 4.6% of GDP or 1.5 bUS\$ at the end of 2000, see IMF, 2001 & NBU, 2001).

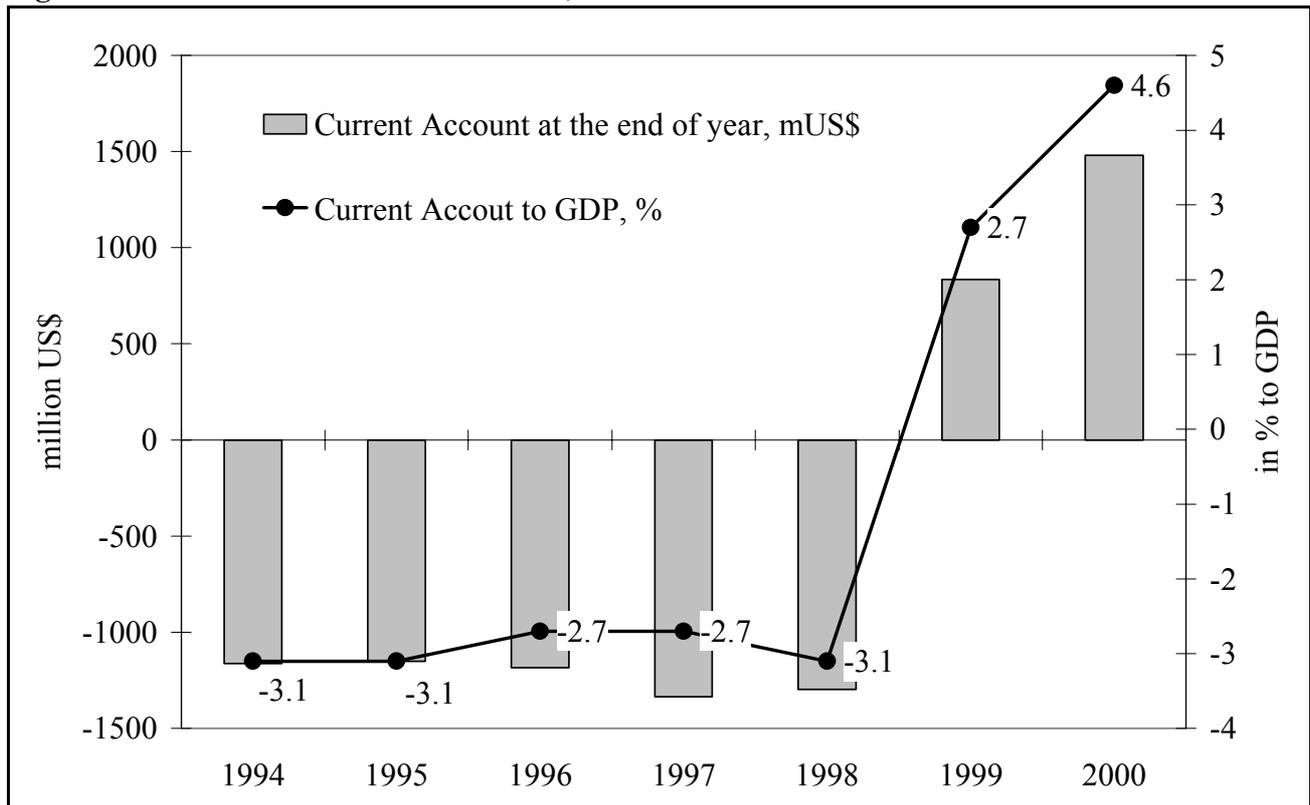
Generally, the development of the current account is highly dependent upon GDP growth. Since Independence, Ukraine never enjoyed positive annual GDP growth until 2000, when real GDP growth of 6% was realised (IER, 2001).⁵ Total real GDP decline from 1992 to 2000 is estimated to be 68% (see UEPLAC, 2001). Moreover, Ukraine's GDP performance is the worst of all Central and Eastern European economies.⁶ In most of these countries, GDP began to recover in 1993-1994. Until 2000, Ukraine continued to contract.

A useful way to begin to understand the nature of the current account is to consider that it can be disaggregated in two ways. From one perspective, the **current account equals savings minus investments** (equation 2). From the other perspective, **it equals to the sum of net exports, investment income, and current transfers** (equations 1). A current account deficit can be financed by running down foreign reserves or through capital inflows (equation 3). Table 2 shows the components of Ukraine's current account, as well as its financing sources.

⁴ For 1999 the IMF data is used for the current account. It does not include the sales of the ships and boats (726 mUS\$) to Russia as a repayment of the foreign debts under the Agreement on Black Sea Fleet.

⁵ This figure has recently been revised to 5.8%.

⁶ See chapter 1 on *Ten Years of Agricultural Transition in Central and Eastern Europe: Some Lessons for Ukraine*, figure 1.

Figure 1: Current Account in Ukraine, 1994-2000

Source: Own presentation based on UEPLAC (2001); DBR (2001); NBU (2001).

Table 2: Components of the current account and its financing in Ukraine, 1994-2000 (as % of GDP)

	1994	1995	1996	1997	1998	1999	2000
a) Current account (as per equation 2):	-3.1	-3.1	-2.7	-2.7	-3.1	2.7	4.6
Total savings, including	19.4	14.2	17.8	17.1	16.5	22.5	22.0
private savings	29.9	22.1	22.4	24.2	19.1	23.9	22.0
public savings	-10.5	-7.9	-4.6	-7.1	-2.6	-1.4	0.0
Total investments	22.5	21.4	20.5	19.8	19.6	19.8	17.4
b) Current account (as per equation 1)	-3.1	-3.1	-2.7	-2.7	-3.1	2.7	4.6
Net merchandise exports	-5.2	-4.8	-9.6	-8.4	-6.1	-1.6	2.4
Non-factor income	2.2	2.3	7.1	5.3	3.2	4.8	1.9
Investment income	-0.6	-1.1	-1.3	-1.3	-2.1	-2.8	-2.9
Current transfers	0.4	0.4	1.1	1.7	1.8	2.3	3.2
c) Current account (as per equation 3)	-3.1	-3.1	-2.7	-2.7	-3.1	2.7	4.6
Net capital inflows*	4.2	4.1	4.6	3.4	-0.1	-1.7	-3.4
Change in foreign reserves (+ increase)	1.1	1.0	1.9	0.8	-3.1	1.0	1.2

Note: * Net capital inflows equals to the sum of the net capital account, IMF and exceptional financing and net payables, as well as errors and omissions.

Source: Own presentation based on UEPLAC (2001); IMF (1997, 1999 and 2001); HIID (2000); DBR (2001); NBU (2001).

The first disaggregation of the current account shows the continuous fall in national savings and investments until 1998 and the sharp increase thereafter (table 2a). Up to 1999, a chronic budget deficit was added to declining savings.⁷ As GDP recovery was accompanied by a balanced budget in 2000, the current account significantly improved, even though the share of investments in GDP de-

⁷ Recall that ROUBINI & WACHTEL (1998) warn that a fall in national savings caused by lower public savings (a higher budget deficit) is potentially more dangerous than a fall in private savings.

creased from 19.8% to 17.4% in comparison with 1999. This decline in investments, so urgently needed for the restructuring of the economy, clouds the otherwise positive results attained in 2000.

Further insights into the current account can be gained with the decomposition into net merchandise exports, non-factor income, investment income, and current transfers (table 2b). In 1994-1996, net goods exports and non-factor income played the most important role in the current account. Since 1997 the influence of investment income and current transfers has increased.

Ukraine's merchandise trade balance was negative until 2000. It is argued by some that the improvement of the trade balance in late 1999 and 2000 was not the result of structural changes, but rather the result of the Hryvnia's real depreciation in the aftermath of the 1998 financial crisis (GERMAN ADVISORY GROUP ON ECONOMIC REFORM, 2000; BUSINESS, 2000; COMMERZBANK, 1999). Moreover, since Russia is Ukraine's major foreign market, exports were fuelled by the real growth in Russia due to the higher world oil prices in 2000. Russia purchases approximately 32% of Ukraine's exports, while Ukraine imports roughly 60% of its imports (mainly energy products) from Russia. Although Ukraine has substantially reoriented its exports to markets outside the former Soviet Union, it is still largely dependent upon Russian energy imports. It is not likely in the nearest future that Ukraine will switch to other sources of energy imports even if the supply conditions are better (COMMERZBANK, 1999).

Non-factor income in 2000 remained at the level of 1994 (around 2% of GDP), decreasing from its peak of 4.8% of GDP in 1999. The lion share of non-factor income derives from the transit fees on Russian gas. However, freight, construction and financial services, as well as telecommunication services also contribute.

Ukraine's investment income includes the repayment of debt to creditors such as Russia (RAO Gazprom), the IMF and the World Bank, as well as to non-resident holders of domestic debt. The burden of debt service has been steadily growing (from -0.6% of GDP in 1994 to -2.9% of GDP in 2000). In 2000 debt repayment would be even higher if Ukraine had not restructured its foreign debts in March 2000 (around 2.2 bUS\$ – NBU, 2001).

Ukraine continues to absorb large amounts of official grants and technical aids. These include grants for the Chernobyl nuclear plant and for defence conversion. In 1994 and 1995, these current transfers played little role in the current account. But in 1999, the current account surplus was approximately equal to current transfers, and these transfers were very important in 2000 as well. As these transfers are not sustainable in the long run, the current account is vulnerable.

Finally we turn to the **financing of the current account deficit** and the **structure of capital flows** into Ukraine (table 2c). From 1994 to 1997, capital inflows financed the current account deficit. Moreover, during this period, capital inflows exceeded the current account deficit, putting pressure on the exchange rate. This development was the result of government policy as chronic budget deficits required financing. As the National Bank of Ukraine ceased financing these deficits in 1995, the government began to issue different types of the securities, including T-bills and Eurobonds. The desire to attract external resources combined with Ukraine's low crediting rating and competition from Russian security markets led the government to push up real interest rates (DABROWSKI *ET AL.*, 1998). The mini-crisis in the fall of 1997 and financial collapse in August 1998 drastically changed this picture. Foreign reserves were drawn upon to finance the deficit, while capital outflows from the T-bill and Eurobond markets took place (HIID-CASE, 1998). Capital outflows continued in 1999 and even accelerated in 2000 because of the real depreciation of the national currency, the increased perceived risk of investing in Ukrainian securities, and political instability prior to the presidential elections in late 1999. The data in table 3 suggests that the structure of these capital inflows is not sustainable.

Table 3: Structure of net capital flows into Ukraine, in % of GDP

	1994	1995	1996	1997	1998	1999	2000
Foreign direct investment	0.2	0.6	1.2	1.2	1.8	1.6	1.8
Portfolio equity	0.0	0.0	0.1	0.5	0.5	0.4	-0.6
Bonds and medium and long-term loans*	-2.3	-0.7	1.2	3.5	-1.2	-0.2	na
Other short-term inflows	2.3	-4.1	0.4	-2.7	-3.0	-4.0	-4.9
Net payables, inc. exceptional financing**	3.2	5.9	-0.6	2.0	3.1	3.3	na
Net use of IMF funds	0.8	2.5	1.7	0.6	0.7	0.3	0.8
Errors and omissions***	0.0	0.0	0.5	-1.6	-1.9	-3.1	-0.5
Capital flows balance	4.2	4.1	4.6	3.4	-0.1	-1.7	-3.4

Note: * Medium and long-term loans are the mainly trade credits from Western countries, as well as project support from the World Bank and the EBRD.

** Exceptional financing includes World Bank adjustment loans, the EU and other bilateral creditor loans.

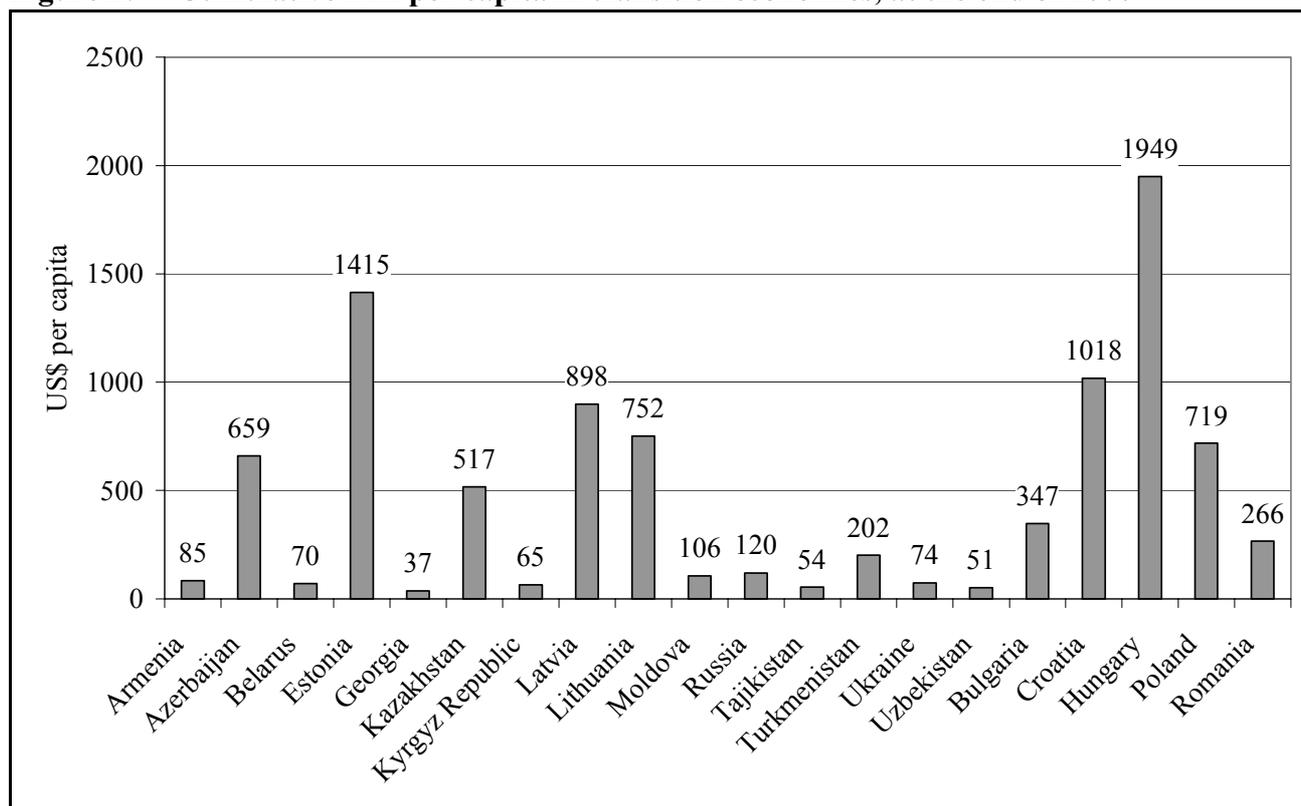
*** Errors and omission include non-recorded capital flows.

Source: Own presentation based on UEPLAC (2001); IMF (1997, 1999 and 2001); DBR (2001); NBU (2001).

Bilateral and IMF financing, foreign direct investment, and short-term capital inflows have been Ukraine's major sources of external financing. In section 2 we stated that capital inflows can be divided into two categories: those which strengthen current account sustainability and those which weaken it. The first group includes foreign direct investments and medium- and long-term investments, while the second group consists of short-term (portfolio) investments and official financing. The structure of the capital account in Ukraine is not cause for much optimism. In recent years, most medium- and long-term loans have been used to repay previous loans, rather than to finance current expenses. Since 1998, the repayment of loans has substantially exceeded new loan disbursements. Portfolio and other short-term investments have proved their highly volatility nature: they immediately reacted to the financial crisis in mid-1998, as well as the earlier financial crises in Asia and Russia. The net outflow of short-term capital strengthened in 2000, in reaction to slow structural reforms and the high risk of investing in government securities. Official financing has behaved in a similar way. Almost all exceptional financing hinges entirely on IMF decisions whether or not to grant loans to Ukraine. As economic reform has tended to be very halting, IMF loans have often been suspended (IMF, 1999). In September 1999, the IMF stopped Ukraine's financing, insisting on the fulfilment of a number of important prior conditions and pending the results of an investigation into NBU operations with foreign reserves in 1997-1998. Together with the IMF, all other donors suspended their financing as well. In December 2000, the IMF renewed Ukraine's financing, but this has not yet re-opened Ukraine's access to international capital markets.⁸

Foreign direct investments – the most desirable source of capital inflows from the point of view of current account sustainability – have been very small despite an increase in their share of the capital account balance. By the end of 2000, Ukraine had received around 3.7 bUS\$ of accumulated FDI, or 74 US\$ per capita. Figure 2 shows that at the end of 2000 Ukraine stands out as one of the least successful countries in Central Europe and the former USSR in attracting the foreign direct investments.

⁸ Furthermore, IMF disbursements were suspended once again in February 2001.

Figure 2: Cumulative FDI per capita in transition economies, at the end of 2000

Source: Own presentation based on IMF (1999); World Bank (2000); DBR (2001).

The next step is to analyse **debts dynamics** and the **development of the debt burden**. Statistics on these indicators are shown in table 4.

Table 4: Foreign debts and debts service in Ukraine

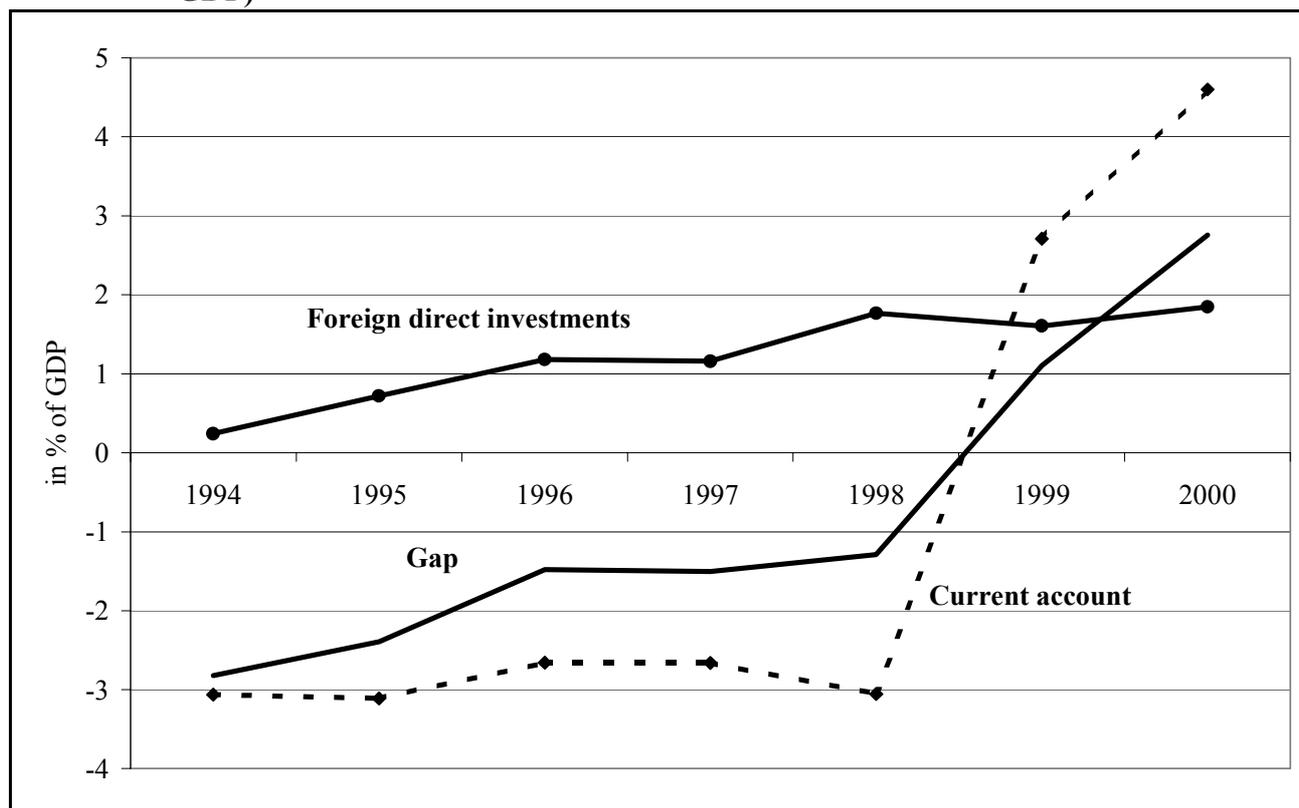
	1994	1995	1996	1997	1998	1999	2000
Foreign debt at the end of year, bUS\$	7.17	8.22	8.84	9.60	11.48	12.44	10.36
Foreign debt as % of GDP	18.9	22.2	19.8	19.1	27.1	40.4	32.2
Foreign debt as % of exports	43.1	48.1	43.4	46.9	65.2	76.6	53.1
Debt service ratio as % of exports	11.2	8.0	6.6	7.3	12.5	16.1	14.5

Source: UEPLAC (2001); NBU (2001).

Foreign debts increased drastically during 1994-1999, and fell again somewhat in 2000. At the end of 2000, the foreign debt had reached 137% of its level in 1994. Foreign debt as a share of GDP increased from 18.9% in 1994 to 40.4% in 1999. Although foreign debt did increase in absolute terms, the sharp GDP decline has also contributed to this increased share. As GDP increased by 6% in 2000, the foreign debt/GDP ratio fell to 32.2%. To service its foreign debt in 2000, Ukraine had to use 53% of its total export revenues, down from 77% in 1999. If domestic debts are included, the ratio of total debt to GDP increases by 11% in 1998 (COMMERZBANK, 1999), and by 17.7 and 18.7% in 1999 and 2000, respectively (GERMAN ADVISORY GROUP ON ECONOMIC REFORM, 2001). The debt service ratio in percent of exports has gradually increased since 1996, at least until 2000.

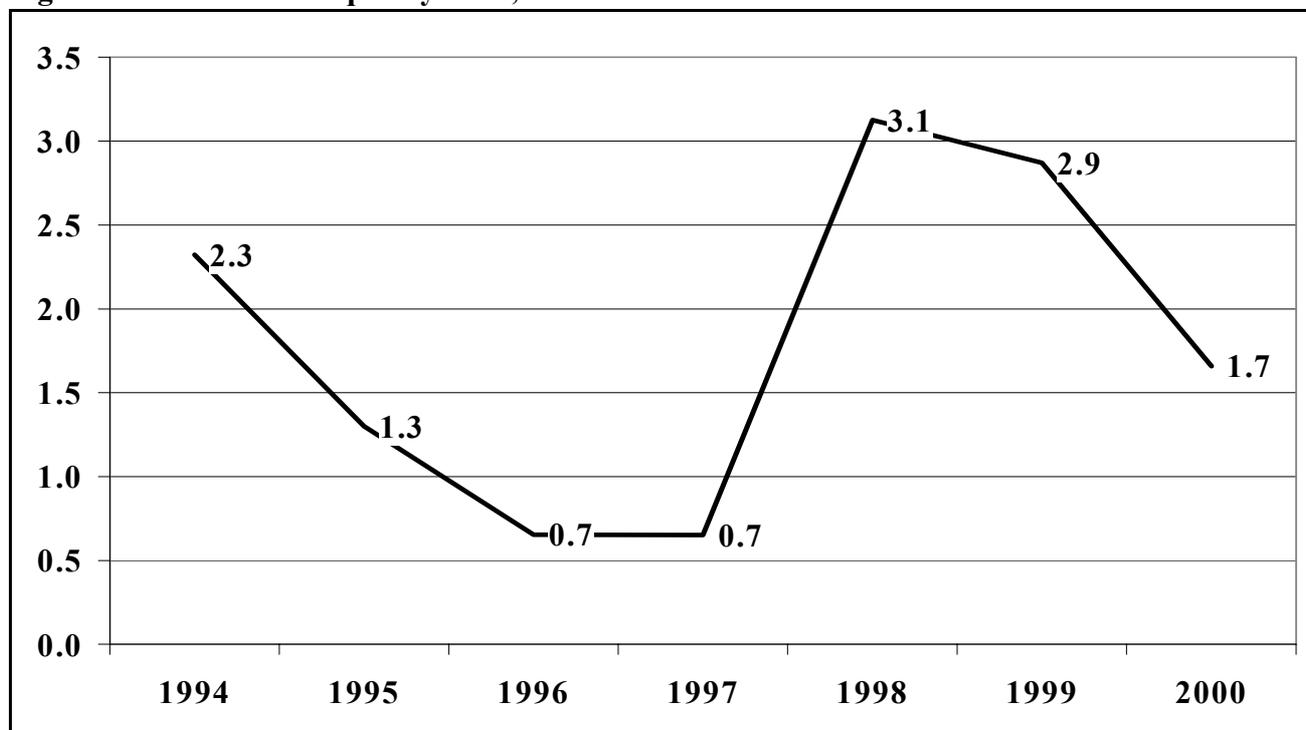
In general, these observations suggest that 2000 saw some improvement in the sustainability of the current account in Ukraine, although there remain questions as to the long-term sustainability of these improvements. Although the current surplus at 4.6% of GDP is a good sign, the sustainability of these surpluses in the future is questionable as real structural reform continues to lag behind short-term macroeconomic stability and export competitiveness due to the devaluation of the real exchange rate in 1999 and early 2000.

Figure 3: The gap between current account balance and FDI in Ukraine, 1994-2000 (in % of GDP)



Source: Own presentation based on data from UEPLAC (2001); DBR (2001); NBU (2001).

Figure 4: Ukraine's liquidity ratio, 1994-2000



Source: Own presentation based on UEPLAC (2001); NBU (2001).

KRKOSKA (2000) presents evidence that in the transition economies of Central Europe a growing gap between current account deficit and FDI has been a most useful indicator that provides clear early warning of forthcoming volatility ending in crisis. KRKOSKA argues that 5% of GDP is a

dangerous gap. However, in Ukraine, this gap has never exceeded 3% of GDP, even before the financial crisis in 1998 (see figure 3).

What about Ukraine's **liquidity**, i.e. its ability to service its short-term obligations on time? The ratio of Ukraine's short-term liabilities to foreign reserves is shown in figure 4. A ratio of larger than one is not sufficient to cause a crisis by itself, since the situation is perfectly sustainable as long as foreign creditors are willing to roll over their debts. However, it is an indication of *vulnerability* because foreign creditors know there is simply not enough foreign exchange available to repay them all (BUCHS, 1999). Figure 4 shows that Ukraine is highly vulnerable. Only in 1996 and 1997, the years of debt accumulation, was the liquidity ratio less than one. In 2000, Ukraine improved its liquidity ratio, mainly due to the successful restructuring of 2.2 bUS\$ of foreign debts.

Additional indicators of the sustainability of the current account are the **adequacy of foreign exchange reserves** and the **openness** of the economy. A traditional measure of the adequacy of foreign exchange reserves is the stock of reserves measured in months of goods and services imports. Although this index has been growing, it is still very low (see table 5). In 2000, Ukraine had foreign reserves equivalent to slightly more than four months of imports.

Table 5: Indicators of foreign exchange reserves and openness in Ukraine (1994-2000)

	1994	1995	1996	1997	1998	1999	2000
Stock of foreign reserves at the end of year, bUS\$	0.80	1.05	1.96	2.34	0.76	1.05	1.60
Stock of foreign reserves in month of imports	1.90	3.20	4.80	5.60	2.70	3.70	4.20
Openness 1: (X+M)/recorded GDP	0.91	0.96	0.94	0.84	0.86	1.02	1.17
Openness 2: (X+M-energy import)/Recorded GDP	0.75	0.81	0.73	0.68	0.73	0.85	1.00
Openness 3: (X+M-energy import)/Recorded & Shadow GDP	0.57	0.62	0.56	0.52	0.58	0.65	0.77

Source: Own presentation based on UEPLAC (2001); NBU (2001).

An economy more open to trade may be less vulnerable to external imbalances than a more closed economy because a country's ability to service its external debts in the future depends on its ability to generate foreign currency receipts (ROUBINI & WACHTEL, 1998). Thus, openness is another potential indicator of current account sustainability. Openness is often measured as the ratio of the sum of exports and imports of goods and services to official GDP (VON CRAMON-TAUBADEL, 2000). On the basis of this ratio, Ukraine seems to be a relatively open economy, with trade volumes roughly equal to GDP (see openness ratio 1 in table 5). But it is well known that the lion share of Ukraine's imports is made up of energy from Russia and Turkmenistan, and that exports are largely composed of metallurgical products that in many cases are only competitive because the firms in question do not have to pay energy bills (which has led to many anti-dumping cases). For example, after deducting the value of imported energy resources, the openness rate declines by roughly 20% in most years (see openness ratio 2 in table 5). However, this still leaves Ukraine on the list of relatively open economies. On the other hand, based on an assumed share of shadow GDP of 30%, Ukraine showed a ratio of 0.65 in 1999 and 0.77 in 2000 (openness ratio 3 in table 5). This is not to say that Ukraine is a closed economy; as the ratios in table 5 show, measuring openness is difficult and somewhat subjective. Moreover, to make valid comparisons, measures of openness must be adjusted for a country's size as large countries generally tend to be less open than small countries. Nevertheless, Ukraine's apparent openness is somewhat ambivalent (because it reflects a critical dependence on energy imports) and vulnerable (because it depends to a great extent on metallurgical exports of questionable economic value (net value subtraction?).

The **real exchange rate** (RER) is an important factor that contributes to the determination of current account stability. It is a consensus that illiquidity and overvalued RERs are the main roots of modern financial crises (DORNBUSCH, 2001). The RER is driven by numerous fundamental economic variables. While the permanent values of these fundamentals shape the equilibrium path of the RER in the long run, in the short run the actual RER is influenced by both permanent and temporary values (EDWARDS, 1989; MONTIEL, 1999).

The RER can be defined in different ways. The most commonly used definition is the ratio of the prices of tradable to non-tradable goods. An appreciation of the RER, i.e. an increase in the relative prices of non-tradable goods, causes resources to move from the tradable sector to the non-tradable, and the consumption of tradable goods to increase due to lower prices. A depreciation of the RER has opposite effects; it makes the prices of the tradable goods higher which induces the reallocation of resources to this sector, and shifts domestic demand toward non-tradable goods.

In this paper, an alternative RER measure is used because it provides interesting insights into Ukrainian competitiveness. This alternative measure, introduced by LIPSCHITZ & MCDONALD (1992), is calculated as the ratio of productivity to unit labour costs. This index, which is often used as a proxy for the RER in transition economies (see KRAJNYAK & ZETTELMEYER, 1997; HALPERN & WYPLOSZ, 1998), can be calculated for the economy as a whole, or for individual sectors. Productivity is calculated as gross value-added per worker employed, while the unit labour costs are the average labour costs per GDP. Table 6 presents the development of the RER according to this measure between 1994 and 2000 for the Ukrainian economy as a whole as well as Ukrainian agriculture and industry.

Table 6: Ratio of labour productivity to unit labour costs in Ukraine

	1994	1995	1996	1997	1998	1999	2000
Index of labour productivity:							
Average for economy	1.00	0.95	1.29	1.53	1.32	0.99	1.04*
Industry	1.00	0.92	0.94	1.27	1.11	0.92	1.02*
Agriculture	1.00	0.85	0.98	1.01	0.79	0.59	0.60*
Index of unit labour costs **: 							
Average for economy	1.00	1.16	1.33	1.31	1.27	1.20	1.04
Industry	1.00	1.25	1.17	1.43	1.38	1.28	1.22
Agriculture	1.00	0.89	1.18	1.37	1.28	1.07	0.90
Real exchange rate:							
Average for economy	1.00	0.81	0.97	1.17	1.05	0.83	1.00
Industry	1.00	0.74	0.81	0.89	0.81	0.72	0.84
Agriculture	1.00	0.96	0.82	0.74	0.62	0.55	0.66

Note: In January of 1996, the State Statistics Committee of Ukraine began to include the component 'other premiums and compensation' in the wage fund (ICPS, 2000). This should be taken into account when analysing wage series before and after 1996.

* Assumes labour force unchanged since 1999.

** Unit labour costs for industry and the economy on average are calculated as the average wage plus payroll taxes (assumed to be 35% in all years) divided by the sector's GDP. For agriculture, these costs are calculated on the base of the aggregated accounting reports of the collective farms.

Source: Own calculations based on UEPLAC (2001); IMF (1997, 1999, 2001); MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (various issues).

Table 6 shows that the competitiveness of Ukrainian enterprises, especially farms, is low. In 1994-1996 the rate of the labour cost growth exceeded the growth of labour productivity for the economy as a whole, inducing an appreciation of the RER (worsening of competitiveness). In contrast, in 1997-1998 labour productivity grew faster than unit labour costs in the economy as a whole. The financial crisis of 1998 was followed by RER appreciation, and only in 2000 the growth of labour productivity was equal to the growth of unit labour costs. The competitiveness of agriculture has worsened, although the situation began to improve in 2000. However, this improvement is hardly sustainable over time, unless systematic reforms in the agricultural sector are accelerated considerably. In particular, reforms must enable farms to both increase productivity and control increasing unit labour costs.

A further indicator of current account sustainability discussed in section 2 is the **health of the financial sector**, especially the banking system. The link between the financial sector and the current account sustainability is direct: financial crisis will quickly reduce the willingness of foreign

investors to finance the current account deficit. SULTAN & MISHEV (1999) state that the banking system in Ukraine is one of the weakest in the world. As the current level of financial development is a good predictor of future rates of economic growth, capital accumulation and technological change, Ukrainian prospects seem to be gloomy. LEVINE (1997) indicates that in the 'rich' countries, deposits in banks as a share of GDP are 31%, while in 2000 in Ukraine this indicator was only 10.6% (UEPLAC, 2001). This is not much higher than the average rate for 'very poor' countries (8%). Among the main reasons for this poor development are weak implementation of banking legislation; kartoteka 2 (which was, however, recently abolished); directed lending and government guaranteed loans; a crisis of credibility; the low profitability of enterprises; exchange risks and barter; and poor performance of banks themselves.⁹ All of these determinants severely undermine economic growth in Ukraine, and reduce the sustainability of the current account.

A final indicator of current account sustainability to be discussed here is **political stability and confidence in the economic environment**. These can be measured by the so-called rating indices produced by different agencies. Transparency International, a non-governmental organisation which monitors and rates corruption, released its annual Corruption Perception Index in September 2000. The index is based on sixteen surveys taken over the past three years, and all countries rated were covered in at least three surveys. On a ranking from 1 (least corrupt, Finland) to 90 (most corrupt, Nigeria), Ukraine and Azerbaijan tied for 87th place, the worst rating of any state of the former Soviet Union. Kenya and the Russian Federation tied for 82nd place. In a report on competitiveness issued by the World Economic Forum in Geneva on September 7, 2000, Ukraine, Bulgaria, Zimbabwe and the Russian Federation tied for 58th out of 59 places. Only Ecuador scored worse in that report (cited in THE WEEK IN UKRAINIAN AGRICULTURE, 2000).

From the above analysis, the main conclusion is that **Ukraine's current account is vulnerable and weakly sustainable**. The same statement applies to both the current account deficit prior to 1999 and the current account surplus in 1999 and 2000. The structure of the current and capital accounts does not contribute to long-term sustainability of the current account; Ukraine has failed to compete for FDI with other transition economies; the country is highly illiquid; although its foreign debt to GDP ratio is falling, it is still high for the current level of economic development in Ukraine; foreign reserves are relatively low; at least until 1998, the real exchange rate was overvalued and although the real depreciation in 1999 provided improved conditions for economic growth and Ukraine's external competitiveness, the RER began to appreciate again in 2000; and only in 2000 did total labour productivity growth exceed the growth of labour costs in agriculture. A weak banking sector combined with very poor rating indices complete the picture.

5 Agricultural policy and current account sustainability in Ukraine

Farming is done not in isolation from the general economic environment. Macroeconomic disequilibria or structural problems in industry can affect agriculture just as strongly as problems originating within the farm sector. Therefore, before analysing the impact of agricultural policy on the current account, the effects of current account unsustainability on the farm sector will be shortly reviewed first.

5.1 The impact of current account unsustainability on the farm sector

The financial crisis that occurred in Ukraine at the end of 1998 is an example of the potential consequences of an unsustainable current account. Such crises can be formidably expensive. DORN-BUSCH (2001) emphasises the following costs: 1) a substantial increase in public debts associated with the crisis, 2) a loss and disruption of output, and 3) the possibility of a socially controversial redistribution of income and wealth.

⁹ See chapter 4 on *Rural Finance in Ukraine – Extending the Frontier*.

1. In a currency crisis, because the government bails out banks and sometimes companies, public debt increases substantially, and with it future tax liabilities. The deterioration in public finance also arises from a period of high interest rates that usually precedes the crisis and lasts into the stabilisation phase. Moreover, the increase in debt may itself bear the seeds of future crisis if the government is not able to meet the higher debt service burden by taxation or reduction in spending. There is also always a large loss of foreign currency reserves, which are sacrificed during the 'defence' phase of the crisis. Clearly, an increased public debt implies a higher tax burden and/or lower budget expenditures. This hurts farms as they either must pay more taxes or receive less subsidies. Also damaging to agriculture are the high interest rates that accompany financial crises; agriculture is a highly capital intensive activity that is especially susceptible to increases in the cost of capital.
2. Financial crises have a dramatic impact on economic activity. This impact arises from the *disorganisation effects* that stem from illiquidity and bankruptcy. BLANCHARD & KREMER (1997) developed a theory of disorganisation to help understand the output collapse in transition economies. They do not apply this theory in the setting of emerging market crises, but DORNBUSCH (2001) suggests that it is useful in this context as well. The real economy is a complex network of relationships that can suffer from disorganisation in two ways: first, input-output relationship can be disrupted at many points in the chain if a critical supply or demand link disappears and hence impairs or brings down the whole chain. Second, credit relationships depending on trust, and suspicion regarding the creditworthiness of actual or potential partners can become a disruptive factor.
3. Currency crises redistribute wealth and income. Primarily, wealth is redistributed to those who hold foreign exchange. On the other hand, reductions in real wages and employment as well as bankruptcies of small debtors lead to losses. The farm sector generally loses because of the population's falling income and, thus, lower purchasing power, and because of the sharp rise in debts, mainly denominated in the foreign currency. For example, farm debts to foreign agrochemical suppliers were 100 mUS\$ at the end of the third quarter of 1998. After only three months, this debt had grown by 107 mUAH or 1% of agricultural GDP in 1998 due to the 45% devaluation of the Hryvnia with respect to the US\$.

5.2 The impact of agricultural policy on the current account

Current account unsustainability in Ukraine is closely linked to distortions in the saving/investment ratio. DABROWSKI *ET AL.* (1998, p. 3) characterised the fundamental causes of the financial crisis in Ukraine in September 1998 as follows "*Ukraine long brew the budgetary crisis and slowdown the process of structural and systematic reforms. In the political realm it means the absence of sufficient political will of both executive and legislative branches to pass the decisions which would contribute to reduction the State's financial liabilities, consolidating the tax base and lifting various bureaucratic hindrances for entrepreneurial activity which prevented the actual economy from coming back to the process of economic growth.*"

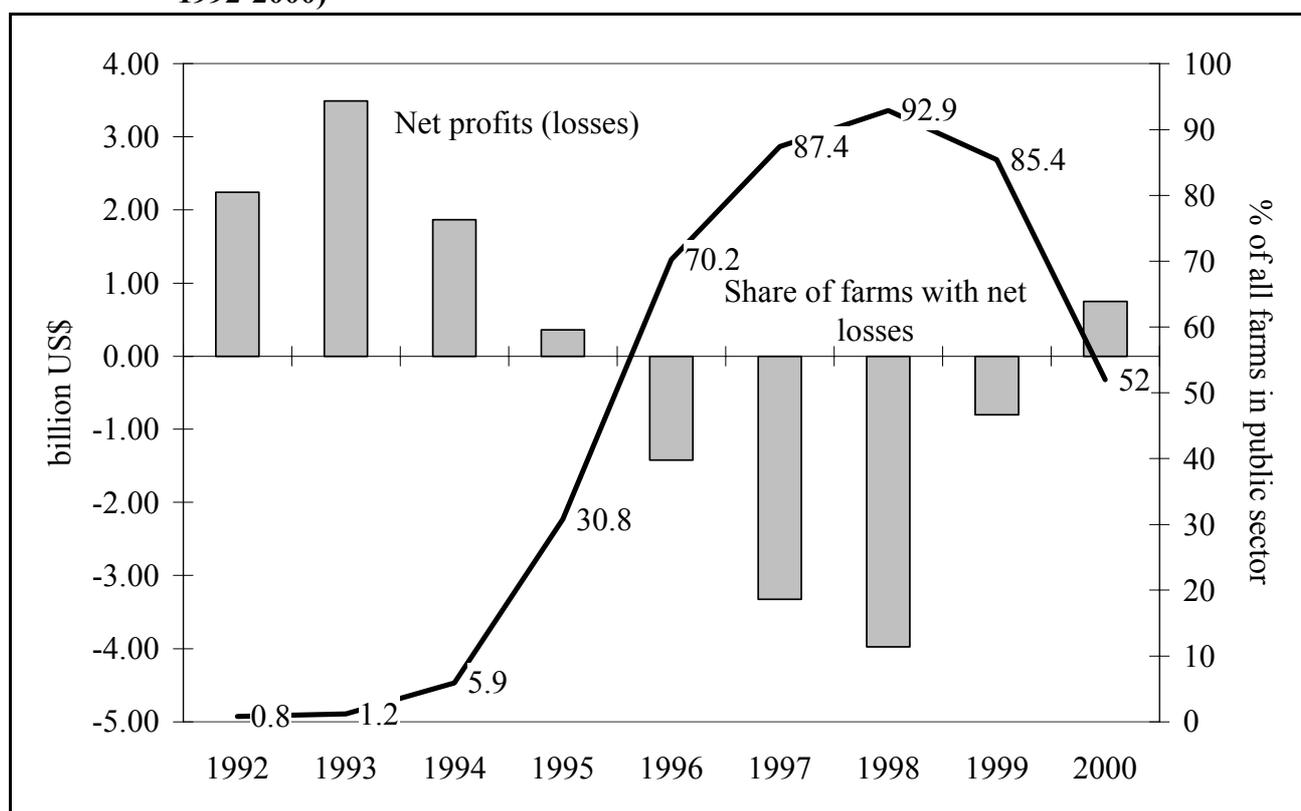
Agriculture was largely responsible for this disorder in economic policy-making in Ukraine. Since Independence, the sector as a whole registered growth only in 2000.¹⁰ This has had a direct impact on the saving/investment ratio, decreasing the saving rate and redirecting investments from what could have been productive activities in agriculture to operations with real estate and/or government securities. Moreover, weak financial discipline in agriculture inherited from Soviet times and the absence of real private property protection substantially added to the country's vulnerability to exogenous and endogenous shocks. As illustrated in figure 5, the number of farms with net losses increased continuously up to 1998. This significantly diminished the ability of farms to pay taxes or attract investments. Only in 2000, when the number of farms with losses decreased to 52%, did

¹⁰ See chapter 2 on *Agricultural Policy Reform in Ukraine: Sequencing and Results*, figure 1.

farms in Ukraine as a whole again register net profits (748 mUAH). Altogether, the agricultural sector which, based on comparative advantage should be one of the strongest in the Ukrainian economy, has failed to live up to its promise.

Agricultural policy is largely responsible for this dismal performance. Distortive state support of agricultural enterprises, poor payment discipline on the part of farms, high and volatile protection against food imports combined with an anti-export policy and weak property rights are the main concerns.

Figure 5: Farm losses and share of farms with net losses (collective agricultural enterprises, 1992-2000)



Source: Own presentation based on MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (various issues).

First, **agriculture received intensive state financing** during 1994-1999. In 1996 (1997), budget expenditures on agriculture were equal to 6.7% (7.3%) of total budget expenditures or 2.8% (3.4%) of the GDP.¹¹ Beginning in 1998, the fall in tax revenues and pressure by international donors to balance the budget led to a proliferation of implicit state support. Among the main support instruments were zero-interest rate budget loans in the form of production inputs, tax exemptions, debt restructuring and write-offs, support through the State Leasing Fund including imported machinery and equipment, and, most dangerous, the tolerance of non-payment of bills in agriculture. CHAPKO (2000) analyses the treatment of agricultural debts and non-payments of taxes by the State (see table 7) and concludes that the State itself promoted debt accumulation and the non-payment of taxes in Ukrainian agriculture.

It is estimated that total agricultural support in 1998 (1999) was equal to 167% (177%) of the GDP of the collective agricultural enterprises or 27% (32%) of total agricultural GDP. The share of the agricultural state support as a share of total GDP in 1998 (1999) was 3.4% (3.5%).¹² In addition,

¹¹ Own calculations based on UEPLAC (2001) and the "Laws on Budgets in Ukraine" (VERKHOVNA RADA OF UKRAINE).

¹² See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*.

state investment in human capital, research and rural infrastructure – the main determinants of the long-term economic growth – was very small (only 11% (8%) of total support in 1998 (1999)).

It is obvious that support of this type and magnitude has significantly influenced budget deficits in Ukraine. In 1996, the absence of such large agricultural support would have decreased the budget deficit from 10.7 to 7.9% of GDP; in 1997 from 14.4 to 10.3%; in 1998 from 5.1 to 1.7% and in 1999 from 3.7 to 0.2%. In 2000, without agricultural support, the budget would have registered a surplus of 1.1% of GDP, as opposed to 0% as was the case.¹³

Table 7: Agricultural enterprises' level of fulfilment of tax and payment obligations, 1991-1999 (%)

Indicator	Year								
	1991	1992	1993	1994	1995	1996	1997	1998	1999
Excise collection	-	-	-	82	64	56	121	81	112
VAT	-	116	99	86	86	79	67	63	66
Chernobyl Fund	64	82	66	68	40	19	22	25	-
Resource payments	97	139	96	96	69	50	48	48	37
Other taxes and payments	76	82	70	70	42	25	34	35	47
Profit tax	71	71	64	88	78	99	-	-	-
Pension Fund assessments	-	-	-	65	38	21	-	-	-
Total	75	104	80	79	61	46	57	54	53

Source: CHAPKO (2000); Ministry of Agricultural Policy of Ukraine.

In 2000, farm support was reduced and redesigned.¹⁴ The success of this policy quickly became evident: agricultural output grew for the first time (by 7.6%) and average farm profitability increased from minus 22% in 1999 to 4.9% in 2000. Nevertheless, Parliamentary hearings and discussions on the 2001 budget were full with proposals to increase agricultural support once more.¹⁵ In early 2001, the Verkhovna Rada approved a number of laws substantially increasing state support, stipulating that this support must amount to not less than 5% of total budget expenditures.¹⁶ If these measures are realised, agriculture will once again burden the current account not only *via* its impact on the State budget, but also because past experience has demonstrated conclusively that state support in Ukraine reduces, rather than enhances, growth and efficiency in agriculture.

The second issue of concern is the **bad payment discipline of many farms**. This makes the national balance sheet more vulnerable *via* two mechanisms: non-performing loans and maturity or currency mismatches.¹⁷ Non-payment by farms diminishes the liquidity of private input suppliers and the state. Furthermore, the private suppliers and banks that suffer from non-payment are less able to pay taxes, increasing deficits and forcing the state to borrow abroad or from already 'weakened' domestic banks. As non-payment proliferated, the maturity and currency composition of debt worsened: private suppliers could obtain only short-term credits and often only in foreign currency, and the state had to raise real interest rates to attract the funds it required to finance its spending. These developments in agriculture contributed and continue to contribute to the weakness of the current account in Ukraine.

¹³ Own calculations based on UEPLAC (2001) and the "Laws on Budgets in Ukraine" (VERKHOVNA RADA OF UKRAINE).

¹⁴ See chapter 2 on *Agricultural Policy Reform in Ukraine: Sequencing and Results*.

¹⁵ The Agricultural Committee of the Verkhovna Rada insisted on the prolongation of VAT and fixed agricultural tax exemptions, on writing-off farm debts to the State Reserve, and on increasing direct budget financing to 1.5 bUAH.

¹⁶ The share of agricultural expenditure in the total budget expenditure was 6.7% in 1996, 7.3% in 1997, 1.5% in 1998, 0.8 in 1999, and 0.4 in 2000 (VERKHOVNA RADA OF UKRAINE).

¹⁷ Chapter 4 on *Rural Finance in Ukraine – Extending the Frontier* contains a discussion of the level and composition of farm debt in Ukraine (especially figure 1).

The third concern is **agricultural trade policy**. Although Ukraine is a relatively open economy, agricultural tariffs are the highest in Ukraine's tariff structure.¹⁸ These tariffs hinder farm adjustment to changes on world markets, diminishing farms' future competitiveness and sustainable agricultural growth. Agricultural protection also hurts the agricultural sector indirectly because it contributes to the overvaluation of the real exchange rate.

Ukraine's export policy in the agricultural sector has also reduced growth.¹⁹ Ukraine employs export taxes on live animals and oilseeds, which redistribute income from farmers to food processors. In addition to indicative prices for commodities subject to export taxes, recommended prices are intensively used. Additional export barriers take the form of regional export bans and physical and regulative bottlenecks in the marketing chain between producers and world markets, all of which often are the result of rent seeking on the part of well connected businessmen and politicians.

All of these manifestations of Ukrainian agricultural trade policy increase the unsustainability of the current account. First, they reduce agricultural exports: directly through export barriers and indirectly through reduced availability of required imported inputs. Second, they hinder the creation of viable commercial farms that are able to compete on world markets. The taxes on agricultural exports decrease farm-gate prices and real farm incomes, while import protection prevents an adjustment of farms to world market conditions. BAUTISTA (1993) argues that import tariffs create incentives to move resources out of export activities. Because not only the prices of directly import-competing commodities but also those of related traded and non-traded goods increase as a result of import tariffs, import-competing activities, the objective of protection, will not be the only beneficiaries of this protection. In fact, the net increase in protection for import-competing activities may be much smaller than anticipated, because policy makers cannot control the effective amount of protection that results. Finally, Ukraine's agricultural trade policy diminishes the ability of farms to pay taxes and it encourages them to attempt to increase their incomes not through seeking efficiency and innovation but rather through lobbying for state financing.

The fourth problem is **weak private ownership** which slowed farm restructuring almost to a stop prior to 2000. Indeed, prior to the December 1999 Presidential Decree,²⁰ the collective agricultural enterprises were little more than kolkhozes and sovkhoses under new names (KOESTER & STRIEWE, 1998). Even since the above-mentioned Decree, restructuring is proceeding slowly.²¹ The new Land code, now being considered in Parliament, may improve the business and legal environment for agricultural enterprises, but there is a danger that political forces will stall the process and attempt to adjust the Code's rules to meet the interests of certain groups.²²

Thus, property rights in the agriculture remain ill-defined and poorly protected. This uncertainty has three serious implications: 1) it diminishes the efficient use of resources – an underlying condition for effective management, 2) it does not allow farmers to use their assets as a collateral, and 3) farmers do not risk losing 'collective' assets, which reduces the incentives to use these assets efficiently and slows the process of allocation of limited resources to the most efficient owners (BOSTYN, 2001).

On the basis of this analysis, it can be argued that agricultural policy in Ukraine has contributed extensively to economic disequilibrium and the unsustainability of the current account. Agri-

¹⁸ See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*, table 2.

¹⁹ See chapter 2 on *Agricultural Policy Reform in Ukraine: Consequences and Results as well as* STRIEWE & VON CRAMON-TAUBADEL (1999) and chapter 10 on *Regional Agricultural Trade in Ukraine*.

²⁰ Presidential Decree "On Urgent Measures for Accelerating Reformation of the Agrarian Sector of the Economy" on December 3, 1999. This Decree stipulates that all CAEs distribute land shares and restructure to form new entities by no later than April 30, 2000.

²¹ See chapter 13 on *Evolution of Farm Structures in Ukraine*.

²² See chapter 14 on *A Market for Agricultural Land of Ukraine*.

cultural reforms initiated in late 1999 and throughout 2000 have reduced this burden on the current account, but much remains to be done to make lasting difference.

6 Conclusions and policy recommendations

The current account sustainability is an important precondition for macroeconomic equilibrium in an open economy. Imbalances between national savings and domestic investment, and the accumulation of debts that cannot be served, threaten the sustainability of the current account, leading eventually to financial collapse. Recent financial crises in Asia, Latin America, and the CIS countries are evidence of the danger of disordered economic policies in open economies.

From the analysis in this chapter the main conclusion is that **Ukraine's current account is vulnerable and weakly sustainable**. This applies to both the current account deficits prior to 1999 and the current account surpluses in 1999 and 2000. The fundamental causes of this weak sustainability are slow structural reform, weak budget discipline, growth-discouraging trade policy, government intervention into micro-level decision making, and political instability. Agricultural policy has made significant contributions to this disorder. Pervasive state financial support of loss-making farms combined with low payment discipline on the part of most farms, trade policy based on import substitution and export limitation, and slow farm restructuring have added to the unsustainability of the current account.

To avoid severe current account imbalances, and consequently financial crises in the future, the following recommendations should be useful to agricultural policy-makers in Ukraine:

- Agriculture is an important part of the economy. Agricultural policy influences overall economic development and *vice versa*. Overall economic policy and macroeconomic processes can play an even larger role in the development of agriculture than agricultural policy itself.
- The indicators of current account sustainability are very helpful for policy making. Critical and professional monitoring of these indicators will help to identify and correct the causes of unsustainability.
- Current account imbalance is a severe macroeconomic problem that affects the long-term economic prospects of a country. Agricultural policy should thus be attuned to economy-wide requirements. While intensive state support for agriculture and other sectors may improve conditions in these sectors, this improvement will be temporary, lasting only to the day when the burden of this support leads to unsustainable macroeconomic imbalance and subsequent financial crisis.
- Ukraine needs a balanced fiscal policy, comprehensive structural reforms, and a liberal trade policy. Moreover, political stability as reflected in constructive working relationship between the President, the Government, and the Parliament are crucial preconditions for policy-making. Agriculture should help Ukraine to embark on a path of sustainable and equitable growth and improve the ability of the inhabitants of rural areas to shape their own futures.

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4 *Rural Finance in Ukraine – Extending the Frontier*

LUDWIG STRIEWE, INNA CHAPKO & ALEXANDER STARIKOV

1 Introduction

“On the establishment of a credit system for rural estates in Mecklenburg”, was the name of a competition organised by the ‘Mecklenburgische Landwirtschaftsgesellschaft’ in Germany in 1804. In this competition, the ‘Landwirtschaftsgesellschaft’ was looking for answers to two questions: What are the obstacles to the establishment of a rural credit system, and how might such a system be developed. It took a couple of years before J. H. VON THÜNEN, one of the founders of agricultural economics in Germany, won the competition with his analysis. He stressed that the main obstacle was not the lack of capital in rural areas at that time but rather the uncertainty faced by lenders. Lenders lacked sufficient information on borrowers – they couldn’t evaluate whether the borrowers’ enterprises were profitable or not – and on borrowers’ willingness to repay their loans. Hence, a lender couldn’t observe a borrower’s creditworthiness and this was, according to THÜNEN’S findings, the main obstacle facing lenders who might otherwise be willing to supply credit (NEUBERGER, 2000).

These are questions that Ukrainian policy makers are very concerned about today. What are the right policies for the establishment of sound financial relationships between farms and other enterprises in rural areas on the one hand, and potential lenders such as input suppliers, banks and private money lenders on the other?

While the need for a sound finance system for rural areas is unquestioned, the measures proposed by different groups vary widely. Some politicians and Ukrainian scientists argue that there is a strong need for government action. They state that Ukrainian agricultural enterprises are not able to borrow at the market interest rate of roughly 40%. Hence, they call for subsidies, the development of ‘clear mechanisms’ for credit provision, and for state-owned organisations in which funds for providing credit to the agricultural sector are centralised (UKRAINIAN NEWS, 12/08/2000). In this paper we will show that this approach is misleading. It does not address the real problems of the rural finance system of Ukraine and is therefore condemned to fail, as the international experience clearly shows.

Many Ukrainian bankers instead call for the improvement of creditors’ rights and less government interference on agricultural output and input markets. They argue that they could increase the credit volume on a sustainable basis even in the nearest future if their rights were protected and if policy-induced market risks were reduced. We follow these arguments and propose for remedies for the following weaknesses of the Ukrainian rural finance system: The lack of creditworthiness of rural enterprises; major shortcomings in Ukrainian legislation; the lack of institution building; and the weak Ukrainian banking system which needs to adapt to the standards of countries such as Poland or the Baltic States.

This chapter is structured as follows. After a brief discussion of the role of a financial system for rural Ukraine in the second section, an overview of the current financing of farms in Ukraine is provided in section 3. Section 4 gives the theoretical and empirical framework for further development of the Ukrainian rural finance system, and in section 5 emerging problems are discussed. Conclusions for the development of a rural finance system and the role of the state in this process are derived in the final section.

2 The rural finance system and its importance for rural development¹

The terms '*rural finance*' and the development of '*rural finance markets*' are often associated with '*a banking system for the agricultural sector*'. This association is misleading. The group of potential lenders comprises more agents than just banks; credit unions, co-operative banks, private money lenders and pawnshops can also provide financial services for small and medium enterprises (SME) and households in rural areas. Also, firms in the up- and downstream sectors that provide trade credits to farms belong to this system. All these institutions co-exist in many countries and serve the different needs of their customers.

Equally important is the fact that not only agricultural enterprises are customers of financial institutions in rural areas. Even if agriculture is probably the single most important activity in rural Ukraine, its importance will shrink in the course of economic development. In Germany, for example, agriculture accounts for less than 10% of regional GDP even in very remote areas. Rural finance systems have to serve the needs of **all** rural dwellers and enterprises.² And they have to provide a full set of services, including savings mobilisation and crediting.

The role of banks and other non-bank-financial institutions

The development of the finance system and financial intermediation is an important element for a growth strategy for the economy as a whole. This has been recognised by the so-called 'new growth' theory. KING and LEVINE (1992, 1993) found that the development of the financial sector precedes economic development and causes growth. This leads us to the question of the mechanisms behind this causality: What functions do financial intermediaries such as banks offer, and why is it important that these financial intermediaries work efficiently and independently?

In market economies, banks and other financial intermediaries are profit oriented enterprises and decide independently. In order to attract savings on the one hand and borrowers on the other, they must provide conditions (interest rates, periods of validity, risk reduction) that are attractive to their customers. By using funds obtained from enterprises or private savers, banks make external financing available to enterprises and households – they work as financial intermediaries.

Banks fulfil several additional functions. For individual savers it is costly to evaluate potential borrowers. Banks, however, have strong incentives to evaluate all potential investment projects properly, and they have specialists who provide the required expertise on behalf of all savers (SULTAN & MISHEV 1999). In this way, banks can reduce the risk of financing unprofitable investment projects. Furthermore, they realise economies of scale in evaluating and later monitoring investment projects. This leads to reduced costs of initiation and monitoring of relationships between banks and borrowers (VINCENTZ & QUAISSER 1998, p. 48).

The transformation functions of banks, their cost-reducing effects on the saver-borrower relationship and their ability to reduce overall economic risk in an economy are reflected in the so-called interest rate spread, i.e. the difference between the credit and deposit rates. The better banks function, the more intense the competition between them, and the lower the overall economic risk, the lower the interest rate spread will be. A low interest rate spread is, of course, good for the economy. It implies that deposit rates are as high and credit rates as low as possible, *ceteris paribus*. Hence, saving becomes more attractive and additional funds are mobilised for investment, while investment becomes cheaper, spurring growth.

¹ Even if we argue for the development of a **rural** finance system instead of an **agricultural** finance system, much of this paper addresses the agricultural sector specifically. This is not due to the fact that we think that only agriculture is important. Instead, it is caused by the lack of data on non-agricultural enterprises in rural areas.

² To spread risks, it is important that banks not concentrate on a single sector. An illustrative case is the German Co-operative banking sector. It is the single most important creditor of agricultural enterprises in Germany, but even it devotes less than 10% of its credit volume to agricultural enterprises!

A sound rural finance system provides other important functions, i.e. the possibility for the population to save and to accumulate funds for investment. Furthermore, it can improve the social security of the population by providing a tool for personal risk management. By depositing excess cash at certain times of the year or in years with good financial results, or by bridging periods of low liquidity with credits, one can avoid critical situations. Especially for that part of the population that relies on cyclical business activities, this is an important function.

3 The external financing of agriculture in Ukraine – Current status and problems

In contrast to Germany, where about 85% of the agricultural sector's external financing is provided by banks, the banking sector played a minor role in financing the agricultural sector in Ukraine. This has changed considerably in the years 2000 and 2001, as is outlined in the following.

3.1 Who finances farms in Ukraine?

According to the annual reports of the Ministry of Agricultural Policy, which reflect the consolidated balance sheets of all collective agricultural enterprises (CAEs) in Ukraine³ – financial resources are derived from a number of sources. Table 1 shows that CAEs relied almost exclusively on short-term external capital and that the share of bank credits in external financing shrank constantly up to 1999. Indeed, bank financing is negligible in the years after 1996, even if one accounts for the fact the farm assets are typically overvalued (TACIS 2000).

Table 1: The financing structure of the CAEs in Ukraine from 1992 till 1999

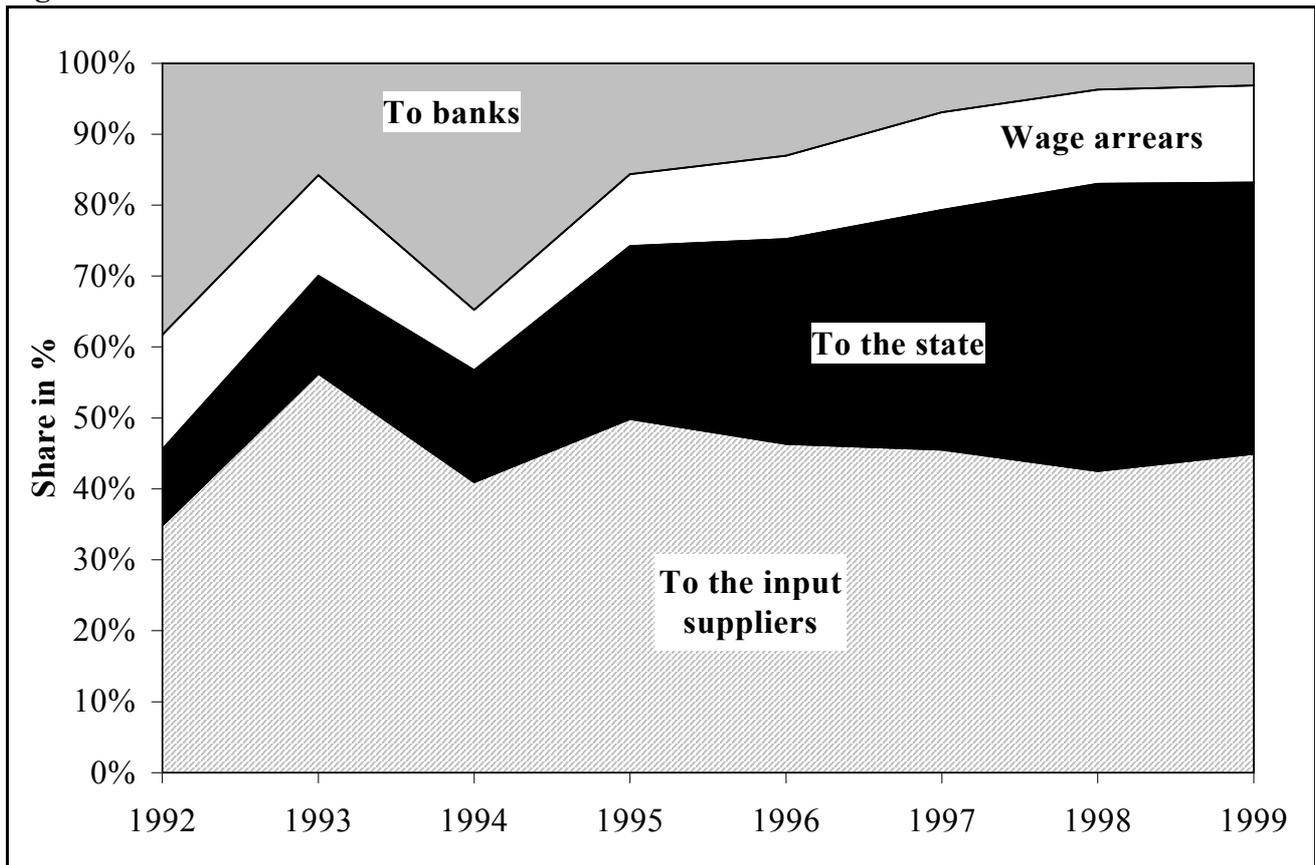
	1992	1993	1994	1995	1996	1997	1998	1999
Share of equity capital in total capital (%)	83.2	80.6	60.7	83.7	92.5	89.1	84.2	80.8
Share of external capital in total capital (%)	16.8	19.4	39.3	16.3	7.5	10.9	15.8	19.2
Share of short-term capital in total external capital (%)	95.2	98.9	99.0	98.3	99.8	99.5	82.2	74.1
Share of bank credits in total external capital (%)	38.3	16.0	35.0	16.0	13.0	7.0	3.7	3.1

Source: MINISTRY FOR THE AGROINDUSTRIAL COMPLEX (1992-1999): Annual Farm Accounting Reports, various issues. Own calculations.

As can be seen in figure 1, in which the shares of total debt owed to different types of lender are depicted, the debt to the banks diminished to 3.1% of the total debt by 1999, while the share of debt to the state increased to 38.2%. As the total amount of CAE debt as of December 31st 1999 was 15.2 bUAH, the debts of the CAEs to the state equalled 5.8 bUAH. This figure includes tax debts and central fund payments, the latter being the payments the state made through its government agencies that provided inputs to the agricultural enterprises. Most of these government credits were never paid back, as some agricultural enterprises were unable to repay, and some of these credits were misused (CHAMBER OF ACCOUNTING OF UKRAINE 2000).

With Law No. 1565 (16.03.2000) "On the depreciation of taxes and other dues", all farm debts to the state were cancelled. Before and especially after the cancellation of these debts, private input suppliers were and remain the most important lenders to CAEs in Ukraine. According to figure 1, their share in total debt was roughly 45% at the end of 1999 and the total amount of their claims on the CAEs was 6.8 bUAH. After the cancellation of state debts, this amount accounts for roughly 73% of total debt. The CAEs' remaining debt is to their employees and accounted for an almost constant share of 10 to 13% up to 1999.

³ It is clear that many agricultural enterprises, namely the entire private sector and all household production, are excluded from this analysis. Unfortunately, no comprehensive data on these enterprises are available.

Figure 1: The shares of different creditors in the total debts of Ukrainian CAEs

Source: MINISTRY FOR THE AGROINDUSTRIAL COMPLEX (1992-1999): Annual Farm Accounting Reports, various issues. Own calculations.

At first glance, the total debt burden of the Ukrainian CAEs appears huge. Including the now cancelled debts to the state, the value of all debts amounted to the total volume of goods sold by Ukrainian CAEs in 1999. Even after the cancellation of state debt, the remaining debt still amounts to roughly 8% of total Ukrainian GDP in 1999. Is this debt burden too heavy for the CAEs, and is it high by international standards? In table 2 the average debt per CAE is calculated by dividing total debt by the number of CAEs. The average CAE had a debt burden of 1,236,700 UAH at the end of 1999, and this was reduced to 763,700 UAH by the cancellation of state debts. This amount corresponds to no more than the price of a western-style middle-class combine harvester.

Table 2: The debt burden of Ukrainian CAEs per enterprise and per hectare in UAH

	1996	1997	1998	1999
Total debt per CAE	603,400	848,900	1,137,100	1,236,700
Remaining debt per CAE without state debts	429,200	562,300	676,800	763,700
Total debt per hectare arable land	228	332	455	496
Remaining debt per hectare without state debts	162	220	271	306

Source: MINISTRY FOR THE AGROINDUSTRIAL COMPLEX (1992-1999): Annual Farm Accounting Reports, various issues. Own calculations.

Of course, an enterprise's indebtedness cannot be measured by the volume of its debts alone. Instead, debts must be seen in relation to the enterprise's income generating potential. Although there are some sophisticated measures for income generating potential, land is still most often used both for this purpose and for measuring the size of a farm. As the most reliable agricultural data available in Ukraine is on land use, arable land is used as a proxy for income generating potential to compare the indebtedness of German and Ukrainian agricultural enterprises. To account for different product prices, indebtedness is converted into t of grain, which is the most important crop product in

both countries. Although it is clear that this comparison provides only an imperfect measure of the indebtedness of the agricultural enterprises in Ukraine, it offers some interesting insights: The indebtedness per hectare in t of grain is rather low in Ukraine compared to Germany. All debts – including the debts to the state which were recently cancelled – account for not more than 0.99 t of grain per hectare.⁴ Without state debts, the figure for Ukraine is even lower at just 0.61 t/ha.

3.2 The new role of the banks – developments in 2000 and 2001

The year 2000 has seen considerable changes in the external financing of agricultural enterprises in Ukraine. All this was the direct result of the reform policy that took place starting at the end of 1999. The Presidential Decree "On urgent measures for accelerating agricultural reform" of December 3, 1999, stipulated that all CAEs distribute land shares and restructure to form new entities. This increased the creditworthiness of Ukrainian farms considerably. First, it clarified the relationship between farm management and farm members, who now receive only land lease payments. Simultaneously, it reduced members' participation in the decision making process considerably. This has made the decision making process more transparent and less cumbersome, and has reduced the incentives for farm managers to steal from their farms.

The second important change was the cancellation of the so-called state order, and therefore the withdrawal of the government from direct involvement in agricultural input supply. Furthermore, by the resolution of the Cabinet of Ministers "On new approaches to supplying inputs to farms" of January 17, 2000 and resolution No. 398 "On additional measures on crediting a complex of agricultural works" of February 25, 2000, a partial interest rate compensation mechanism was implemented. This stipulates that the interest rates farms pay for credits from commercial banks is compensated by 50% of the NBU discount rate on the day of signing a credit agreement, but no less than 17.5% of the annual rate.

All of these changes in the environment for crediting agricultural enterprises can be summarised as follows:

1. The creditworthiness of farms was improved due to restructuring and the increased responsibility of farm managers. This made many farms more attractive for banks. Furthermore, the profitability of farms has increased sharply as a result of favourable agricultural product prices and reduced government interference in the marketing of agricultural products. Other policy measures – even if they were rather expensive and their appropriateness has to be questioned – have also increased the profitability of farms. These are the writing off of tax debts and the exemption of agricultural enterprises from VAT.
2. The business environment for banks has improved substantially. This was due to a stabilised macroeconomic environment, which in turn led to falling interest rates (see figure 2), less government interference into the decision making process of banks and improved expertise within banks for assessing the creditworthiness of agricultural enterprises.

3.3 The results of recent policy changes

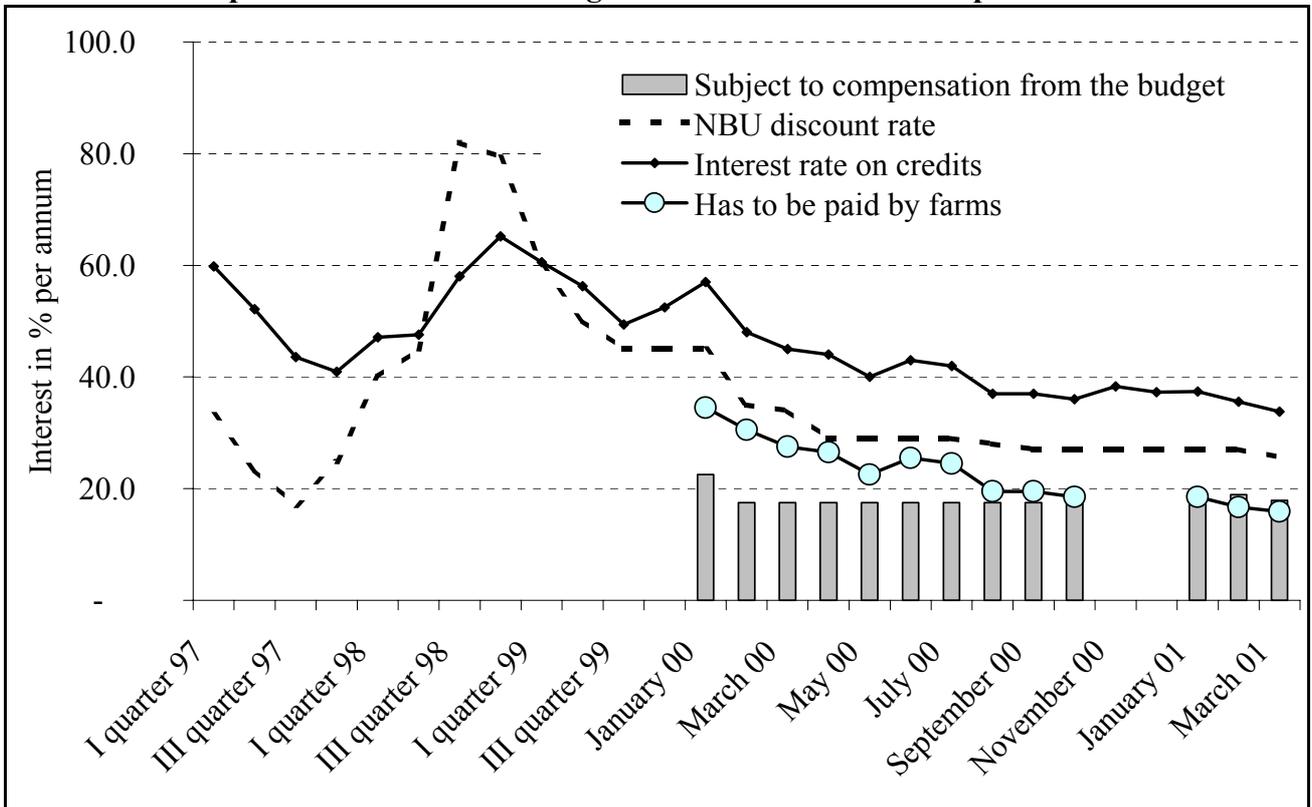
The results of the policy changes that took place beginning at the end of 1999 are positive and were unexpected for many observers. These results have proven that the supporters of heavy government involvement, who succeeded in lobbying for government provision of inputs in 1999 and the years before, were wrong. Indeed, this policy failed four years in a row – in all of these years the state was unable to collect more than 50% of its outstanding debts. Instead, the liberalisation of input supply and less government involvement have proven to be successful.

⁴ Debt is measured in t of grain per ha based on a grain price of 500 UAH/t in Ukraine and 250 DM/t in Germany. The average debt per hectare of 496 UAH in Ukraine corresponds to 0.99 t of grain/ha. In Germany farms carry a debt burden of 3,429 DM/ha, which corresponds to 13.7 t/ha.

Furthermore, with the partial compensation of interest rates, the government chose the right instrument to foster the provision of credit for agricultural enterprises. Whereas direct government involvement in the credit cycle is seldom useful (see for example v. PISCHKE, 1999), the partial compensation of interest rates created the right incentives at the right time. Furthermore, this policy has been rather inexpensive. 175 mUAH were allocated in the 2000 state budget for this program, but not more than 50 mUAH were used.⁵ By comparison, billions of Hryvnia were spent on farm subsidies in earlier years,⁶ to little effect.⁷

The partial compensation of interest rates has had the following effects (figure 2): The central bank interest rate was rather volatile since 1997. From a low of under 20% in the second quarter of 1997 it reached levels of over 80% during and after the financial crisis in 1998. Since then it has fallen constantly to a level of 26% in the first quarter of 2001 and even further to 19% in June 2001. The average interest rates on commercial banks credit were also very high after the financial crises, reaching a level of 65%. In the course of macroeconomic stabilisation they diminished to around 35% in the first quarter of 2001. Figure 2 shows that the level of interest rate compensation was 17.5% in all months except January. The difference between commercial rates and the interest rate compensation remains to be paid by enterprises of the Agroindustrial Complex (AIC).

Figure 2: Central bank interest rates, commercial bank interest rates, interest rate compensation and the resulting interest rate for AIC enterprises in 2000



Source: NATIONAL BANK OF UKRAINE (2001): Statistical data.

The mechanism of interest rate compensation is – without going into details – rather simple. An agricultural producer applies for a credit at a commercial bank. If the credit is approved by the bank, the bank and the farmer apply for compensation with the oblast administration. The oblast administration itself consults with the Ministry of Agricultural Policy (MAP), which in turn assign

⁵ This can be explained by the fact that many of provisions of the program were not clarified before May 2000.

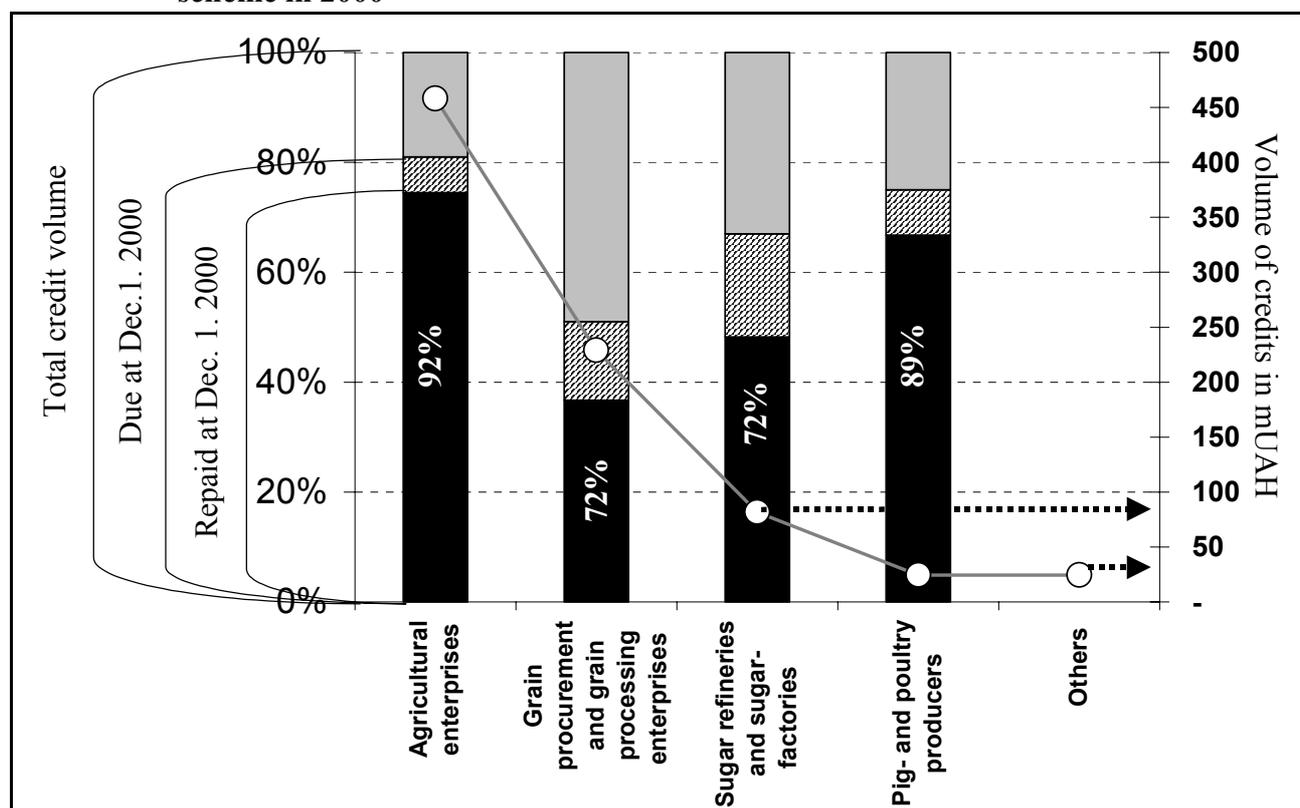
⁶ See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*.

⁷ The partial interest compensation was continued in 2001. In accordance with the Law of Ukraine No. 2120-III of December 7, 2000 “On the state budget of Ukraine for 2001” 150 mUAH were allocated in the national budget.

the treasury to transfer the money to the banks, if the application is approved. The advantage of this mechanism, and a major difference from the practice in former years, is that the creditworthiness of the applicant is determined by the commercial bank and not the state. The banks know that they will be compensated by 50% of the NBU interest rates, but this does not reduce their incentives to assess the creditworthiness of borrowers carefully. Hence, only profitable enterprises are subsidised, and unprofitable enterprises must attempt to increase their profitability before they apply for credits. This mechanism differs from that applied in other countries such as Germany, for example, where government agents decide on the provision of subsidies to farms. In the case of Germany, it has been demonstrated that the government's agents systematically fail to assess the creditworthiness of farms correctly (STRIEWE *ET AL.*, 1996; FORSTNER, 1999).

Altogether, Ukrainian commercial banks gave credits to agricultural and food sector enterprises of about 1.8 bUAH in 2000. Of this amount, 818 mUAH were provided under the partial compensation scheme, of which agricultural enterprises received 56%, grain procurement and grain processing enterprises 28%, sugar refineries and sugar factories 10%, and others 6% (see figure 3). 51 commercial banks took part in that scheme and provided credits to agricultural and food sector enterprises in 2000. Of these, Bank Ukraina (25%), Aval (21%) and Prominvestbank (16%) played leading roles.

Figure 3: Repayment of credits to AIC enterprises under the interest rate compensation scheme in 2000



Source: CHAPKO (2000).

Of the total credit volume under the partial compensation scheme of 818 mUAH, agricultural enterprises received roughly 460 mUAH. Note that the total amount of credits to agricultural enterprises amounted to 1 bUAH in the year 2000. Hence, only 46% of all credits were provided under the partial compensation scheme, and 54% were provided on the free market. Since credits from commercial banks to agricultural enterprises were almost non-existent in 1999, this is a clear indicator that the business environment for bank credits has improved substantially.

Total credit volume is only one very partial indicator of the situation in 2000. The performance of the banks and the enterprises that received credits has to be further assessed by the rate of

repayment. Recall that in the years prior to 2000, when the credit volume provided by the state amounted to 2 bUAH/year and more, the repayment rate was under 50%. Under 'normal' conditions this would result in the bankruptcy of any bank; under Ukrainian conditions the state-budget absorbed the losses.

To assess performance in 2000, the repayment rate of the different enterprises credited under the partial compensation scheme is depicted in figure 3.⁸ On the right axis the total credit volume to different branches of the Agroindustrial Complex (AIC) is depicted. A little more than 80% of the loans to agricultural enterprises was due on December 1st 2000. Of this amount, 92% had been paid. If 8% of all credits are not paid back in the long run, this would be a bad result as it would directly translate into higher interest rates. But under Ukrainian circumstances this is a rather promising result. Interestingly, it corresponds to the repayment figures that banks in the Eastern part of Germany were confronted with in the first years after reunification. Thus, they can be seen as 'normal' in the early stages of the real transformation of agriculture. Nonetheless, it is important that the repayment rate remains at least stable or improves in coming years to attract banks into doing business with agricultural enterprises. A high rate of repayment must also prevail in years in which the prices are less favourable than in 2000.

The other branches of the AIC performed worse. Repayment rates of 72% for grain procuring and processing enterprises and sugar factories are unacceptable. Although it is not clear whether this figure increased in the following months, such a low repayment rate would bring the credit provision by banks in any western country to a standstill. To sum up: The results of the year 2000 are promising. But it is still unclear whether this promise can be kept. For this to happen a number of preconditions have to be fulfilled as will be argued in the following section.

4 Extending the credit frontiers – a concept for developing rural finance

As the experience of many countries in Central and Eastern Europe (CEE) shows, creating financial markets in rural areas is a difficult and multidimensional task. It cannot be resolved by the adoption of a corresponding order or resolution. Instead, it depends on the creation of a set of preconditions. These are a) creditworthy borrowers, b) an efficient banking sector and non-bank-financial institutions that are able to attract savings and mobilise them for the purposes of borrowers, and c) the corresponding legal framework and the accompanying institutions that govern the relationship between the providers of capital and those who borrow these funds, whether for private use or for commercial investments.

These arguments – we will elaborate them below – are questioned by some Ukrainian politicians and academics. They argue that the profitability of agricultural enterprises in Ukraine is too low to lend money at interest rates of 40% or even higher. Instead, they claim that the profitability of agriculture is lower than 6%, which proves that agricultural enterprises will never borrow at interest rates that are much higher.

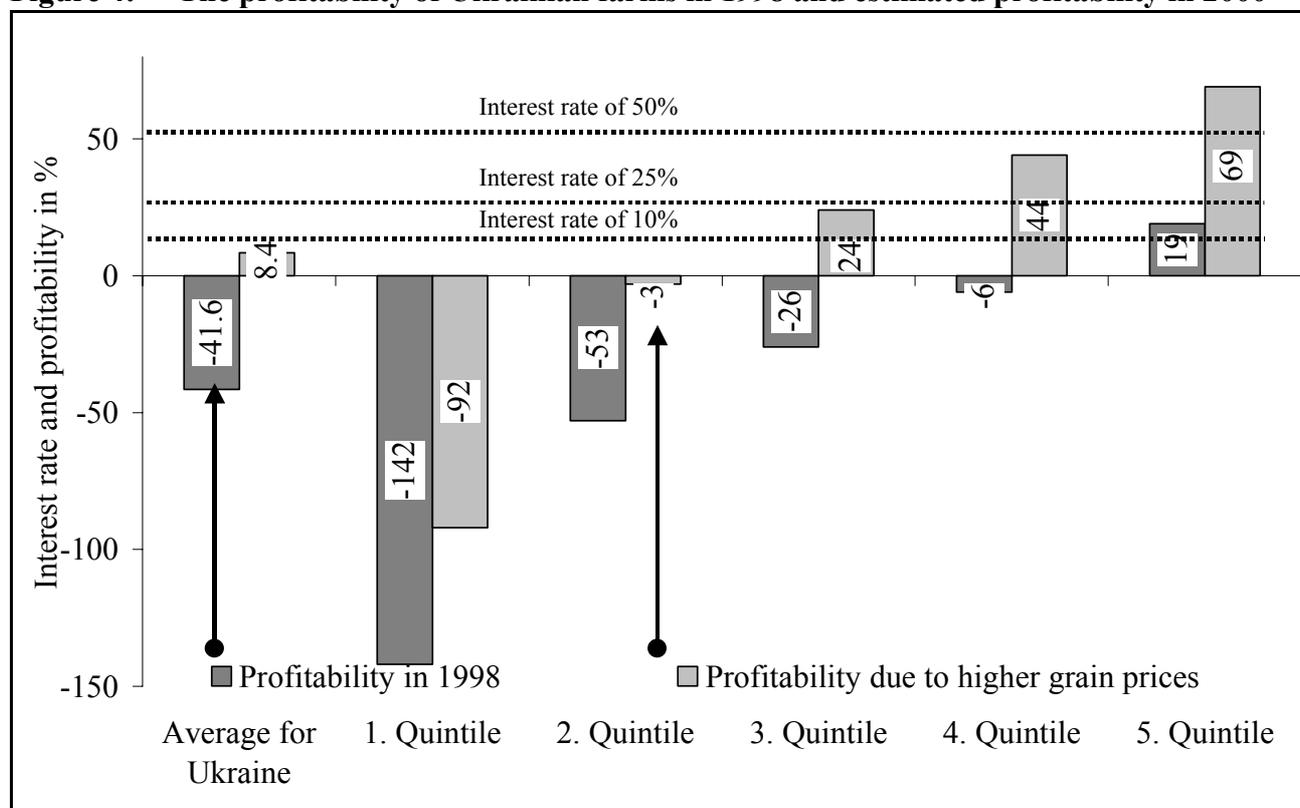
Even if the average return on capital is 6% or lower in Ukrainian agriculture, this argument is wrong. This is demonstrated in figure 4, where the Ukrainian agricultural enterprises are sorted according to their profitability. The first quintile shows that the worst performing 20% of Ukrainian farms had an average profitability of -142% in 1998. The next 20% had an average profitability of -53%, and so on. The 5th quintile showed a profitability of 19%. Altogether, the average profitability of all enterprises was -41.6% in 1998, as shown at the left of figure 4.

No such figures are available for the years 1999 or 2000. Nonetheless, for the arguments presented here, this does not matter. Simply assume that the favourable product prices that prevailed for

⁸ Due to a lack of data, the repayment rate can be presented only for credits granted under the partial compensation scheme.

many agricultural products in Ukraine in 2000 increased the profitability of all Ukrainian farms by 50%. This is not an exact number but depicts the range in which the situation has changed; while average profitability was less than -40% in 1998, the corresponding figure was roughly 6% in 2000 (UKRAINIAN NEWS AGENCY).

Figure 4: The profitability of Ukrainian farms in 1998 and estimated profitability in 2000



Source: SEDIK (2000).

If one assumes that the profitability of Ukrainian farms was equal to the rate of return on equity, which is not quite the same,⁹ the argument that the interest rates of 40 to 60% that prevailed in the last two years (see figure 2) were too high for agriculture can be tested. If one considers the average profitability figure for all agricultural enterprises of the former public sector in Ukraine, one might conclude that agriculture is too unprofitable to borrow at such interest rates. Nonetheless, many agricultural enterprises have taken loans even without the partial interest rate compensation, and were able to repay these loans. In figure 4 we see that enterprises in the upper quintiles were able to borrow at market interest rates. Those farms display profitability figures of 50% or more. And those farms benefiting from the partial compensation scheme in 2000 had to pay interest rates of not more than about 23% in May 2000, for example. This enabled even more farms to apply for credits.

But even if the profitability of a given farm is less than the interest rate demanded by banks, it can be rational and possible for this farm to borrow. This can be explained as follows: Assume a farm that has two major activities, dairy farming and grain production. Assume further that both branches account for 50% of the total turnover of that farm and that dairying shows a profitability of -10% while grain production produces +30%. Hence, the total profitability of that farm is 10%. This average profitability would – according to the arguments of some academics in Ukraine – preclude the farm from borrowing even under the partial compensation scheme. This argument is wrong. If the farm were to purchase yield-increasing inputs for grain production, it is very likely that the ap-

⁹ Profitability is the rate of return on total assets, whereas the interest rates depicted in figure 4 represent the interest rate on external capital alone.

plication of these inputs would show a rate of return on investment of 50% or even more! Hence, even a farm that shows a low profitability can repay a loan that bears interest of 40%.

Clearly, the average profitability of a sector says almost nothing about the creditworthiness of the enterprises that compose this sector. In the Eastern part of Germany, large farms showed an average return on investment of only 1.2% in 98/99, and a return on equity which was negative (-0.1%) (AGRARBERICHT 2000). Nonetheless, banks were and are highly interested in crediting those agricultural enterprises that display above average performance. Hence, it is wrong to treat agriculture in Ukraine as one huge kolkhoz or sovkhos as was done in Soviet times. Furthermore, it is dangerous! If one concludes that farms cannot borrow on the market because their average rate of return on investment is too low, one is likely to conclude that interest rates have to be artificially reduced (i.e. subsidised) to enable the farms to borrow. Of course, it is true that the number of creditworthy farms increases as interest rates decrease. How can interest rates in Ukraine be reduced without subsidisation? One way to reduce interest rates is macroeconomic stabilisation. Fiscal and monetary discipline are measures that help all sectors simultaneously and are prerequisites for establishing a sound rural finance system. A second important factor is the efficiency of the banking sector. The lower the efficiency of the banks, the higher the interest rate spread and the higher the interest that banks charge for credits. Finally, the legal and institutional environment plays an important role. The better the rights of lenders are protected and the easier it is for them to claim securities and liquidate them, the lower the risks and the costs of providing credit, and the lower the interest rate.

The economies of Western Europe and North America show how efficient banking systems can be. Competition among banks and non-bank-financial institutions regulates interest rates. The legal framework for protecting lenders' and borrowers' rights is elaborated and the institutions for fulfilling these tasks are established. However, banking systems are in a constant state of flux even in these countries. In the course of technological change and globalisation, Western banks must also adapt. Given the rapidly changing environment even in the stable economies of the West, the need for an urgent and sharp restructuring of the banking system in Ukraine becomes apparent, if Ukraine is to catch up with developments in the rest of the world.

5 The way ahead – how to establish a sound rural finance system in Ukraine

What policies should be implemented and what has to be done in the farms themselves to establish a sound rural finance system? In the following we address a range of problems, from the creditworthiness of rural enterprises to the banking sector and legislation.

5.1 *Securing repayment*

The solvency of borrowers is a major precondition for their creditworthiness, and profit is the main source of credit repayment. In addition, banks require collateral to secure loans. The effectiveness of the use of collateral depends on the legal framework. This is discussed in the following subsection.

5.1.1 How to improve the creditworthiness of Ukrainian farms and other rural enterprises

The high and ever increasing number of unprofitable farms in the second half of the 1990s led to a lively discussion: Are these enterprises unprofitable because they did not receive any credits for years, or did they not receive credits because they were unprofitable. In fact, profitability is a precondition for borrowing. Commercial banks want to know for certain that the lender is capable of repaying.¹⁰ This implies that the managers of agricultural and other enterprises must demonstrate

¹⁰ In Germany it is almost impossible for an unprofitable enterprise to get credit, with exceptions only made if there are strong indications that the enterprise has a good business concept and/or has collateral to secure the loan. The latter is sometimes the case for agricultural enterprises that own land.

that they are able to streamline the organisational structures of farms, reduce the labour force and increase productivity – i.e. tap the existing potential of the farm – before they apply for a loan. As many projects in Ukraine and other CIS countries such as Russia have shown, many of these improvements are possible **without** borrowed money.

The low profitability of the majority of Ukrainian farms has a number of causes. Ukrainian farmers often praise the wonderful conditions (i.e. subsidisation of agriculture) in the EU, and argue that they need similar subsidies to become profitable. However, it is very likely that the overwhelming majority of Ukrainian farms would not survive under EU conditions! Consider, for example, the development of the former kolkhozes (LPG) in the former GDR. Those former LPGs that survived under EU conditions¹¹ had to reorganise completely. The labour intensity of the successor farms of the former LPGs was reduced by 80% from 13.5 workers per 100 ha in 1989 to 2.7 workers per 100 ha in 1994/95 (THIELE, 1998). Decision-making processes were reorganised and the number of different levels in these processes reduced. And unit costs were reduced substantially by adopting advanced production methods. Only if all these measures were applied did the successor farms survive.

Most of these restructuring measures have not taken place at all in Ukraine, or were started late at the end of 1999 and in 2000. There is still a long way to go. The following measures have to be applied to improve the creditworthiness of farms:

1. Ukrainian farms still suffer from monopolised sales structures and/or export barriers that reduce farm gate prices.¹² The only solution is a liberal trade and investment regime.
2. Although the procedure for transferring the social sphere to local governments is regulated by the Resolution No. 1060/96 of the Cabinet of Ministers and Presidential Decree No. 398/00, more than 4% of all schools and almost 55% of pre-school institutions were still listed in the fixed assets of agricultural enterprises as of January 1, 2001. Farms spent 407 mUAH financing the social sphere and providing public services to households in 1999, out of which 277 mUAH were not reimbursed (SABLUK 2000). This amounts to roughly 7% of the total losses incurred by farms in that year.
3. The main obstacle to the profitability of Ukrainian farms is their low productivity, whether it is labour, land or input productivity. The number of farm workers per 100 ha was 8.3 in 2000 in Ukraine. It is clear that this number will shrink to at most 5 in the coming years. The Ukrainian Government has still not developed a consistent policy to deal with the social consequences of this change. Such a policy is needed to help both the employees who are going to be dismissed and the agricultural enterprises that must reduce their labour forces to increase labour productivity.
4. The land and input productivity is also very low in Ukraine. All relevant physical productivity figures for Ukrainian agriculture (the yield of field crops per ha, milk yield per cow, feed use for the production of 100kg of meat etc.) fall far behind corresponding figures for Central or Western European countries.¹³ It is very often claimed that the lack of funds, the lack of modern machinery and the lack of inputs is the reason for this problem. Without going into detail here there are strong indications that this is simply not true. Instead, is the wrong use of these inputs. In Germany, for example, the quantity of fertiliser applied per ha has been shrinking constantly throughout the nineties, but yields continue to increase by 2% per year! In Ukraine, many farms have not begun to question whether old production technologies de-

¹¹ EU agricultural policy was implemented almost in full in the former GDR as of July 1, 1990, i.e. just eight months after the fall of the Berlin wall.

¹² See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets* and chapter 10 on *Regional Agricultural Trade in Ukraine*.

¹³ See chapter 1 on *Ten Years of Agricultural Transition in Central and Eastern Europe: Some Lessons for Ukraine* and chapter 6 on *Can the Crisis in Ukrainian Agricultural Be Attributed to Price Disparity?*

veloped in the 70s or 80s are still appropriate. Consider, for example, the seed density in Ukrainian grain production. In Western Europe seed density has been reduced constantly in recent years, and now amounts to 250 to 300 seeds/m². In the Eastern part of Germany, farmers adopted lower densities soon after reunification. Lower densities are more productive due to lower costs and stable yield but healthier plants. Western experts believe that seed density in Ukraine could easily be reduced by at least 30%. Hence, from the 2.88 mill. t seeded in 2000/01 Ukrainian farms could save 860,000 t, worth 600 to 700 mUAH! This potential in Ukrainian agriculture, like many others, cannot be tapped by subsidies, but instead by well educated and efficient managers.

5.1.2 Mortgages for short-term and long-term crediting

The creditworthiness of any borrower depends on the lender's ability to secure repayment of the loan, if need be in the form of collateral. Many forms of collateral that play an important role internationally are not used in Ukraine. Examples are warehouse-receipts and mortgage crediting. These will be considered subsequently.

Creating a warehouse-receipt system

Grain receipts or warehouse receipts are a proven way to finance the working capital needs of agriculture. Agricultural produce has to be stored and financed from harvest until it is processed or consumed. Banks can finance this stock through separate agreements with borrowers and the warehouses in which it is deposited, or by using a system of grain receipts and licensed warehouses, which are regulated and inspected by independent bodies. The latter has been working successfully in the USA since 1916, and in other countries as diverse as Indonesia, Ghana and Argentina (EUSEBIO & BRYDE, 1999). In Slovakia and Bulgaria a legislative framework was established in 1998, and in Hungary 30% of current production was financed by this instrument as early as in 1996. Warehouse receipts are a seasonal financial tool that works according to the following mechanism:

After harvesting, the farmer delivers his products, e.g. wheat, to a licensed warehouse and receives Certificates of Title (CT) and Pledge (CP). The warehouse will only release the crop to the owner of both documents. When the farmer borrows against the crop, the bank keeps the CP as security and the CT for safekeeping (to ensure that the bank knows who the owner of the crop is). Before the maturity of the loan (typically up to nine months) the farmer sells the crop to a primary processor (or to a trader) by 'selling' the CT (upon consultation with the bank). At maturity, or when it needs the crop, the primary processor redeems the CP from the bank by repaying the loan, and the processor, now owner of both CT and CP, can collect the crop from the elevator. If the loan has defaulted, the warehouse will release the crop to the bank upon presentation of the overdue CP (EUSEBIO & BRYDE, 1999). The warehouse receipts system allows the producer to use his harvest as collateral, e.g. for financing the autumn sowing campaign, without being forced to sell his/her products immediately. Hence, the producer can independently determine the time of sale but is able to use the corresponding revenues in advance.¹⁴

In Ukraine a type of warehouse receipt system was established by the Decree of the President of June 29, 2000 No. 832 and the accompanying resolution of the Cabinet of Ministers No. 1141. These documents are aimed at fulfilling two tasks: Mortgage crediting and state grain purchases to serve the needs of the internal market. Both tasks are to be carried out by the state agent – Khliv Ukrainy. Hence, unlike in other countries such as Hungary, for example, the Ukrainian system is supposed to perform two separate functions simultaneously.

¹⁴ For a comprehensive discussion see SECRETARIAT OF THE AGRICULTURAL COMMISSION AND GERMAN ADVISORY GROUP ON ECONOMIC REFORM: The Further Development of Rural Financial Markets – A Strategy for Ukraine. Kyiv, May 2001.

On the one hand, there is an intervention element that has much in common with the loan rate system in the USA. This system must be seen as rather problematic for Ukraine.¹⁵ The second element is the pledge system. This gives agricultural producers the opportunity to sell their grain at the pledge price with the possibility of redeeming it at this price if it can be sold on the market at a more favourable price. This meets the idea of the warehouse receipt system. But in many respects this system contradicts the preconditions for a functioning warehouse receipt system. The most important difference is that functioning warehouse receipt systems elsewhere in the world function without direct state participation. Instead, the state's role is limited to the provision of the legal framework, support for licensing, registering, monitoring and arbitration.

Mortgage crediting system

A mortgage credit is secured by real estate, i.e. by an immovable asset. As the value of real estate is less volatile and an immovable asset cannot be taken away, real estate serves as a relatively secure collateral for banks. Hence, it reduces the lender's risk, which in turn enables the lender to provide credits at lower interest rates. In Germany, for example, the average interest rate stood at 11% as of April 2001, whereas banks asked for only 6% on mortgage credits.

In Ukraine the legal foundation for a functioning mortgage credit system is being created, as the Verkhovna Rada considers drafts of the following laws: "On mortgage", "On registration of the title of immovable property ownership" and the "Land Code". Nevertheless, the system of mortgage crediting is developing very slowly in Ukraine.¹⁶ As long as the land code is not adopted and as long as a set of other preconditions is not fulfilled, a mortgage credit system will not develop. Thus, it is unrealistic to assume that Ukrainian farmers will be able to make use of mortgage credits in the near future. The following factors should be considered:

Mortgage credits are typically given for long periods, in Germany for example for 15 to 25 years. Any bank that secures a loan on an immovable asset therefore wants to know what the value of this asset will be in five or even ten years. Although, this cannot be predicted precisely even in stable market economies, the lender is on the safe side if he provides mortgage credit on just a certain percentage of the current value of that asset. In Germany this is typically 60%.

Even if the Land Code were adopted this would not mean much for banks, because it is difficult or even impossible to predict what will be the value of a specific hectare of Ukrainian farm land in 2006, for example. The value of land is a function of many variables including legal and political circumstances.¹⁷ Political and legal instability translates directly into lower land values and, hence, lower collateral values! Without legal and political stability, banks will hesitate to provide long-term credit.

If commercial and bank credits are to become the principal source of financing for agriculture, policy makers will have to place greater emphasis on the **creditor protection**. This is why bankruptcy laws in Western Europe and the US emphasise the creditors' rights. As table 3 indicates, secured lenders in the USA have their claims honoured 'off the top', i.e. they get dollar for dollar on their claims. Next in line are priority claims, which include administrative expenses associated with bankruptcy and other tax and wage claims. In the Netherlands, creditors claiming damages arising out of bankruptcy have first priority. Next in line are secured lenders, followed by tax and social security authorities. In Hungary, Poland and Czech Republic, the first and second orders of priority are granted to secured lenders and administrative costs related to the bankruptcy procedure. In Russia, however, secured creditors' rights are rather weak compared with other nations. This is one reason why commercial credits have a bleak future in the productive sector in Russia.

¹⁵ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

¹⁶ The current legal framework is provided by the Law of Ukraine "On mortgage" passed on in 1992 and numerous changes and amendments to this law.

¹⁷ See chapter 14 on *A Market for Agricultural Land in Ukraine*.

Table 3: Claim priorities under bankruptcy laws in various nations (1995-1998)

Claim category	Russia	USA	Germany	Netherlands	Hungary	Poland	Czech Republic
Court fees	1	2	1	1	1	1	1
Administrative expenses	1	2	1	1	1	1	1
Secured creditors	4	1	2	2	2	2	1
Other creditors	6	3	4	4	5	5/6	3
Employee claims	2/3	2	1	1	1	1	1
Fiscal claims	5	2	3	3	4	1	2
Social security	5	2	3	3	4	4	2

Source: EUROPEAN EXPERTISE SERVICE ASSISTANCE TO THE RUSSIAN FEDERATION MINISTRY OF AGRICULTURE AND FOOD in Restructuring of Farm Debts Russian Federation Project No. RF27. Discussion Paper Farm Insolvency in Russia: Identified Problems and Possible Solutions (Restricted distribution)

5.2 Financial intermediaries in Ukraine – the need for further reorganisation

Ukraine has one of the smallest¹⁸ banking sectors of all the transition economies in CEE. Nevertheless, this banking sector is by far the single most important lender in the country. Loans provided by banks to the private sector amounted to 11.8 bUAH in 1999. Leasing, investment funds and credit unions provided just 0.45, 0.2 and 0.04 bUAH respectively.

The attraction of savings from enterprises – although it improved considerably in 2000 and 2001 – is insufficient due a lack of trust in banks and financial institutions in general. The volume of deposits stood at 12.2 bUAH or 9.6% of GDP at the end of 1999, and increased to 18.6 bUAH or 10.6% of GDP in 2000. The bank loans issued to enterprises in 1999 amounted to 11.8 bUAH or 9.3% of GDP, and 19.1 bUAH or 11% of GDP in 2000. However, Ukraine lags behind other transition economies in this regard. In Poland, for example, the share of commercial credits in GDP was almost 25% in 1998, and comparable figures for Slovenia and the Czech Republic are 35 and 55%, respectively.

5.2.1 Development of the banking sector in Ukraine

The poor condition of the Ukrainian banking sector cannot be understood in isolation from the malaise in the productive sector. Furthermore, as a consequence of the 1998 crisis, Ukrainian banks suffered from direct losses on T-bill holdings and other severe effects (see ROE *ET AL.*, 2000, p. 29). Thus, the business environment for banks was rather weak in Ukraine, but it has been improving constantly since 1999.

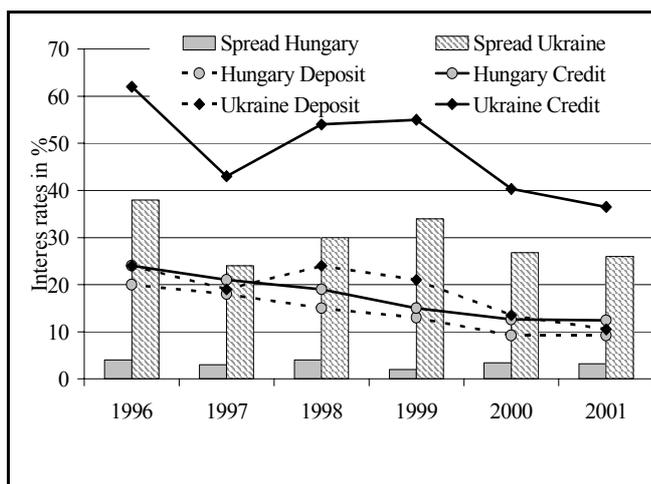
At the same time, the very low efficiency of many Ukrainian banks is an impediment to the development of the sector. In figure 7, interest rates and interest rate spreads in Ukraine and Hungary are compared. Not only are interest rates in Hungary lower, the interest rate spread in Hungary remained at about 5% or even lower between 1996 and 2001. Interest rates in Ukraine have been three times as high as in Hungary, and the interest rate spread was always well above 20%.

High interest rate spreads reflect a range of cost factors, such as the risk of bad loans and high operating costs. ROE (2000) estimates that Ukrainian banks have to charge an interest rate spread of at least 20% just to cover their high operating costs. Figure 8 shows that the ratio of costs to income-earning capacity averages 20% in Ukraine compared with less than 5% in the Czech Re-

¹⁸ The Ukrainian banking system consisted of 195 commercial banks as of February 1, 2001, of which only 153 were actually operating. The banking system of Ukraine is characterised by a high level of concentration. The seven largest banks own 50% of all assets, and the 120 smallest banks have only 15%.

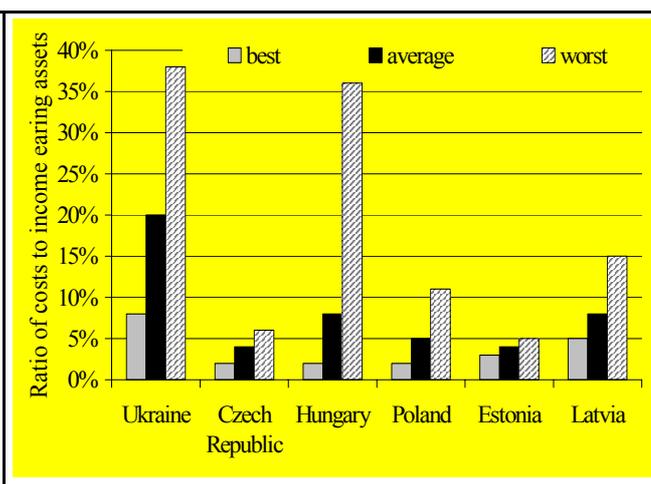
public, Poland and Estonia, and less than 10% in Hungary and Latvia.¹⁹ Nevertheless, there is also good news for Ukraine. This is that the best banks perform much better than the average. They have costs of less than 10%, which is comparable to the Hungarian average. Hence, there are good banks in Ukraine which are capable of development, and poorly performing banks, which must restructure or leave the market. This is why banking sector reform is so important. Ukraine's new banking law provides the sector with a good legal foundation. If restructuring is carried out and the number of banks reduced, the sector will develop on a sustainable basis and will play an important role for economic growth for the rural areas.

Figure 5: Interest rates on credits and deposits in Ukraine and Hungary



Source: NATIONAL BANK OF UKRAINE AND NATIONAL BANK OF HUNGARY.

Figure 6: Ratio of costs to income earning assets in different Transition Economies



Source: ROE ET AL. 2000.

5.2.2 Strengthening credit unions and establishing co-operative banks

The further development of SMEs in rural areas – among them the private agricultural enterprises and household plots – will greatly depend on their access to financial institutions. Especially start-up enterprises with no credit history face difficulties in securing the small loans they need. Not only high interest rates but also high transaction costs are an obstacle to obtaining credit. The many documents that have to be provided for a loan application, the time spent and the travel expenses incurred, especially in remote areas, make a micro-credit of a few hundred or thousand Hryvnia expensive, especially when the decision making process within the bank takes two to three months. The experience gained by the Micro-Finance Bank (MFB), founded in Kyiv in January 2001, shows that these problems can be solved with appropriate credit technologies. While the MFB has its comparative advantage in urban areas, in rural areas other types of financial intermediaries have proven that they can fill a niche, namely credit unions (CU) and co-operative banks (CB). Of course, CUs and CBs will never be the only financial institutions in rural areas, nor must they be the most important institutions. But by increasing the competition among rural financial institutions, they can enhance the efficiency of the whole rural finance sector.

UNASCU, the Ukrainian National Association of Savings- and Credit Unions, estimates that there are about 500 CUs in Ukraine. More accurate data are not available as there is no national registry of CU and as there is no national system to supervise CU activities. The UNASCU represents 105 CU with a total membership of 75,000, and total assets of over 10 mUAH. So far the legal environment for the existence of CUs and CBs has been weak. Along with the problems faced by all financial intermediaries in Ukraine, the development of CUs was impeded by a lack of regulation,

¹⁹ These figures can, to a certain extent, be explained by the low share of income earning assets to total assets which was as low as 50% in Ukraine, but reached almost 90% in the Czech Republic and over 80% in Hungary and Estonia in 1998.

by a lack of political support by local and national authorities, and by unequal tax treatment. As of May 2001, a law that has been submitted to the Verkhovna Rada which at least meets the minimum requirements of regulating CUs activity, has not been adopted. If adopted, this law would regulate the use of the term 'Credit Union' and it would be the normative basis for the functioning of the national CU association etc. CUs and CBs should be given the right to do business with non-members, and they should be subject to general banking supervision.

5.2.3 The development of leasing

Leasing is an efficient means of using long-term assets such as machinery when enterprises lack the liquidity needed to purchase these assets. Hence, leasing could be an attractive instrument for agricultural producers and other enterprises in rural areas. However, the volume of leasing operations in Ukraine lags far behind expectations. According to data from the NBU, leasing operations amounted to 450 mUAH in 1999, and UKRLEASING – the Ukrainian Leasing Association – estimates that the volume of leasing transactions was even smaller in 2000, not exceeding 300 mUAH. As of today, there are over 50 leasing companies in Ukraine, of which not more than 25 actually operate. About 16 leasing companies, most of which were founded by agricultural machinery producers or banks, work in the agricultural sector.²⁰

The volume of leasing transactions in the agricultural sector amounts to almost a half of all leasing transactions in Ukraine. This is caused mainly by involvement of the state in this sector. With the Resolution of the Cabinet of Ministers No. 1031/97, the State Leasing Fund was initiated to provide agricultural enterprises with machinery and equipment produced in Ukraine. However, from the very beginning this Fund was very inefficient. Agricultural enterprises received altogether 8,345 units of equipment worth 391 mUAH from the State Leasing Fund as of March 2, 2001. However, the Fund could collect no more than 20.6% of due payments as of January 2001! This is the main reason why the Fund has also failed to make timely settlements with the producers of agricultural machinery. The company Ukragroleasing became the successor of the State Leasing Fund in July 1999, and is now responsible for managing its funds.

The funds that were channelled *via* the budget and the Leasing Fund towards agricultural producers have enabled them to purchase some machinery. But as the low payment rates show, the Leasing Fund was unable to assess the creditworthiness of lessees. Hence, the establishment of this organisation did nothing for the sustainable development of a market-based leasing system. Indeed, it is very likely that it was counterproductive, as it blocked private initiatives to develop the leasing market.

Leasing operations in Ukraine are regulated by the 1997 Law on leasing No. 723/97-BP. This law has many disadvantages that are addressed in a new law on leasing that was approved in second reading by Parliament on April 5, 2001. The adoption of this law is a priority.

6 The role of the state – active agent or facilitator?

It is wishful thinking to expect that a rural finance system can be established in Ukraine within just one or two years. However, the process can definitely be accelerated by learning from the experience of other countries and by avoiding their mistakes. It would be a success story if within the next five years Ukraine could reach the level of financial depth – measured in terms of credit provided as a percentage of total GDP – that has been reached in Lithuania or Latvia.

Politicians will always be confronted with the question whether the government can't do more than just facilitate and create the legal framework and institutions? Isn't it true that most Western countries have special policies such as development banks, interest rate subsidy programs, credit

²⁰ No exact data exist on the number and specifics of leasing agreements in the agricultural sector, as not all leasing contracts are registered.

guarantee funds, intervention price systems, land set-aside payments and so on? Why shouldn't Ukraine implement such policies as well?

While it is true that these policies are employed in the EU for example, they are very costly and controversial. Most farmers in the EU are not content with these policies. The following arguments against agricultural sector banks and/or heavy subsidies should be considered:

1. The effects of most of these policies are quite clear as stressed by observers such as VON PISCHKE (1999): „... *to the best of [my] ... knowledge, government or donor intervention motivated by the desire to overcome market failure in a developing or transition economy has never – never – produced a viable credit institution or program*“. The reason for this very pessimistic conclusion is clear: State lending institutions must operate in the same environment as private institutions. While state lending institutions may be able to refinance themselves at lower rates (at the expense of taxpayers), they are nonetheless confronted with the problems of risk and information asymmetry that private lenders also face when dealing with agriculture. Experience in countless projects in countries all over the world have demonstrated conclusively that the state is no better able to identify creditworthy borrowers than private lenders are. Moreover, state lending institutions are often under considerable political pressure to provide loans to loss-making enterprises. This has been amply demonstrated by the experience with state subsidies for farms in Ukraine in past years. These subsidies, which have often taken the form of credits, have helped many CAEs to avoid necessary restructuring, they have fostered a highly irresponsible attitude towards debt repayment on the part of many farm managers, and they have fuelled large budget deficits in Ukraine, thus contributing to macroeconomic imbalance and high interest rates. This is why international observers of Ukrainian policy are rather perplexed by the fact that there are so many Ukrainian supporters of a policy that has proven to be unsuccessful in almost all countries world-wide. Don't the supporters of these ideas believe in international experience? Or is Ukraine so different from all other countries of the world?
2. Observers are also puzzled by the fact that there are so many supporters of subsidy programs for Ukrainian agriculture. Massive subsidies in Soviet times (that were twice as high as the subsidies provided in the EU) did not contribute to an increase in the competitiveness of Ukrainian agriculture. And the subsidies of the nineties – the state provision of inputs, the tax breaks and the cancellation of debts – were equally ineffective. Providing subsidies to agriculture in Ukraine is like doping an untrained athlete. The doping might help for a while (if side-effects are ignored), but it also reduces the incentives to train effectively.
3. The last fact that puzzles international observers is how and where government funds are used in Ukraine. Subsidies are very often channelled to the productive sector (for example, *via* VAT breaks, the state leasing fund etc.). At the same time, other government tasks which are seen as public goods in Western market economies are neglected totally. Why, for example, is the educational system in rural areas still so poor? Why do many Ukrainian schools and universities engaged in agricultural sciences lack the funds for international literature, modern curricula etc.? The reason is, of course, the lack of money – scarce money that is being spent on subsidies for agricultural enterprises.

At this important stage of the reform process, Ukraine should use its limited budget funds and managerial capacities to create the conditions for rural finance and for the development of rural areas instead of wasting them on projects that have failed in other countries.

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5 *Towards a More Market-Driven Strategy for Agricultural Reform in Ukraine*

DON VAN ATTA¹

1 Introduction

Ukrainian agricultural reforms trace their origins to changes in agricultural policy throughout the USSR beginning in the mid-1980s. Like the rest of Mikhail Gorbachev's perestroika, agricultural reforms were presented as a way to fix minor problems in the existing system, not as a radical alternative to it. So, some thirteen years ago, the USSR began a hesitant transition to a market economy by legalising some small businesses.² Eleven years ago, the Soviet Union adopted a "Law on Land" allowing its then-constituent republics – now independent countries – to give land parcels to qualified persons to start individual farms.³ Ten years ago, the USSR fell apart, in part under the pressure of a collapsing agricultural system which it could no longer afford to subsidise.⁴ Nine years ago, independent Ukraine mandated the restructuring of the collective and state farms.⁵

Ukrainian agriculture today is still dominated by a division between very large production agricultural units descended from collective and state farms that produce most grains and oilseeds, and very small household plots which produce most livestock products and provide subsistence for the rural population.⁶ With few exceptions, neither large farms nor small plots have really begun to approach international levels of productivity or competitiveness, although some of them may have come closer to the frontier of their theoretical technical efficiency than they were under the Soviet regime.⁷ In any case, aggregate physical agricultural production has fallen steadily in Ukraine since 1990.⁸

¹ The author is solely responsible for the opinions and analyses expressed in this paper. They do not necessarily represent the views of the Institute for Policy Reform, Iowa State University, the US Agency for International Development, the World Bank, or the Secretariat or Policy Analysis Unit of the Presidential Commission on Agrarian Policy of Ukraine.

² USSR Law on Co-operatives, PRAVDA (June 8, 1988).

³ PRAVDA (March 7, 1990). The then union-republics were to bring existing land codes into compliance with this law. Thus, Ukraine adopted a new Land Code in December 1990. The text, with later amendments, is in State Committee of Ukraine on Land Relations, *Zemel'ni vidnosyny v Ukraini: Zakonodavchi akty i normatyvni dokumenty* (Kyiv: "Urozhay": 1998), p. 31-83.

⁴ Vasilii Starodubtsev, then a leading spokesman for the 'collective farm lobby' and now governor of Tula oblast, got into a shouting match with USSR President Gorbachev in May 1990 when Starodubtsev demanded that all state investment should be devoted to agriculture in order to solve the country's food-supply crisis. Starodubtsev was later a member of the State Committee on the State of Emergency, the group whose attempt at a military coup against perestroika led directly to the collapse of the USSR. His stated reason for joining was that state direction was needed to provide agriculture with the labour and other resources needed for successfully completing the year's harvest.

⁵ "Law of Ukraine on the Collective Agricultural Enterprise" (February 14, 1992).

⁶ See chapter 13 on *Evolution of Farm Structures in Ukraine*.

⁷ Technical efficiency for Ukrainian farms as a whole declined in the early and mid-1990s (for instance, KURKALOVA & JENSEN, 1996). Technical efficiency in farms which have undergone restructuring by any of the donor projects in Ukraine appears to have improved relative to unstructured farms, but a recent World Bank study (see LERMAN & CSAKI, 2000, p. 49) cautions that "*the average technical efficiency index is quite low even for the reorganised farms (0.7 out of the maximum achievable value of 1) which implies that very few reorganised farms actually attain the efficient frontier and most of them lie at a considerable distance from the frontier.*"

⁸ See appendix tables at the end of this book.

The major legislative 'success' of recent years, adoption of Ukrainian Presidential Decree No. 1529 on farm reform on December 3, 1999,⁹ effectively completed the reorganisation of the existing large former collective and state farms that began with the 1992 Law on Collective Agriculture Enterprises. This leaves Ukrainian agriculture, in a legal and organisational sense, where Russian reform had been at the end of April 1993 when a similar El'tsin reform decree was reported fulfilled. Although Ukrainian gross agricultural output has grown in 2000, contributing to the increase in overall GDP, there are indications that much of the increase in agricultural output was due to price rather than volume effects as the country shifted from an export to an import situation for key agricultural products.¹⁰

Many of the problems of agricultural reform in Ukraine are not specific to that sector: a highly imperfect legal system and general lack of respect for contracts, a weak banking system and other more general difficulties hobble agricultural reform. However, even given these general difficulties, there is general agreement among Ukrainian and foreign observers that the country's agricultural reforms since 1991 have been less than completely successful. But Ukrainian and foreign commentators disagree on the reasons for this poor performance and so draw quite different conclusions. Ukrainian policy-makers frequently argue that the design of their economic reforms, including the agrarian reforms, is correct, but they are being poorly implemented.¹¹ They often assert that the major difficulty they have encountered is the unwillingness of international donors to provide enough funding to make the reforms work.¹² Some American opinion leaders argue that aid to Ukrainian agriculture should end. As an evaluation of the USAID-sponsored Ukrainian Agricultural Policy Project carried out in 2000 noted, "*Since 1994, 75,000,000 US\$ has been allocated to agriculture projects, particularly the agrobusiness and land reform sectors. The results have been generally disappointing. Consequently, questions are now being raised concerning whether or not USAID should even be involved in the Ukrainian agriculture sector.*"¹³

The agricultural sector is too important to Ukrainian development to be abandoned by donors and reformers. As one of the first areas in the Russian empire to be industrialised, much of Ukraine is endowed with antiquated industrial enterprises and played-out mines. Because of the patterns of development enforced by planners in Moscow, much of its more modern industry and potentially competitive high-tech, often defence-oriented, industry can function effectively only in combination with enterprises now located in other countries of the former Soviet Union. Ukraine's one certain comparative advantage, a result both of its geographical location and its natural endowment, is in agriculture. Almost 70% of Ukraine's surface area is agricultural land. The agricultural sector employs one third of the labour force and generates some 11% to 12% of Ukraine's GDP. Moreover, garden plots worked by urban families and household plots cultivated by rural residents represent important sources of food as well as, in effect, serving as 'welfare in kind' for the substantial elderly and un- or underemployed population. For these reasons, adopting a reform strategy in Ukraine that mimics the strategy in the Russian Federation, where attention focused on raw material extraction and processing during the 1990s, with lesser attention to the military-industrial complex and a sense that agriculture had to be left for later, will not work.

⁹ Ukrainian Presidential Decree No. 1529/99, "On immediate measures to accelerate the reform of the agrarian sector of the economy" (*Holos Ukrainy*, December 7, 1999). On the results of the Decree, see chapter 13 on *Evolution of Farm Structures in Ukraine*.

¹⁰ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

¹¹ For instance, in a March, 1997 state of the nation report to the Ukrainian Verkhovna Rada (parliament), Ukrainian President Leonid Kuchma asserted that the reform ideas that had been adopted were correct, but their implementation had been done inefficiently and even corruptly. "Kuchma blasts Lazarenko's cabinet," *Kyiv Post* (March 27-April 2, 1997), p. 1.

¹² Author's interviews.

¹³ "Abridged Version Of An Evaluation Of The Ukrainian Agricultural Policy Project: Co-operative Agreement No. NIS-A-00-97-00005-00" (February 2000), p. 7.

In this chapter I argue that the reasons for inadequate Ukrainian agricultural reform are both conceptual and operational. Ukrainian policy-makers and foreign advisors hold conflicting concepts of what agricultural reform should accomplish. Moreover, attempts at agricultural reform, however defined, have been implemented in a top-down way that is characteristic of the Soviet command system and, thus, incompatible with attempts to dismantle that system.

2 Soviet command agriculture and Ukraine

The Ukraine is a successor, in political and economic terms, of the Soviet Union. Its institutional structure, and its ruling elites, are still essentially Soviet, in mindset and training if not always in expressed views. Ukraine is also like the rest of the former Soviet Union in having the legacy of collectivised, command agriculture. Agricultural production under the Soviet system was organised as part of the command economy. Very large-scale units produced the basic commodities at the detailed direction of the political authorities. Farm workers were allowed to maintain very small 'household' plots of land to produce labour-intensive products such as vegetables and potatoes for their own use and for sale in regulated collective-farm markets. However, this private production was entirely dependent on the large-scale farms, from which inputs were obtained legally or by theft, and through which much of the surplus plot production was collected for off-farm consumers.

Supply of inputs, provision of services to farms, and collection of product for processing and eventual delivery to urban areas were all organised and controlled by the political authorities and performed by local monopoly enterprises. Enforced by a massive secret police apparatus and a complex system of other social controls, this system ensured political stability in rural areas. Equally importantly, it provided sufficient food for urban areas even when the peasants themselves were left to starve, as in the early 1930s and 1946.¹⁴ But command agriculture was not capable of substantially increasing production or improving quality and assortment. During the twentieth century, Soviet agricultural production never made the quantitative or qualitative improvements in agricultural output that were characteristic of the transition from agriculturally-based economies to urban, industrial ones in Western Europe and North America.

The goal of Soviet economics was to produce a particular mix of goods and services as specified by the central planners. The associated costs, both direct and in terms of foregone alternative uses of the resources, were ignored. It was assumed that the country would produce everything it needed, and the amount of foodstuffs 'needed' was calculated based on an ideal diet, all components of which were produced domestically. It was further assumed that agricultural resources should be used for agriculture, and that mobility of factors of production among various uses should be strictly regulated by the planners. The institutional structure of command agriculture, for example the denial of free movement to farm workers through internal passports and residence permits, or banks' responsibility to ensure that farms spent their money 'appropriately', reflected – and continues to reflect – this assumption.

Once post-war reconstruction had been completed, about 1960, the Soviet regime promised its subjects that their standard of living would constantly improve. This was an implicit 'social contract' between regime and population: in return for the political passivity and apparent disinterest of the population, the authorities would provide more material comforts. The regime's principal self-imposed indicator of increasing popular well-being was growing meat consumption, as Nikita Khrushchev famously declared in the early 1960s.

Raising meat consumption was taken to require more investment in agriculture to support larger livestock herds. The regime began increasing agricultural investment in order to increase food supplies in the mid-1960s. These efforts ultimately failed. The USSR was never able to invest enough to solve the problem – because more investment was only a very partial solution to a prob-

¹⁴ The classic account is CONQUEST (1986).

lem inherent in the structure of the command agricultural system. During the late 1970s and 1980s, Soviet agricultural economists became increasingly concerned because large capital investment in agriculture was not resulting in a commensurate increase in output – the marginal product of a rouble of investment fell steadily throughout this period.¹⁵ By the late 1980s, which agricultural specialists in many of the former Soviet Union countries now remember as a 'golden age', about one-third of capital investment was going into agriculture. By the time the Soviet regime disintegrated in 1991, the average Soviet consumer was reported to be consuming substantially more meat than a consumer in a market economy at a comparable level of per capita GDP,¹⁶ yet urban demand for food supplies was not being met as well as it had been a decade earlier.¹⁷ This imbalance occurred both because of the government policy described above and because there was little else for consumers to buy. However, the post-1991 price reforms not only reduced purchasing power, they provided greater access to other consumer goods and increased meat production costs as subsidies were removed.¹⁸ For all these reasons, the Ukrainian livestock industry has collapsed since 1991.¹⁹

From the late-1960s on, the USSR became increasingly dependent on foreign suppliers, in Western Europe and the US, for the feed grain to maintain and increase its meat and dairy output. These imports were largely financed by exports of natural resources, particularly oil and natural gas, and, to a lesser extent, of military hardware. By the late 1980s falling international prices for oil and natural gas, and the sheer volume of required imports, made the cost of continuing agricultural commodity imports too great to be continued without affecting the rest of the economy. In summary, the command system of agriculture was not successful on its own terms of supplying sufficient food for urban consumers and ensuring rural incomes, even if some with nostalgic memories claim otherwise.

Ukraine's macroeconomy flew out of control almost immediately after independence was regained in 1991. One major reason for the inflation that wracked the economy was the insistence of the Verkhovna Rada on continuing high-level subsidies for agriculture. Although the monetary subsidies were drastically reduced in the mid-1990s, in part at the insistence of international donors, the state reasserted command over agriculture. Monetary subsidies were increasingly replaced with in-kind subsidies bartered against expected production.²⁰ Given their apparent belief that only minor tinkering with a sound system was needed, it is not surprising that Ukrainian officials followed this policy.

The post-Soviet Ukrainian authorities have made plain that they believe that the government must and should control agricultural production in order to ensure that the nation produces enough food for its own needs. The Soviet-style definition of 'reform': changes in organisation and incentives within the basic organisational framework of command agriculture, which should lead to rapid increases in the volume of production, remains operative for many Ukrainian policy-makers. The programs for 'reform' produced by the Ministry of Agrarian Policy continue to assume that the purpose of change is to produce a greater volume of much the same kind of commodities in order to

¹⁵ By 1987, it was estimated that a rouble of investment in agricultural produced only 22 kopeks of additional production. See TIKHONOV (1987).

¹⁶ See SEDIK (1993).

¹⁷ In 1988, the author encountered sugar rationing in Latvia and meat rationing in Novosibirsk. Rationing of foodstuffs in other parts of the USSR was common during that decade as well.

¹⁸ ÅSLUND (2001) points that the savings which disappeared following the price liberalisation of 1991 could have been used by their owners only with great difficulty because of the shortage of consumer goods in the pre-reform USSR. The observation is valid even though this fact did not make the loss any less painful for those who saw their bank balances wiped out.

¹⁹ See BAKER & PROTCHENKO (1999).

²⁰ Calculations of the total barter obligations to repay the state assumed by farms in both 1998 and 1999 done by analysts in the Agricultural Policy Analysis Unit of the Presidential Commission on Agrarian Policy of Ukraine showed that the farms had promised at least their total marketable crop, leaving the sector, in aggregate, with nothing to pay its workers and no surplus for reinvestment or working capital for the following year.

ensure that Ukraine can supply itself with essentially all the food and agricultural raw materials it needs for its own consumption. The 'Ukrainian grain 2001' program loudly approved at a special session of the Ukrainian Cabinet of Ministers held at the Taras Shevchenko memorial in Kanev on August 15, 2000, demonstrates the persistence of this thinking, arguing that what is needed to produce 35 mill. t of grain in 2001 is simply for all farms to carry out specified production procedures on time.²¹ While this may be true, it is not helpful when farms lack the resources to do so and there is no obvious market for their produce.

Essentially all foreign experts agree that the command agricultural system is not viable and must be fundamentally reformed.²² The major technical assistance projects have been seeking basic changes such as land privatisation and creation of free input and commodity markets. Foreign experts draw their examples of successful post-Soviet agricultural reform from countries which have fundamentally rejected the collective farm system (the Baltic states, Armenia, and, most recently, Moldova), from former Soviet-bloc countries which never really accepted it at all (Poland and Hungary), or from socialist countries where the level of development and system of agricultural production are so different as not really to be comparable at all (China). To the best of my knowledge, no western scholar argues that the collective or state farm or its variants is an economically efficient form of farming that can compete with agriculture producers elsewhere in the world.²³ In contrast, few Ukrainian specialists accept that the command agricultural system is no longer viable. Most Ukrainian experts continue to tinker with the existing system, which is why they focus great attention on issues of optimal farm size and proper legal structure. Although the contrasting views may in part reflect varying economic interests, no one is at fault for this difference in viewpoint, which is so basic that it has rarely been noted. In large part it results from the incremental way in which both former Soviet Union-country reforms and donor efforts to assist those reforms have developed. However, this difference in views must be directly acknowledged and addressed if Ukrainian agricultural policy is to be effective, and if donor efforts are to be more useful.

3 Major donor-supported efforts at agricultural reform in Ukraine

Agricultural reform in Ukraine since 1991 has had three main components. The first two, which largely grow out of Soviet-era reforms, are restructuring of the large farms and land reform. The third, stemming from economy-wide privatisation efforts and international investors' interests, is the development of private-sector businesses in agricultural supply and farm services (up-stream agriculture) as well as in processing and sale of farm products (down-stream agriculture). Despite the best efforts of all concerned, these three major types of activity have not been well integrated. Nor have they been particularly successful.

3.1 Restructuring farms and land reform

During the late 1980s, it was argued that if farm workers had to pay for their own inputs, equipment, and land they would be spurred to increase production.²⁴ Experiments seemed to result in

²¹ Copy of program in author's possession.

²² The most comprehensive study is WORLD BANK (1992).

²³ Western critiques of agricultural reform in the Russian Federation, and, by extension, Ukraine as well, generally focus on their social effects, which have, indeed, been extremely severe.

²⁴ This was the original justification for the creation of sharecropping teams within large farms beginning in 1987, and the establishment of independent, often family-run, farms starting about two years later. These new farms, mis-called 'peasant farms' at CPSU ideologists' insistence, were intended to be organised and to operate like family-owned farms in the United States or Western Europe. In Ukraine, these farms are 'private' in the sense that they are not 'public' like collective or state farms. However, most of them own only a small part of their land, and even that is subject to severe land-use restrictions. So these individual farms are not private in the sense of private ownership. These individual farms should not be confused with farm workers' household plots, gardens of up to one hectare in size given to all workers on the state and collective farms but which are always worked in addition to employment on the big farms.

increased output, so it was asserted that their general introduction would lead to a rapid and cheap increase in agricultural output.²⁵ Although some advocates of the new organisational structures saw them as eventually supplanting the large collective farms, most of the advocates of reform assumed that the large collective and state farms and the new individual farms would co-exist.²⁶ This competition of forms of farm organisation and management was expected to stimulate fuller use of existing resources and a rapid increase in total production. Ukraine therefore adopted a Law on Peasant Farms in 1991.²⁷ But the creation of individual farms has not been a particularly important part of agrarian reform in Ukraine since 1991 for at least three reasons: 1) individual farms, like large farms, depended on state support, and so their creation stalled as that support dried up; 2) the farmers themselves have, like other reformers, been unable to build sufficient political support to expand their movement; and 3) the economic and political conditions which have worked against all farms have particularly hit the individual farmers' new and unpopular (with the government and many neighbours) businesses.

The restructuring of the large farms was a logical outgrowth of late-Soviet-era reform efforts. The general method seems to have been first described in detail in a Russian Federation Law in late 1989. It was adapted to Ukraine in the 'Law on Collective Agricultural Enterprises' adopted in 1992. In general, it provided that agricultural land should be denationalised, land holdings of large farms should be equalised within rural districts (with any surplus given to the district for distribution to individual farmers), then divided into equal shares – corrected for land quality – and distributed to all eligible members of the farms. Non-land productive assets of the farm were also to be divided, but in shares weighted according to farm members' contributions to producing those assets (usually measured as total earnings over a period of years). However, physical plots of land and physical assets were to be given only to people leaving the farm in order to set up their own independent farms. Those who remained in the group farm could choose to recommit their shares to a new corporate entity. Thus most people received 'conditional shares', or 'entitlements', not physical land plots or actual assets.

This method of reform allowed free choice about use of assets by permitting those who wished to leave the large farms to strike out on their own. As they received their own property, it became more possible for individuals to oppose local autocrats. Creating new large farm enterprises allowed the state, in principle, to reduce or end subsidies to the farms, although Ukraine in fact continued to subsidise the successor farming entities. Equity, i.e. providing everyone with an equal share of the limited resource of land but a graduated share of non-land assets based on property, was also observed. These were all values prized by the initial Russian and Ukrainian designers of the reforms.²⁸ By changing the legal form of ownership, farm restructuring also fit with a curious legalist bias inherited from Soviet times. If socialism equalled nationalisation and state ownership, as Stalin had decreed, the end of socialism could equally be defined as the return of formal private ownership.

This 'share system' of farm reorganisation was soon taken up by Western aid donors, particularly the International Finance Corporation – with substantial financial support from USAID and later the British Know-how Fund – and developed into the 'Nizhnii Novgorod method'. Early ver-

Individual farmers rarely wish, and until 2000 were not permitted, to continue working on a large farm after they establish their own farm business.

²⁵ The best-known assertion of the individual farm's superiority was Russian Prime Minister Ivan Silaev's claim, while introducing legislation to allow the creation of individual farms at the II RSFSR Congress of People's Deputies in 1989, that the creation of a mill. individual farms would ensure that all Russia's needs for food would be met.

²⁶ VAN ATTA (1990).

²⁷The Law was extensively revised in 1993. "Law of Ukraine 'On the peasant (farmer-type) farm,'" *Zemel'ni vidnosyny v Ukraini*, p. 144-154.

²⁸ Author's interviews with Vladimir Fedorovich Bashmachnikov, El'mira Nikolaevna Krylatykh, Aleksandr Aleksandrovich Nikonov, Evgeniia Viktorovna Serova, Vasiliï Iakimovich Uzun, Petr Trofimovich Sabluk, and others, 1988-2000.

sions of the IFC manual on farm restructuring set as a goal that farms should be entirely broken up. However, that stipulation disappeared from subsequent editions of this handbook, as experience in Nizhnii Novgorod oblast and elsewhere showed that most farms reorganised into no more than half-a-dozen large units, often following village community lines, with a few outlying individual farms. This farm restructuring system was adapted to Ukraine by IFC. Although both were constrained by the legal framework, the USAID-sponsored agricultural land-share project placed more formal emphasis on full demarcation of land parcels, while the British Know-how Fund/Cargill Technical Services large farm restructuring project concentrated on assembling large tracts of land that could be leased out.²⁹

The various adaptations of the share system of farm restructuring fit well with Westerners' assumptions that fixing definite rights to determined pieces of property, providing the opportunity to reduce the scale of production somewhat, and helping to assure equitable distribution were keys to a workable land reform that would make productive resources more mobile. Although fully restructuring a farm was a lengthy and expensive process, the results were easy to see, appeared to represent real change, and meant that foreign donors could say they had done something substantial about reform in agriculture within the limited time horizon of their projects.

However, in Ukraine agricultural land shares have not proven to be as transferable as initial advocates of the system had hoped. Although the constitution allows for private property in land, the country's present land code does not allow for purchase and sale of agricultural land.³⁰ In the absence of firm legal guidelines, many local and national authorities with some jurisdiction over land sales often refuse to allow land transactions. When they do approve transactions, these are always tainted by the possibility that they may later be overturned by higher-level legislation.³¹ Moreover, farm land shares remain constrained by a web of regulations requiring that the land be used for agriculture and produce average crops. If the land is not used and does not produce, it may be seized from the owner in an administrative procedure.

Inflation, the reduction of agricultural subsidies, changes in the terms of trade with industry as a result of price liberalisation, and general economic uncertainty have made the perceived risks of farming in Ukraine much greater since 1991. Given these unfavourable circumstances, it is no surprise that all surveys as well as case studies of individual farms show relatively little interest among farm employees and workers in becoming independent farmers. In the absence of economic stimuli to encourage farmers to take their land and asset shares and exit the farms to set up on their own, and given circumstances which make the viability even of larger daughter enterprises doubtful, the process of farm reorganisation becomes essentially an administrative exercise. The exercise may be very valuable in implementing procedures which will allow people to safeguard their property rights, but in the absence of a real possibility to use that property, the property rights are unlikely to be taken seriously by the recipients. In fact, despite the best efforts by those involved to ensure that everyone involved understands their right and opportunities, all the donor-supported farm restructuring systems have in fact been implemented like previous 'reforms' in collectivised agriculture, by carrying out generally-applicable administrative commands from the centre.

3.2 Development of private sector up- and downstream agriculture

When the current wave of agricultural reform began in the late 1980s, most attention was concentrated on land reform. Government aid agencies and international financial institutions generally followed that priority. However, it soon became clear that new forms of land tenure, whether

²⁹ For detailed description of the various donor-developed farm restructuring methods, see LERMAN & CSAKI (2000).

³⁰ See chapter 14 on *A Market for Agricultural Land in Ukraine*.

³¹ There is a close parallel here to the pre-Revolutionary Stolypin agrarian reforms. Land sales were allowed under a 1906 governmental decree, but until the decree was finally enacted into law by the State Duma in 1912, local authorities often refused to carry out land transactions for fear they would later be overturned.

individual farms or restructured large ones, would make little difference in the lives of their owners and workers and have little economic effect until and unless the institutions of state planning which controlled their activities, and the supply, service, processing and marketing agencies with which they dealt, were also transformed. Most of those organisations had a single or very few agencies in each rural district responsible for dealing with assigned nearby large farms. The resulting monopolies, created by the pattern of location of enterprises and transportation in the countryside, were reinforced by state-set pan-territorial pricing regardless of enterprise efficiency or prime costs. The upstream and downstream enterprises were initially treated as part of the general process of industrial privatisation. However, the Verkhovna Rada insisted that primary agricultural producers had special interests in their suppliers and those to whom their products were delivered, and so enacted special legislation to govern the process of upstream and downstream agricultural privatisation. Under these 'peculiarities' laws, the various monopolies were generally transformed into regional associations part-owned by the farms they served or from which they purchased output, and part-owned by local and national governments.

Most privatised up- and down-stream enterprises have become part of regional or national associations. While nominally private, these associations continue to act as parastatal agencies, and are often given instructions in government resolutions. These 'private' agencies tend to be headed by former officials who may or may not be on good terms with serving government officials.

In some cases, such as the former Main Administration of Input Supplies of the Ministry of Agriculture which became the Ukragroprombirzha corporation, or the Main Administrations of Grain Processing and Grain Storage which became the Khlib Ukrainy (Bread of Ukraine) Corporation, units of the Ministry of Agriculture became 'private' corporations – often with a substantial share of government ownership. In other cases, it appears that officials managed to convert their positions into ownership of private enterprises, in the process acquiring substantial amounts of wealth. In any event, records are often not made public and the precise ownership and degree of independence from state control of many ostensibly private up- and downstream firms in agriculture is the subject of much speculation and rumour. Clearly, this is hardly the sort of level and transparent playing field needed to encourage desperately needed foreign direct investment in Ukrainian agriculture.

The little foreign investment that has taken place has been a second source of reform in up- and down-stream agriculture in Ukraine. Most major international agrobusiness companies have made at least defensive entries into Ukraine in order to position themselves in an important producing country, in case the market opens up. Substantial business has been done in supplying agricultural chemicals and farm equipment, and substantial amounts of Ukrainian agricultural commodities received in payment for these inputs have been exported by these agrobusiness investors. Indeed, agriculture (specifically the up- and downstream industries) has received more foreign investment than any other sector of the Ukrainian economy – although, given the small total amount of foreign investment in the country (Ukraine has received a total of only 3.7 bUS\$ of foreign direct investment since Independence), this is not saying much.

Often with the encouragement of US and other donor government programs, international investors have connected with and supported Ukrainian private up- and down-stream companies. In this way they have helped to create a larger private sector capable of and interested in resisting state encroachments on their business. However, these agrobusinesses, like any other businesses, want stable customers who are capable of paying their debts. Moreover, they have been able to operate only where the political authorities have allowed them to do so. For both these reasons, there appears to be little business between restructured farms and private input suppliers and marketers. Since it is likely that farms that choose to go through the restructuring process are marginal (why attempt a serious reform unless the situation is desperate?) this lack of co-ordination is understandable and represents a rational business decision on the part of input suppliers. However, by providing inputs to unreformed large farms, this private sector activity may be prolonging the process of

reform, and, if in fact the large farms are unviable and will eventually have to change, then these private-sector efforts have cut against reform. It might not even be too much of an exaggeration to say that, in effect, the international agrobusiness that provided large amounts of inputs to Ukrainian agriculture in the mid-1990s were, in effect, simply taking over the role of the former Soviet state. The considerable difficulties many of those firms encountered in obtaining timely repayment for the inputs they supplied suggests that most Ukrainian farm managers and agricultural officials believed this to be the case.

4 The political implications of agricultural reform

In the Soviet command system, all real property except for personal items was, directly or indirectly, owned by the state. However, it was controlled by particular state functionaries, who were often able to enjoy the benefits of ownership without its liabilities. However, these functionaries could never be certain of their ability to use state property for their own ends. As a result, the state could and did destroy any opponent, since failure to do as a superior asked could lead to loss not only of employment, but also of housing, medical care, and any way to earn a livelihood – and this blacklisting could be extended throughout an entire country. Western economic theory values individual private property because it gives owners certainty that they will be able to enjoy the benefits of their labour. Individual property also makes it necessary for property owners to limit state power – taxation, after all, is simply slow-motion forcible seizure of property, and so unlimited taxation amounts to universal nationalisation of property. Private property also makes it possible for property owners to oppose state power through control of the economic resources needed to do so.

In the Ukrainian countryside, where the large farm combines economic, administrative-political and social functions in one unit under the direct and autocratic control of the farm manager, arguments for the need to disperse property ownership and allow owners to organise their own farms in order to provide a basis for a democratic political order have particular resonance. If a goal of the post-Soviet transition is to create a democratic political system, then, it may be argued, the power of the farm managers over their workers must be broken or substantially limited. So splitting up the large farms has the desirable consequence of promoting democratic development.³²

Granting property ownership rights to individuals has another positive consequence for reform, by making it impossible for officials to use their positions to administer economic activity without being accountable for their actions. However, this positive consequence of denationalisation of property has a negative side as well, as officials seek to use their positions for individual gain as property is transferred from state to private ownership. From the viewpoint of many officials in the Ukrainian government, as well as many farm managers, leaving property rights unclear as long as possible is good because it allows them more time either to insure that ultimately they themselves acquire legal ownership of the property or, if that is impossible, have stripped all valuable assets from it when it is finally privatised.

Officials' interests in delaying the clear delineation of property rights are reinforced when, as is the case in Ukraine, local officials represent territorial constituencies in the legislature. Since much of Ukraine is agricultural, many Verkhovna Rada deputies represent areas where the principal or only economic activity is agriculture. As in any representative democracy, they seek to defend the immediate interests of their constituents. Residents of agricultural areas, by and large, continue to see their principal interest in obtaining a maximum of state subsidies and support – without which, they fear, the large farms that structure their lives will disintegrate. The failure of the Agrarian Party of Ukraine (APU), which was pro-President Kuchma in the Verkhovna Rada election of 1998, illus-

³² This Jeffersonian argument has been made particularly strongly by PROSTERMAN & RIEDINGER (1987). Prosterman's Rural Development Institute designs and monitors legislative frameworks for land reforms in order to promote democracy.

trates this point.³³ Contrary to expectations, the APU carried few seats in rural territorial districts, and did not pass the 4% barrier for party-list representation. Before the Soviet Union collapsed, local leaders' power was built on an implicit bargain. They guaranteed economic security and slowly increasing standards of living for their employees. In return, those employees, who were also their political constituents, 'supported' the local leadership's policies and the national policies of the Communist Party. Since the collapse of the Soviet Union, local leaders have been less and less able to provide economic security and benefits to their constituents. The APU assumed that the bargain still held, and nominated 'local notables' on the assumption they could win rural seats. Since those local bosses were no longer delivering their side of the bargain, rural voters did not do so either, and many APU candidates who had expected easy victories were defeated.

When elected legislators' personal interests reinforce their constituents' immediate interests, as is the case with legislation to allow the free purchase and sale of land, the legislature may become extremely resistant to attempts to enact laws assigning clear property rights in agricultural land and productive assets. Although it is impossible to prove, it seems clear that there are two sources of Ukrainian legislators' opposition to the creation of a free rural land market. On the one hand, they oppose it for ideological reasons. On the other hand, they seek to delay it as long as possible and make its introduction as confused as possible in order to increase their own eventual gains. The first objection, typically expressed by the Communist Party of Ukraine, is probably less important as a source of political opposition than the second, more frequently held not only by members of the Peasant and Socialist Party bloc, but also by many apparent reformers as well.

5 Will Ukrainian command agriculture crash if it is not reformed?

It is tempting to believe that the Ukraine's command agricultural system will self-destruct if it does not reform. There has, of course, been a tremendous fall in total production since 1990, but it can be argued that that fall actually represents a painful adjustment to market conditions – a response to realistic pricing for outputs and the loss of 'markets' ordered by planners. It is more worrisome that productivity has shown little change since the beginning of transition,³⁴ since increased productivity is, ultimately, the point of economic reform. These facts together suggest that the system is now declining in a systematic way; continuing to function but at lower and lower levels.

A bastardised form of command agriculture could survive for many more years in Ukraine. If the national authorities, labouring under the mistaken impression that American or European levels of productivity require only 'throwing enough money' at the problem, continue to devote their resources to the old system, it can survive. It can survive because foreign investors will remain willing to make limited investments to support it, because such expedients as leasing large tracts – though unlikely to be as productive as the best smaller farms in the OECD countries – will be profitable for those involved, and especially because the loss of urban markets to foreign suppliers means that the real motor for a demand for change – difficulties in supplying enough food to the cities – will be absent. Ukrainian authorities frequently cite fear of 'social tension' to justify the need to keep propping up command agriculture. But it is hard to imagine the Ukrainian rural population, especially the elderly and dependent population often conjured up by those same policy-makers to justify preserving the paternalistic aspects of the command system, raising real, effective civil disorder of more than a momentary kind. As the history of the Russian Empire and the Soviet Union showed, it is urban disorders that threaten a political regime. As long as imports keep filling the stores with high-value-added processed foodstuffs, and enough grain is produced domestically to keep price-controlled bread freely available, such urban disorders are extremely unlikely.

³³ In fact, the party was set up by the authorities to attract rural votes. The party program was written by staff members of the Ukrainian Cabinet of Ministers' Agro-Food Sector Department during working hours as part of their regular work. Author's interview.

³⁴ See chapter 6 on *Can the Crisis in Ukrainian Agriculture be Attributed to Price Disparity?*, especially figure 8.

It might be argued that the pressure for macroeconomic stabilisation brought by the international financial institutions (IFIs) will prevent the Ukrainian authorities from continuing to provide agriculture with minimal resources. But the IMF is attempting to reduce the number of its conditions in particular economic sectors to concentrate on its core mission of macroeconomic stabilisation. World Bank loans generally go to the Ukrainian national budget even when they concern agriculture, and once the cash is in hand there is relatively little the Bank can do to enforce policy measures. The experience of Presidential Decree No. 832/2000 which (re-)introduced grain export restrictions³⁵ shows that if the Ukrainian authorities are determined to retain an ill-advised policy in the agricultural sector, the IFIs are likely to eventually cave in and allow it. Once Ukrainian policy makers have learned that the IFIs can be successfully resisted or fooled, it becomes much harder to make conditions stick the next time. And, since the IFIs should be imposing conditions agreed to by the recipients, it is unlikely that their resources can or should be used to force policy change when the recipient country chooses to resist.

But the scenario of continued 'post-Soviet policy as usual' in the agricultural sector is not an optimistic one. It is a scenario for a slow disaster rather than a fast collapse. If Ukrainian agriculture does not become more competitive, and if structural adjustments are avoided as a matter of policy, then the country's future is more likely to be that of Mexico or Brazil – a dual economy in which one part looks to the OECD countries and the other is trapped in subsistence agriculture – rather than that of Eastern or Western Europe. Those who succeed in monopolising the country's agricultural resources may, in this way, become extraordinarily rich, but at the cost of impoverishing the country and foregoing the possibility of creating vastly greater wealth for a vastly greater number of Ukrainians.

6 A more market-oriented definition of reform in agriculture

Few of the assumptions inherent in the definition of 'reform' inherited by Ukrainian policy-makers from the Soviet era are likely to pass unchallenged by anyone brought up in a market economy.

Rather than assuming that decisions about what, how, and how much to produce should be determined by national authorities based on some 'scientific' reckoning about what is best for the society, a market-oriented approach assumes that social welfare results from the total of millions of individual decisions about economic activity. Political authorities may regulate and influence decisions to some extent, but these decisions can be made only by the economic actors themselves primarily in response to economic incentives. All economic resources have alternative uses; only the economic actors can judge, based on the market conditions they face, what use of those resources is best in a given situation. Further, market economics leads to the recommendation that nations should trade and not seek to be self-sufficient in all goods and services. Nations, like individuals and firms, should specialise in those economic activities they can most profitably perform, and purchase other necessary goods and services. Whether this specialisation occurs within a national market or among nations makes little difference from an economic viewpoint.

From these assumptions, it follows that the immediate goal of any economic reform must be to increase the mobility of factors of production – land, labour, and capital – so that economic actors can use them more efficiently in pursuing their own, and so society's welfare. There is constant 'creative destruction' of old technologies, institutional structures, and ways of managing in a market economy. One role of the political authorities is to anticipate and assist in such change, both by defining and enforcing property rights and contracts and by helping to build political support for 'structural reforms' when such changes require the joint effort of many citizens.

³⁵ For a discussion of this Decree see chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

It further follows that the long-term goal of such changes is an increase in economic efficiency. However, when a fundamental change in economic structure (for instance, the shift from railroad to automobile and aeroplane passenger transportation in the United States) is under way, there is likely to be a decrease, not an increase, in output on at least some measures, especially those indicators tied to the economic activity, structures, or processes which are dying out. So no economist would be surprised to find that the overall volume of agricultural production in the former Soviet Union, and each of its successor states individually, has declined as a part of the fundamental transformation which command agriculture has been undergoing.³⁶

According to the Soviet-legacy definition, the goal of economic activity is to maximise production for society as a whole. Therefore, any unused productive resources – land, labour and capital – should be immediately employed, regardless of the cost of doing so. In a market economy, however, the goal is to maximise profit to the individual actor. If the cost of employing another unit of a resource is not profitable, the resource will not be used for production, even if there is some demand for the potential output.

In particular, Western economics assumes that labour is just one, albeit special, factor of production. Unemployment – usually in practice significantly cushioned by insurance and similar schemes – is an unavoidable cost of ensuring that resources are used profitably. Although 'make-work' schemes may be useful in some economic circumstances, there is no particular value attached to work just for the sake of work. If a worker's efforts produce nothing that can be profitably sold, those efforts are wasted, just as much as if the worker had never done anything at all and let his capabilities go unused. By contrast, the Soviet system assumes that anyone capable of working must do so, and be paid for the effort, even if nothing useful emerges. In the Ukrainian countryside, where there are few if any jobs outside of agriculture, the result is massive hidden unemployment.

Another very significant difference between these two conceptions of reform lies in the role of the individual in economic activity. In the command economy, economic actors, whether the lowliest worker or the most privileged manager or economic-sectoral minister, were to take orders and fulfil plans imposed on them by their superiors. In contrast, economic actors in a market system must take the initiative to understand changing economic conditions and rapidly respond to them if their enterprises are to survive. Modern western management theory emphasises decentralised authority, individual responsibility and quick reaction to changing economic circumstances not only by managers, but by workers as well.

Western agricultural economists emphasise that because the agricultural production cycle takes a long time and is extensive in space, efficient agriculture requires a high degree of initiative and responsibility on the part of the producers. But it is precisely here that the Soviet system left its most pernicious legacy. Managers and workers have little or no idea of or ability to be responsible for their own work in a real, economic sense, although they are used to providing reports and fooling superiors. Worse, in order to make it easier to give orders and observe results, the production units in command agriculture were made far too large for effective management in the western sense, and because the production units are so large, very few managers are capable of effectively running a former collective or state farm.

For Westerners, the obvious solution to these difficulties is to reduce the size of the individual production units, in particular to split up the former state and collective farms into smaller, more flexible units. Such a policy prescription has three advantages from the point of view of most western analysts: first, it would increase the pool of managerial talent by creating smaller units which can be more easily managed; second, it would permit family ownership and operation, the form of farm organisation and management generally felt to be most efficient in the market economies; and

³⁶ For a useful discussion of the problem of decline in agricultural output and its relation to reform in Central Europe, see MACOURS & SWINNEN (2000).

third it would help to spread out control and ownership of productive assets, a result desirable for political democracy as well as an efficient market economy.

Another important, and little-noted, difference in approaches to agricultural policy that distinguishes Ukrainian from Western analysts concerns the legal structure and production organisation of farm businesses. Ukrainians commonly assume that there is a one-to-one correspondence between legal form and the structure of operation and management. Yet many different forms of production organisation may have the same legal structure in a market economy. For instance, many family-owned farms in the United States are legally organised as corporations. Within those corporate family farms, however, there is great variation in how day-to-day operations are organised, performed and managed.

7 Economically-driven agricultural reform

If it is to avoid a slow spiral of decline in agriculture and much of the rest of its economy, Ukraine has little choice but to pursue an agriculture-led growth strategy. However, to implement an agriculture-led economic recovery requires that serious reform be carried out. This, in return requires a fundamental redefinition of agriculture's problems. Instead of being concerned with protecting producers and feeding their own population, Ukrainian policy-makers will need to accept that they have no shortage of food, just of the means with which to buy it, and that this problem can only be solved by creating an agriculture which can export competitively.

Real agricultural reform, therefore, needs to begin by explaining the true state of affairs to those who work in agriculture and are directly affected by reform. At the moment, very few legislators and government officials, and even fewer citizens, understand the language of reform as it is presented by the IFIs, bilateral donors, and Western experts and businessmen. Without such an explanation there is no hope of building a constituency to support reform. A key point of a campaign to explain the need for reform ought to be a careful explanation of the possibilities facing Ukraine and how they differ from those of Russia or the former Soviet Union. Such a campaign can also help to consolidate Ukrainian statehood.

People who understand the possible benefits of reform to themselves can press to get the government to release its stranglehold on agriculture. Conditions set by international donors may help in this regard, but the donors will also have to be ready to pick up the pieces when government withdrawal from agriculture causes particular farms, or particular regions, economic hardship. Much of the countryside now depends as much on agricultural production as the Donbass does on coal. Like many of those coal mines, many large farms are likely not to be competitive under any conditions. The donor community will have to provide the safety net for them. Such a safety net may include payment of severance benefits and pensions, and certainly must include job-creation and re-training schemes. Non-agricultural employment in rural areas must be encouraged to end the countryside's dependence on a single, cyclical business and to prevent a new exodus of rural unemployed to Ukraine's cities.

To make reforms acceptable and desirable, rural areas need information about possible markets. Where, how, and for how much can what agricultural products be sold? Both the EU and the US have supported market-information projects, but information from both has not been widely disseminated. More basically, the international donors will have to help Ukraine to find international markets for its agricultural produce. Despite the results of the Uruguay Round of GATT, agricultural commodity markets remain highly cartelised and highly intransparent. Assistance in understanding and even breaking into those markets may be necessary. Such assistance can target the Ministry of the Agroindustrial Complex, which will have to be basically reoriented. Rather than being a ministry which commands production, it must become, like other Ministries of Agriculture in market economies, on the one hand a guarantor of quality and upholder of minimum standards, and on the other a sales agent for its sector. Helping Ukraine find markets for its produce will sometimes contradict the immediate interests of donor countries' own producers, and could even run foul of legal limits on

foreign assistance. However, without demand for its products, there will be no positive incentive for Ukrainian agriculture to undergo serious reform.

Particular attention will need to be paid to standards and quality control. To effectively export, Ukraine must have a transparent, rigorously-enforced system of grading and ensuring the safety of its agricultural commodities. One of the many unfortunate legacies of Chernobyl' is distrust of Ukrainian products in the world market. One shipment of sub-standard or tainted food products could severely set back Ukraine's attempt to break into any market where consumers have a choice about the origin of their foodstuffs. For this reason, it is particularly unfortunately that some influential voices in Ukraine advocate returning agricultural land poisoned by the accident to production as soon as possible. All agricultural land should be thoroughly checked for radioactive contamination and used or removed from production accordingly. Losing a little (unsafe) production now could prevent losing the ability to market much more later.

Much of the structural reform needed by agriculture is common to the whole economy. Legal changes to make it easier to enforce civil contracts, such as a lowering barriers to the use of civil (*arbitrazh*) courts should be considered. One key element of change will be the transformation of the banking system and the breakdown of the rigid legal and regulatory division between legal entities and physical persons. Economic activity can most easily be stimulated by removing unnecessary restrictions, and the present banking system, with its Soviet-era emphasis on control of economic actors, is a major locus of such restrictions. These structural reforms should generally not be agriculture-specific, however. In a market system agriculture is a particular, sometimes peculiar, economic activity. But it is not separated from the rest of the economy by a Chinese wall, as the countryside and agriculture was in the Soviet era. Trying to produce agriculture-specific measures risks having legal changes fall victim to agricultural special interests in the legislature, and will impede overall economic reform. Instead, agriculture's needs for structural change should be addressed as a part of this overall economic reform.

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Part II: Agricultural Policy and Agricultural Markets in Ukraine

6 *Can the Crisis in Ukrainian Agriculture Be Attributed to Price Disparity?*

KONSTANTIN SIRIN & SERGIY ZORYA

"... the lack of price parity in the exchange of agricultural and industrial products has spiralled a negative trend of decline in agricultural production for many years running, as well as shrinkage of the sector's output potential ..."
(Resolution of Ukraine's Verkhovna Rada No. 1825-III dated June 25, 2000)

1 Introduction

It has been postulated that the decline of agriculture in Ukraine has been due to a reduction of price parity for agricultural products that must be countered by policy measures. Three Ukrainian laws call for "*an equivalent exchange between agriculture and industry*" and "*a fair correlation of prices for agricultural and industrial products*".¹ However, none of these laws contain a definition of 'an equivalent exchange', nor do they spell out the underlying principle behind "a fair correlation of prices". This vagueness has made it possible to use 'parity' as a universal justification for any government measures designed to support Ukrainian agriculture.

In this chapter, we argue that an alleged 'violation of price parity for agricultural produce' is not the cause of the decline of agricultural production in Ukraine. We argue, therefore, that it can provide no justification for corrective price policy intervention in agriculture. Instead, the government would be better advised to help agricultural producers adjust to declining relative agricultural prices by creating an institutional environment which is conducive to agricultural development. And it should take steps to reduce the negative impact of its own policies on price parity.

To make these points, section 2 focuses on the different approaches to measuring parity or so-called 'terms of trade' which are often used as arguments in academic and political discussions on the need to support agriculture and the ways of providing such support. The results of empirical studies which measure agricultural terms of trade in different countries are presented in section 3. These are contrasted with empirical findings for Ukraine in section 4. The main conclusions and recommendations with regard to Ukrainian agricultural policy are put forward in section 5.

2 The concept and measurement of 'terms of trade'

In textbooks on agricultural economics, price parity is measured using a price ratio that measures the purchasing power of a unit of agricultural output in terms of other goods and services. The concept of price parity and the related concepts of income parity or a 'fair' exchange of goods and services have a long history in the agricultural policy of many countries.² Therefore, it comes as no surprise that these concepts have been the focus of much attention in economics.

The economic concept behind the notion of parity is the terms of trade (ToT) (HENRICHSMEYER & WITZKE, 1991, p. 185). Parity and ToT are very closely related. Essentially, maintaining price parity is equivalent to maintaining constant ToT, and those who complain about price disparity in Ukrainian agriculture are complaining about declining agricultural ToT. In the following, we discuss several different ToT indices and their implications.

¹ These Laws are "On Prices and Pricing" (art. 3); "On the Priority of Social Development in Rural Communities and the Agroindustrial Complex in the National Economy" (art. 1); and "On a Collective Agricultural Enterprise" (art. 15).

² See HANAU (1952) and SEROVA (1999).

2.1 Commodity terms of trade

The simplest and the most widespread ToT index is the so-called **Commodity Terms of Trade** (CToT). The CToT of a given sector is defined as the ratio of that sector's output price index to an index of its input prices:

$$CToT = \frac{P_{I_o}}{P_{I_i}} \quad (1)$$

where P_{I_o} = price index for the industry's output, and P_{I_i} = price index for the means of production and other resources employed by the industry (HENRICHSMEYER & WITZKE, 1991).

The CToT is easy to compute and the required statistical data is easily available in many countries. This accounts for its frequent use in empirical studies. The CToT simply shows how much faster (CToT increasing) or how much slower (CToT decreasing) agricultural output prices are increasing compared with the prices of input commodities used for the purpose of agricultural production.³

However, the CToT is far from being perfect. Its fall or rise does not automatically entail a deterioration or improvement in the purchasing power of the investigated industry because it does not account for quantity changes that might be counteracting price changes. For instance, a decline in an industry's CToT could be coupled with increased sales of that industry's output, and the combined effect of falling prices and increasing output could very well be to increase overall proceeds (HENRICHSMEYER & WITZKE, 1991, p. 185). Similarly, the CToT does not account for changes in productivity. It could be that as the CToT falls, for example, producers are learning to produce more units of output per unit of input, leading to a net increase in profits.

Thus, two important conclusions can be drawn with regard to the CToT index: a) the CToT is, by definition, identical to the notion of price parity as it is most commonly used in political discussions, and b) the CToT measures the purchasing power of a unit of an industry's output, not the purchasing power of that industry itself. The CToT is only an **indirect** indicator of the latter.

2.2 Income terms of trade

The shortcomings of the CToT are partially overcome by the **Income Terms of Trade** (IToT) concept. An industry's IToT is equal to its CToT multiplied by an index of that industry's output.

$$IToT = \frac{P_{I_o}}{P_{I_i}} \times I_{Q_o} = \frac{P_{I_o} \cdot I_{Q_o}}{P_{I_i}} \quad (2)$$

where I_{Q_o} = an index of the industry's output of finished goods, and all other symbols are as in (1).

The IToT measures changes in the amount of inputs that an industry can purchase using its total revenue (the numerator in equation (2)). Therefore, as opposed to CToT, the IToT is a **direct** indicator of the dynamics of an industry's purchasing power. However, the IToT still suffers from the weaknesses that it does not take productivity changes into account. For example, in order to make output grow it could be that the industry has used proportionately more inputs, leading to a net reduction in profitability even as the IToT increases.

³ Generally, a base year is set equal to 100, so a CToT greater (less) than 100 indicates that the purchasing power of a unit of output measured in units of input has increased (decreased) since the base year.

2.3 Factoral terms of trade

In order to make a more realistic assessment of the dynamics of the purchasing power and competitiveness of an industry, the CToT index can be multiplied by a productivity index or ratio of productivity indices, leading to the so-called **Factoral Terms of Trade** (FToT) concept. Both **Double Factoral Terms of Trade** (DFToT) and **Single Factoral Terms of Trade** (SFToT) can be considered.

The DFToT index equals the product of the CToT and a ratio of productivity indices between the industry in question and the industries that manufacture the inputs consumed by this industry:

$$DFToT = \frac{P_{I_o}}{P_{I_i}} \times \frac{\alpha_o}{\alpha_i} \quad (3)$$

where α_o = an index of the productivity of the investigated industry, α_i = an index of the productivity of the manufacture of inputs consumed by the investigated industry, and all other symbols are as in equation (1).

Given the difficulties involved in collecting statistical data on the productivity of input manufacture, it is often much simpler to make use of the SFToT, which only takes into account the productivity index of the investigated industry (HENRICHSMEYER & WITZKE, 1991):

$$SFToT = \frac{P_{I_o}}{P_{I_i}} \times \alpha_o \quad (4)$$

Productivity measures how effectively an industry is making use of its inputs such as land, animals, labour, material and technical resources and finance. Changes in productivity can make it possible for farms to absorb the impact of falling CToT without suffering corresponding reductions in profitability. As a stylised example, while it may require 10 times more wheat (output) to purchase one tractor (input) today than it did 50 years ago (declining CToT), this would be compensated (overcompensated) by the fact that it is possible to produce 10 or 12 times as much wheat with one tractor today than was the case 50 years ago.

Indeed, as is discussed below, changes in productivity are actually a driving force behind changes in CToT over time. Productivity growth goes hand in hand with progress in science and technology, which is a critical factor in long-term agricultural growth (LELE & MELLOR, 1989; CORNELIS & VAN DER MEER, 1989).

2.4 An illustrative comparison of the different terms of trade indices and their implications

The results of computing different ToT indices can be illustrated by the following example (see table 1):

It is assumed that all indices equal 1 in the base period $t = 0$. By $t = 1$, the prices of outputs in the industry in question have grown with respect to this base period by 10% ($P_{I_o} = 1.1$), while the prices of inputs consumed by this industry have grown by 20% ($P_{I_i} = 1.2$). Since it is also assumed that output and productivity remain unchanged between $t = 0$ and $t = 1$, we see that all 3 ToT indices are identical in $t = 1$ and that the industry's purchasing power has fallen by 8% relative to $t = 0$.

It is assumed that by $t = 2$ output prices have declined with respect to the base period by 5%, while input prices have grown by 20% (i.e. the former have declined since $t = 1$ while the latter have remained constant). It is also assumed that over the same period output has grown by 22%, while input use has fallen by 8% so that the productivity index has increased to (roughly) 1.3.

Table 1: A comparative illustration of different terms of trade concepts

Period	Index values with respect to the base period	ToT index
t = 0	$P_{I_o} = 1$ $P_{I_t} = 1$ $I_{Q_o} = 1$ $\alpha_o = 1$	$CToT = \frac{1}{1} = 1$ $IToT = \frac{1}{1} \times 1 = 1$ $SFToT = \frac{1}{1} \times 1 = 1$
t = 1	$P_{I_o} = 1.1$ $P_{I_t} = 1.2$ $I_{Q_o} = 1$ $\alpha_o = 1$	$CToT = \frac{1.1}{1.2} = 0.92$ $IToT = \frac{1.1}{1.2} \times 1 = 0.92$ $SFToT = \frac{11}{1.2} \times 1 = 0.92$
t = 2	$P_{I_o} = 0.95$ $P_{I_t} = 1.2$ $I_{Q_o} = 1.22$ $\alpha_o = 1.3$	$CToT = \frac{0.95}{1.2} = 0.79$ $IToT = \frac{0.95}{1.2} \times 1.22 = 0.97$ $SFToT = \frac{0.95}{1.2} \times 1.3 = 1.03$

Source: Own presentation.

Based on the CToT index (the price parity index) one might conclude that the industry as a whole is worse off in t = 2 since the CToT parameter in this period (0.79) is considerably lower than in t = 1. A look at the other indices (IToT and SFToT) indicates that this conclusion is wrong. In fact, when increases in output and productivity are taken into account it becomes clear that the purchasing power and the profitability of the industry have increased in comparison to t = 0.

3 Deterioration of the terms of trade in the context of agriculture

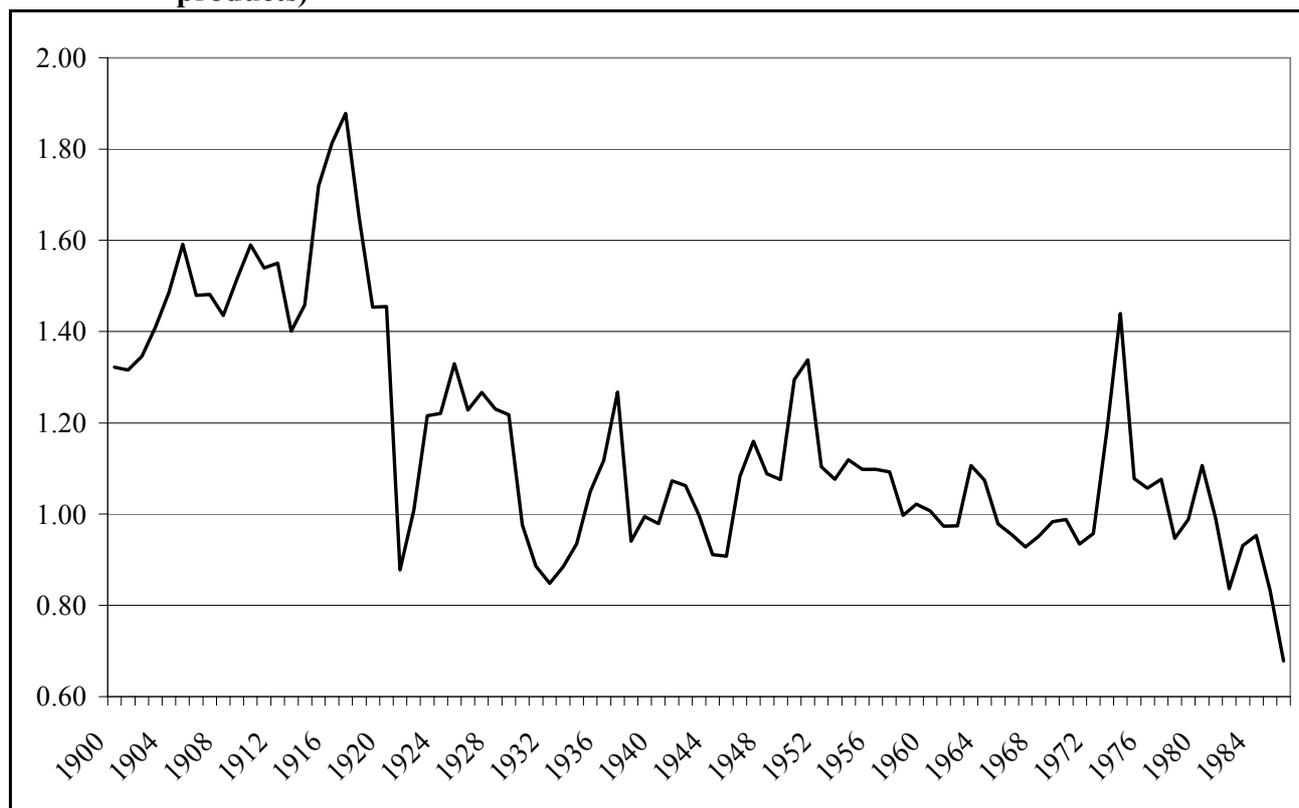
This section presents the results of empirical studies of changes in agriculture's terms of trade world-wide which have been conducted using the terms of trade concepts described above.

3.1 Commodity terms of trade

A seminal study of price parity changes was carried out in 1950 by PREBISH & SINGER who presented evidence that the relative prices of raw materials (including farm products) tend to steadily decline in the long-term. PREBISH & SINGER concluded that this reduction in commodity terms of trade leads to the impoverishment of developing countries, since they tend to be major exporters of agricultural products.

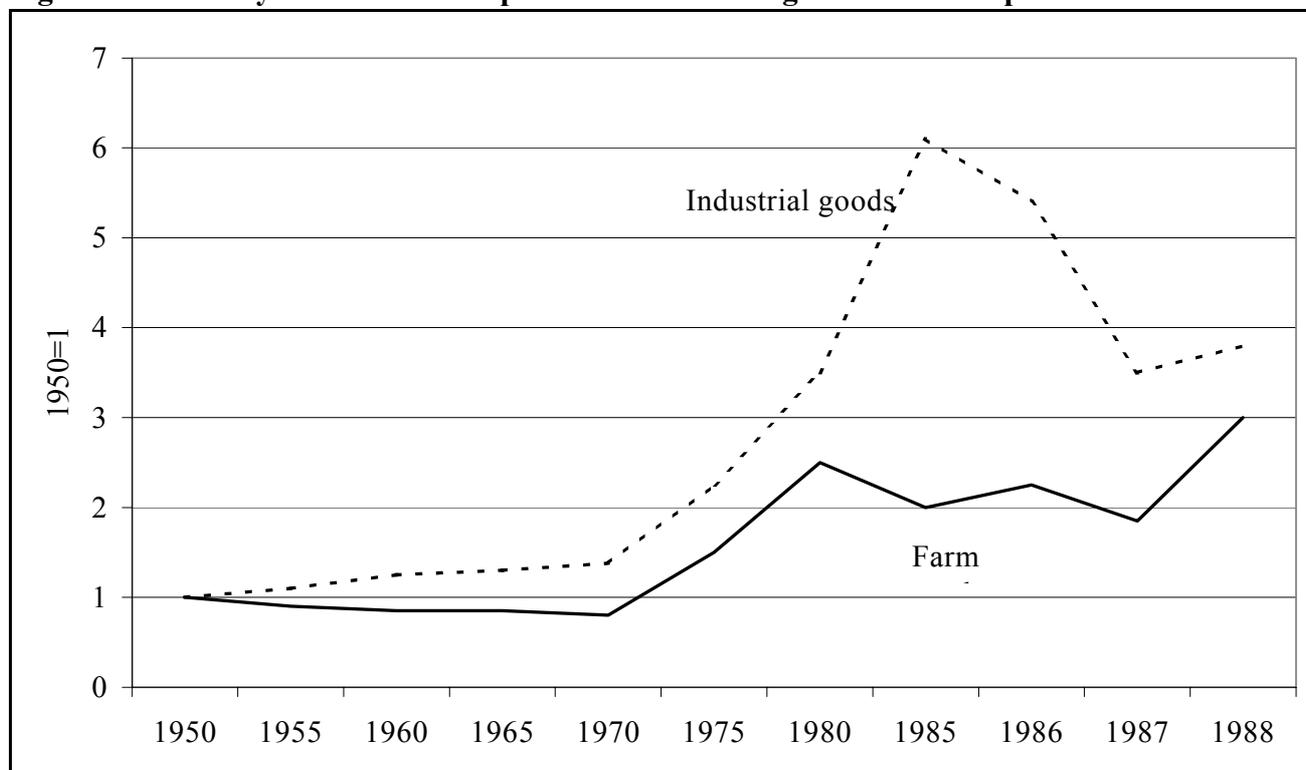
A number of more recent studies consider additional evidence on this so-called 'Prebisch-Singer hypothesis'. One of the most recent and complete studies in this area is by GRILLI & YANG (1999) who identify a long-term decline of 0.6% per year in the prices of raw materials (and primarily farm products) relative to the prices of manufactured goods between 1900 and 1986 (figure 1).

Figure 1: CToT for raw materials (ratio of prices for raw material and manufactured products)



Source: GRILLI & YANG (1999, p. 141-143); Own estimates.

Figure 2: The dynamics of world prices for industrial goods and farm products



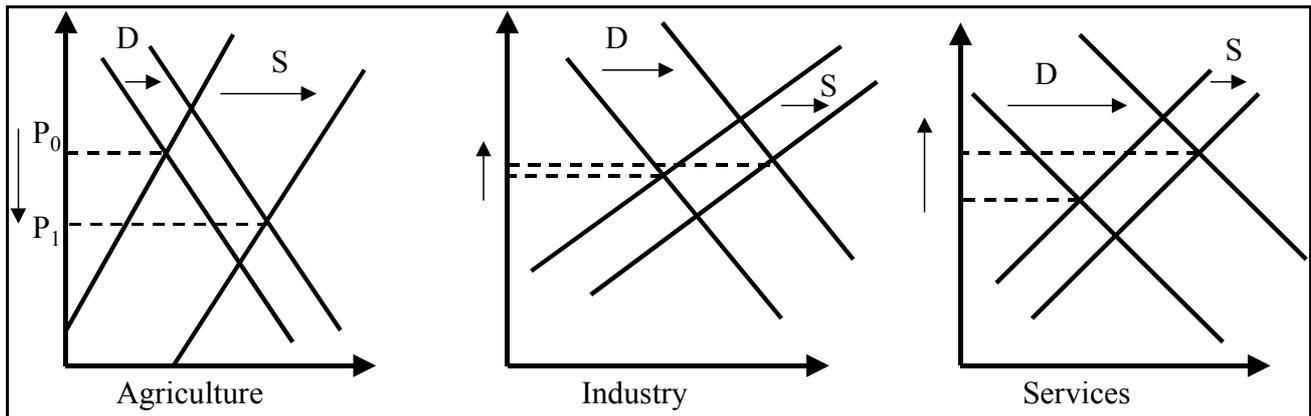
Source: HENRICHSMEYER & WITZKE (1991, p. 183).

On the basis of a shorter period (from 1950 through 1988), HENRICHSMEYER & WITZKE (1991) find that prices for farm products have been falling by 1,5% per year relative to prices for

industrial goods (see figure 2). It is clear that measures of changes in agricultural ToT will vary depending on the period of time selected for study. But the trend towards a long-term decline of the CToT appears to be evident.

This long run decline can be explained by the gap between the prices for farm products and those for industrial goods that arises from several specific properties of agricultural commodity markets: The demand for food, and by extension farm output, tends to grow relatively slowly over time as the income elasticity of demand for food is less than one⁴ and lower than for services and industrial goods (Engel's law). By comparison, technological change has tended to be more rapid in agriculture than in most other sectors on average, leading to relatively rapid supply growth.

Figure 3: A comparison of ToT developments over time of agricultural sector, industry and services



Source: Own presentation.

The impact of these factors is shown schematically in figure 3. Compared to other sectors, the supply curve in agriculture shifts outward rapidly while the demand curve shifts relatively slowly. In industry, supply and demand shifts are more or less of the same magnitude,⁵ and in the service sector the latter tend to be larger than the former as the demand for services increases rapidly with increasing income. The result of these different constellations is declining CToT in agriculture, more or less constant CToT in industry, and increasing CToT in the service sector.

In view of these characteristics of agricultural commodity markets, it therefore comes as no surprise that agriculture's CToT tend to decline over time. As argued above, however, this does not necessarily imply that the purchasing power or the profitability of agriculture is declining as well. Indeed, one of the factors driving agriculture's declining CToT, rapid technological change, will lead to productivity changes that could turn declining CToT into increasing IToT and/or FToT (single or double, as the case may be). Note that in figure 3, while prices have fallen in agriculture the quantities produced and marketed have increased. Depending on the exact shapes of the curves in question, therefore, it might be that total revenue in agriculture remains more or less constant or even increases.

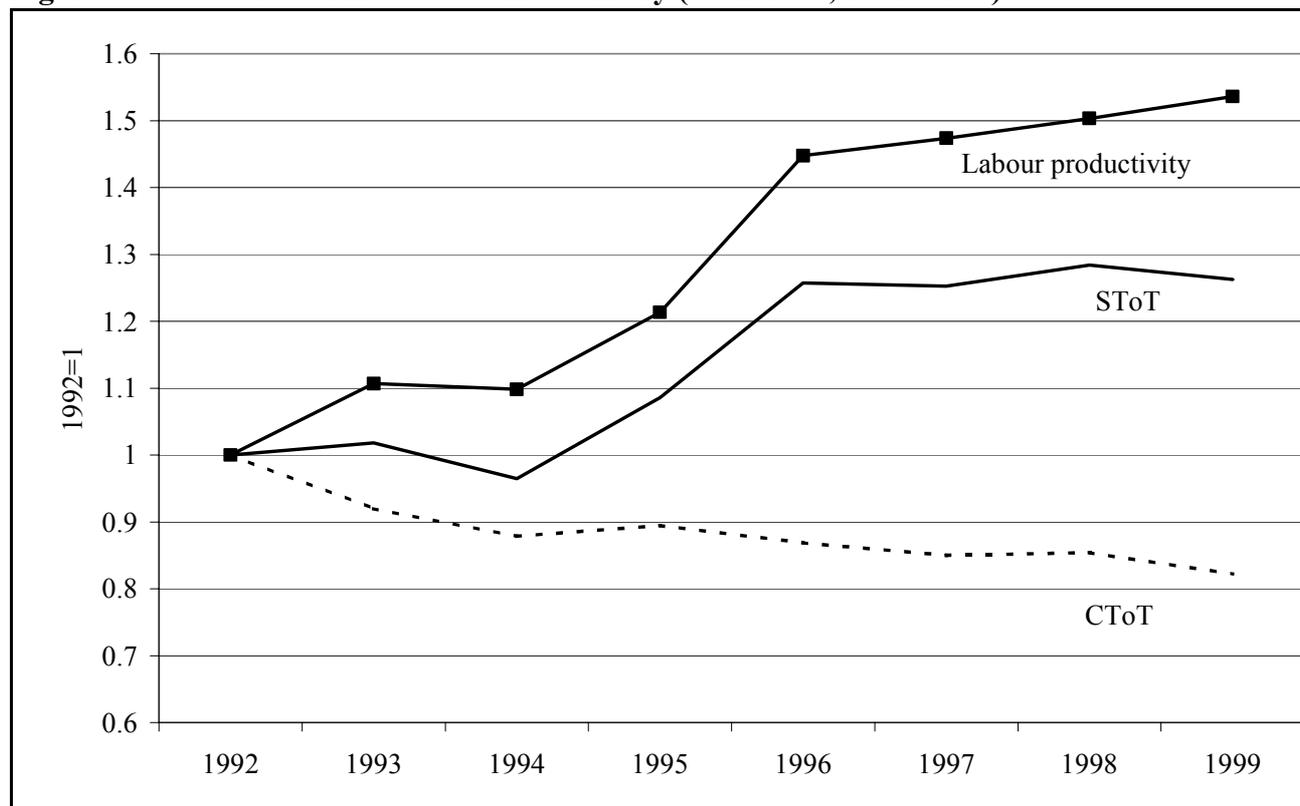
Consider, for example, the development of ToT in German agriculture over the course of the 1990s (figure 4). Not surprisingly, the CToT in German agriculture deteriorated over this period. However, the same period saw significant improvements in labour productivity in agriculture. In numbers, an 18% decline in relative prices for agricultural products was accompanied by an increase

⁴ The income elasticity of demand for food measures the percentage change in food demand that is induced by a 1% increase in income. In industrialised countries this elasticity is less than 1, meaning that if income grows by 1%, demand for food will grow by less than 1%.

⁵ Of course, within the industrial sector there is a great deal of heterogeneity with some goods (computer chips) characterised by a great deal of technological change, and others (mousetraps) by very little in recent decades.

in labour productivity of 54% in Germany as a whole ('old' and 'new' Länder). As a result, labour's SFToT in German agriculture improved by 26% between 1992 and 1999.

Figure 4: Factoral terms of trade in Germany (1992-1999, 1991 = 100)



Source: BML (2000); Own calculations.

4 The 'violation of price parity' for agricultural products in Ukraine

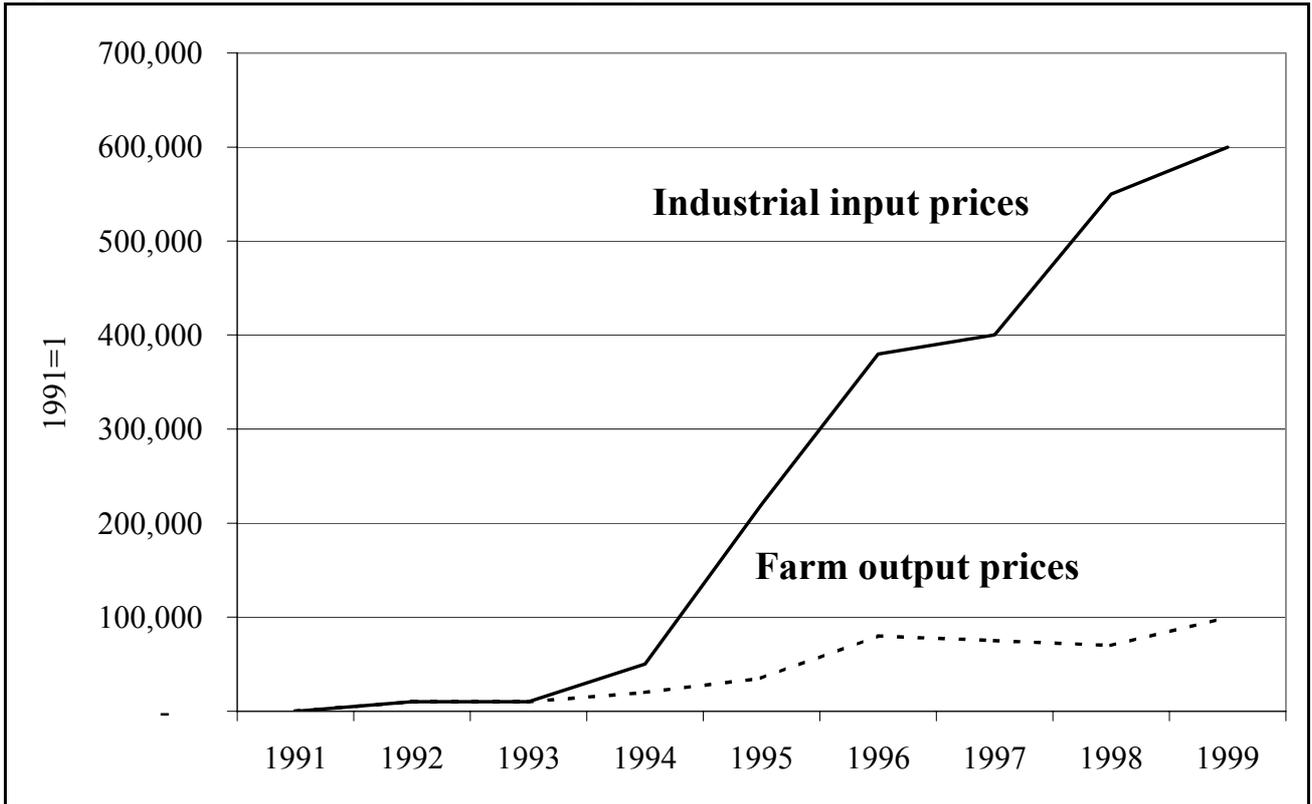
To what extent are the ToT trends discussed above topical for Ukraine? To what extent are changes in the ToT of Ukrainian agriculture since Independence responsible for agriculture's current malaise? This section attempts to answer these questions.

4.1 Commodity terms of trade

The issue of price parity for agricultural products or agriculture's CToT receives much attention in Ukraine. The importance of this issue in agrarian policy debates is illustrated by the fact that a variety of price indices, including the following depiction (figure 5), are published regularly in official statistical bulletins.

It is only natural that the CToT of Ukrainian agriculture have declined since Independence. First, as was presented above, similar trends are characteristic of agriculture all over the world. Second, the collapse of the Soviet Union led to radical changes in price structures. Prior to mid-1992 in the former Soviet Union, domestic prices for farm output (assessed at realistic exchange rates) were lower than the corresponding world market prices.

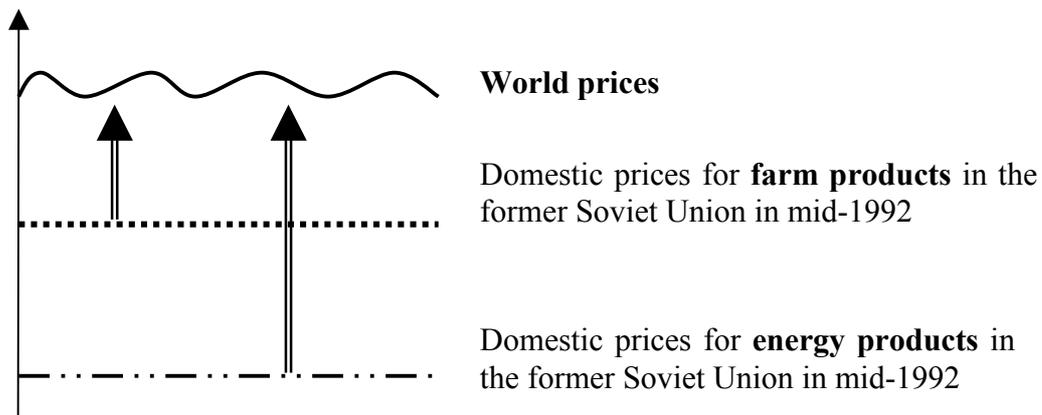
Figure 5: The ratio of farm output to input prices in Ukraine (1991-1999)



Source: STATE STATISTICS COMMITTEE OF UKRAINE (2000b).

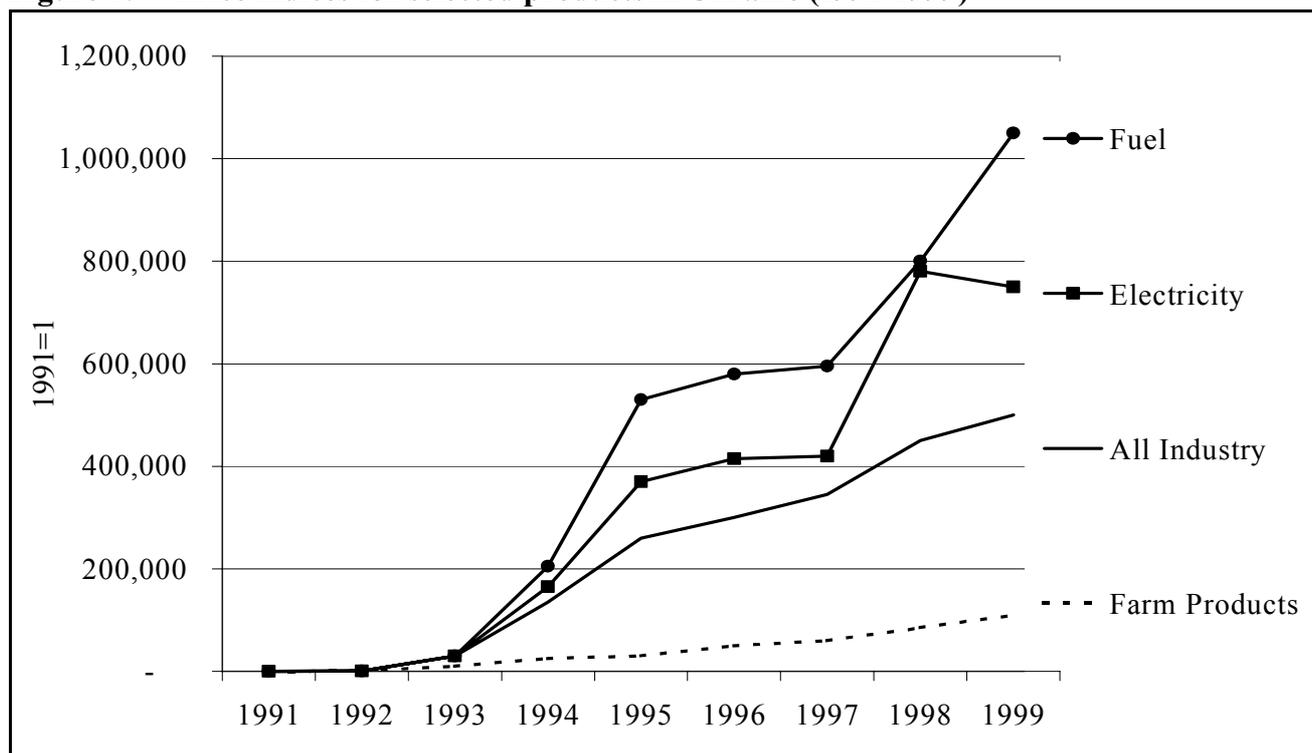
However, prices for energy, raw materials and industrial semi-finished goods were even lower as compared with world market prices (WORLD BANK, 1994). As early as 1993, BROOKS (1993) indicated that as domestic prices were liberalised and aligned themselves with world market levels, CToT would deteriorate more in agriculture than in other sectors. In other words, it was clear that as subsidies and other distortions associated with central planning were dismantled, prices for energy and raw materials would necessarily increase much faster than farm output prices (see figure 6).

Figure 6: The ratio between prices in the former Soviet Union and on world markets

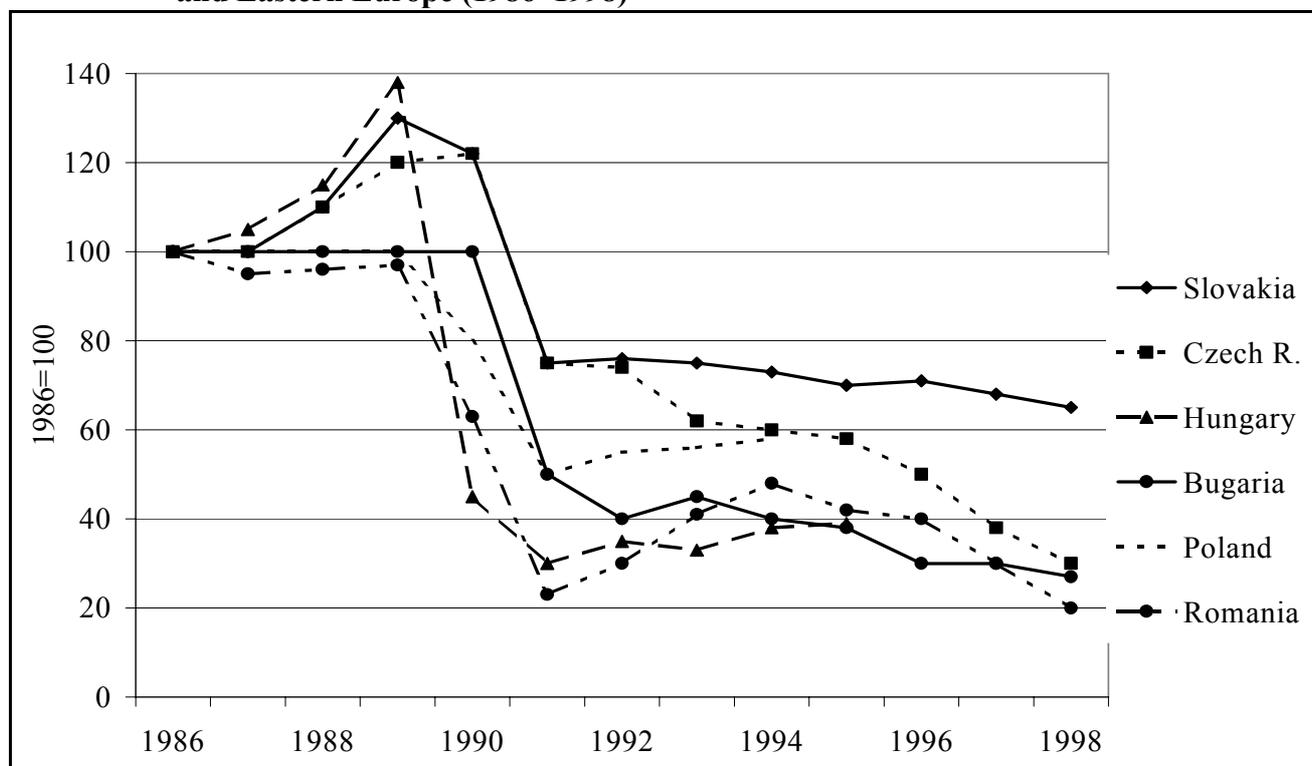


Source: BROOKS (1993, p. 419).

Historical developments have confirmed this expectation: Over the last ten years energy prices (electricity and fuel) in Ukraine have grown faster than average prices for industrial goods and much faster than prices for farm products (figure 7).

Figure 7: Price indices for selected products in Ukraine (1991-1999)

Source: STATE STATISTICS COMMITTEE OF UKRAINE (2000a) and (2000d); Own estimates.

Figure 8: Price indices for farm output and agricultural inputs in the countries of Central and Eastern Europe (1986-1998)

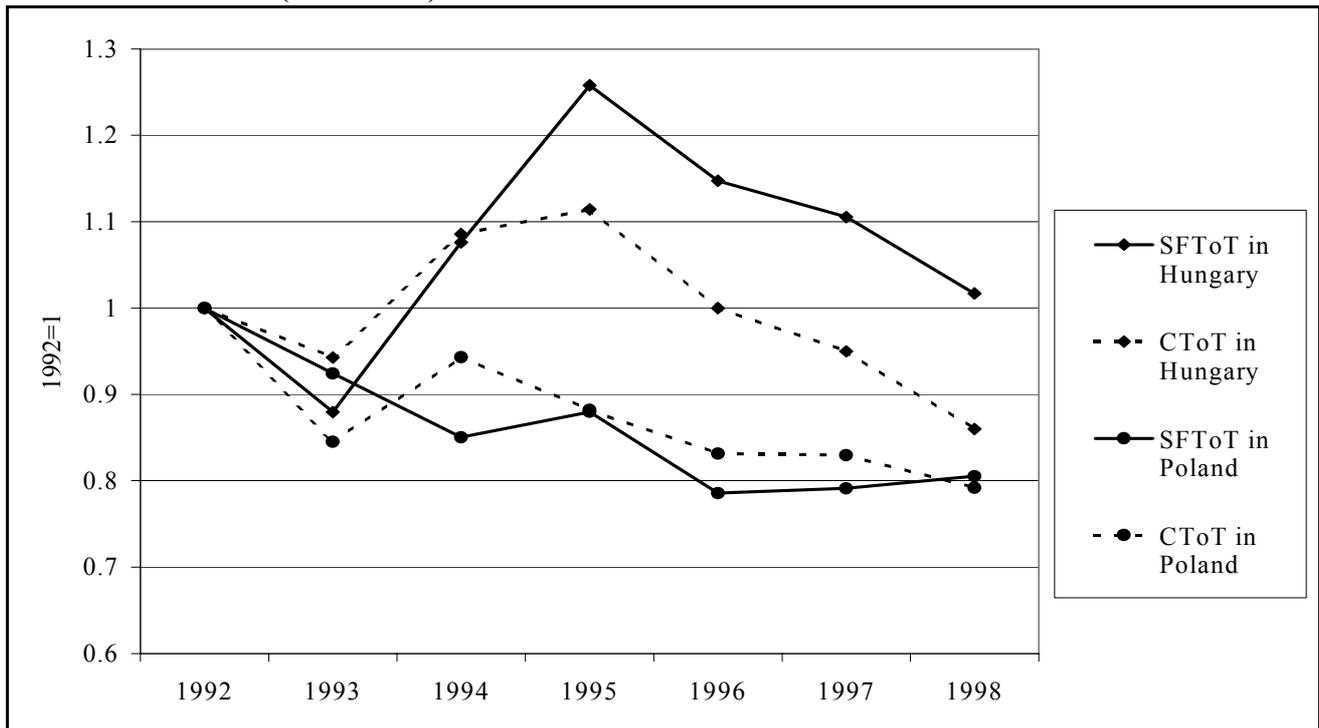
Source: SWINNEN (2000b).

In figure 7 we see, however, that the largest part of these shifts occurred quite rapidly in the early to mid-1990s, and that price developments have been much more moderate since then. The decline in agricultural CToT in Ukraine since Independence can therefore be divided into two main phases: first an initial 'shock' associated with the elimination of massive price distortions that had

been created under central planning in the former Soviet Union, and then a second phase of much more moderate decline/stagnation that more or less parallels developments in agriculture's CToT world-wide.

The first 'shock' phase of sharp CToT decline occurred not only in Ukraine but also in the Czech Republic, Hungary, Poland and other Central and Eastern European countries (see figure 8). In all cases, this shock was the inevitable result of the elimination of artificial distortions. According to estimates produced using data collected in eight Central and Eastern European countries, this initial decline in agriculture's CToT led to a decline in farm output of 40-50% in those countries over 1989-1995.

Figure 9: Commodity terms of trade and labour's factoral terms of trade in Hungary and Poland (1992-1998)



Source: ZMP (2000); OECD (1998); IMF (1997, 2000); STATISTICAL YEARBOOK OF REPUBLIC OF POLAND (various years).

By improving productivity, however, agriculture was able to adjust to the new economic conditions and resume growth in some of these countries (SWINNEN, 2000 (a)). This adjustment is shown in figure 9 for Poland and Hungary. In Hungary, for example, productivity grew dramatically due to a 50% reduction of labour use in agriculture (OECD, 2000; MACOURS & SWINNEN, 1998). Hence, while the CToT declined, labour's FToT declined much less and even increased in some countries.⁶

Indeed, as can be seen in table 2, gross agricultural output has been increasing in Hungary and Poland since the mid-1990s, while employment in agriculture has been falling. As a result, labour productivity in agriculture has been increasing in these countries. In Ukraine, all of these trends have run in the opposite direction. Trends in milk yields per cow and wheat yields per hectare (although the latter is subject to considerable year to year fluctuation due to weather conditions) have also been, if not clearly positive, much less negative in Hungary and Poland than in Ukraine. In essence, agriculture has responded to declining CToT in Hungary and Poland in the only way possible,

⁶ SWINNEN discusses these changes in chapter 1 *Ten Years of Agricultural Transition in Central and Eastern Europe: Some Lessons for Ukraine*.

by adjusting and improving productivity. In this regard, Ukrainian agriculture lags far behind and signs of structural adjustment and productivity increases are just beginning to emerge.

Table 2: Various indicators of agricultural development in Hungary, Poland and Ukraine (1989-1999)

	1989*	1994	1995	1996	1997	1998	1999
Gross agricultural output (1989-91=100)							
Hungary	102.7	71.7	70.8	76.0	78.3	78.2	75.6
Poland	101.7	77.9	83.8	87.9	85.0	91.2	87.8
Ukraine	107.1	72.2	69.6	63.1	61.9	56.7	52.6
Share of agriculture in economy (%)							
Hungary	15.6	7.1	7.1	6.9	7.0	6.0	5.2
Poland	12.9	6.9	6.9	6.4	5.5	4.8	4.0
Ukraine	25.2	15.0	14.6	13.1	12.1	11.2	11.4
Farm labour force (in 1,000 people)							
Hungary	742	631	610	590	570	551	550
Poland	5,200	4,837	4,756	4,673	4,590	4,506	4,492
Ukraine	4,957	4,743	5,267	4,972	4,994	5,028	4,932
Share of farm labour force in total employment (%)							
Hungary	17.9	8.9	8.2	8.3	8.1	7.8	7.5
Poland	26.7	27.1	26.9	28.1	28.9	27.3	27.3
Ukraine	19.5	20.6	22.2	21.4	22.1	22.5	22.6
Wheat yields (dt/ha)							
Hungary	52.4	46.1	41.7	32.9	42.1	41.4	35.9
Poland	38.5	31.8	36.0	34.6	32.1	36.2	35
Ukraine	40.2	30.3	29.7	23.0	28.3	26.5	22.9
Milk yields (kg/cow/year)							
Hungary	5,004	4,807	4,893	4,846	4,985	5,378	5,322
Poland	3,358	3,121	3,136	3,249	3,370	3,491	3,466
Ukraine	2,863	2,362	2,204	2,103	1,988	2,219	2,358
Labour productivity (agricultural GDP/farm worker (1994=1))							
Hungary	0.82	1.00	1.14	1.16	1.17	1.19	na
Poland	1.15	1.00	1.12	1.17	1.20	1.30	na
Ukraine	na	1.00	0.85	0.98	1.01	0.79	0.59

Note: * 1990 data for Ukraine; na = not available

Source: ZMP (2000); OECD (1998, 2000); IMF (1997, 2000); STATE STATISTICAL COMMITTEE OF UKRAINE; Own calculations.

Note that recent months have seen the advent of a third phase in post-Independence CToT developments in Ukraine. As a result of reductions in production, Ukraine is (in early 2001) no longer a net exporter of several key commodities (e.g. sugar and milling wheat) but rather a net importer. As a result, many domestic agricultural commodity prices in Ukraine have increased significantly.⁷ Indeed agriculture's CToT are better now in Ukraine than in Germany, despite the impact of the protectionist Common Agricultural Policy in Germany (see table 3)!

⁷ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

Table 3: Agricultural commodity terms of trade relative to diesel oil in Ukraine and Germany in November/December 2000

Product	ToT (kg agricultural product required to purchase one litre of diesel oil)		Ratio (ToT in Germany to ToT in Ukraine)
	in Ukraine	in Germany	
Slaughter pigs	0.33	0.49	1.51
Beef cattle	0.46	0.50	1.08
Dairy cattle	0.60	0.70	1.17
Eggs	2.10	7.23	1.41
Milk	1.80	1.88	1.04
Milling wheat	2.25	5.05	2.24
Rye	3.28	5.47	2.43
Maize	3.28	5.18	1.58
Barley	4.10	5.55	1.35
Potatoes	3.01	15.48	5.24
Rapeseed	2.47	3.04	1.23

Note: Quoted prices for diesel oil = 1.20 DM/t in Germany and 1.92 UAH/t in Ukraine; exchange rate 2.46 UAH/DM.
Source: ZMP: Osteuropa Agrarmärkte – Aktuell, 1/2001, p. 6. Own calculations.

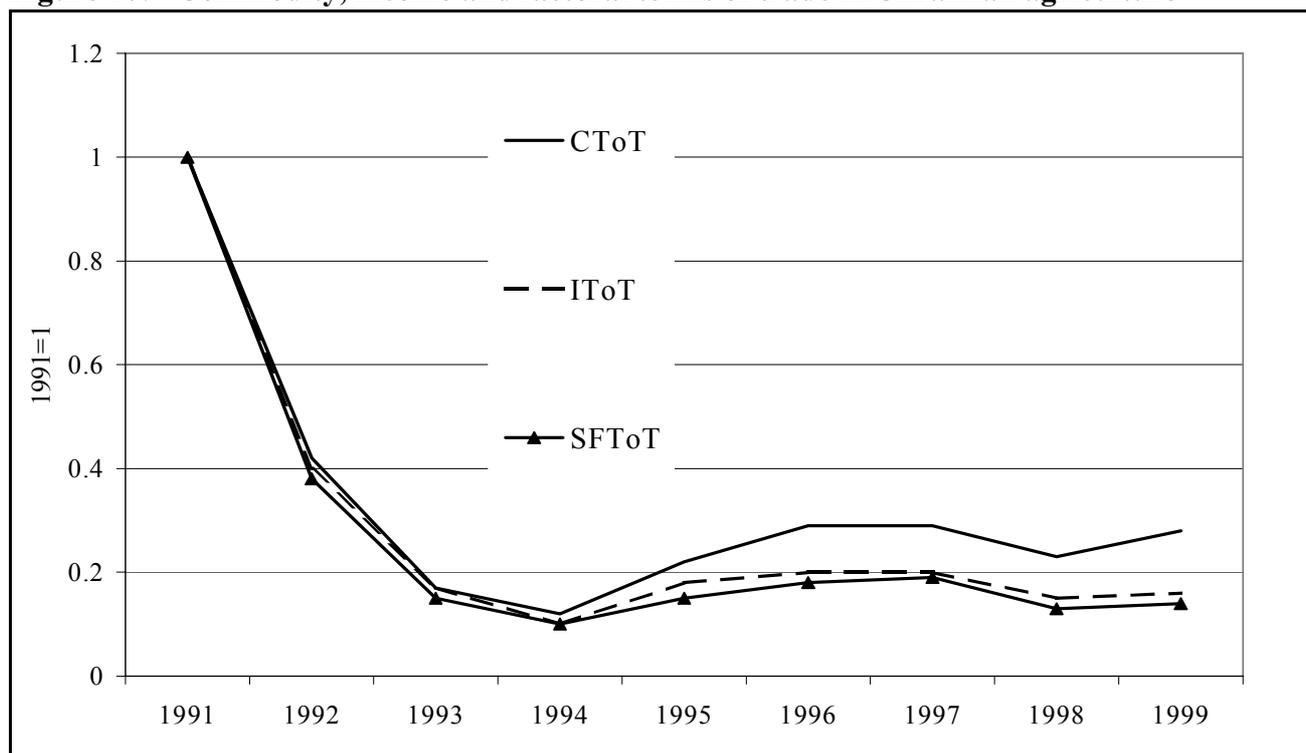
In table 3, CToT are calculated using producer prices for various agricultural products and diesel oil. It is clear that at present Ukrainian farmers enjoy significant ToT advantages over their German counterparts. For example, in order to purchase 1 litre of diesel oil a German farmer must 'spend' 2.2 times more milling wheat, 5 times more potatoes etc. than his Ukrainian counterpart.

In summary, it is true that over the first few years of the 1990s there were significant changes in relative prices which were surely not to the benefit of agriculture in Ukraine. But other Central European countries have witnessed similar changes in agricultural ToT, and, unlike Ukraine, have nonetheless managed to return to a path of agricultural growth. Furthermore, agricultural ToT have been declining world-wide for decades and there are objective economic and technical reasons to expect that this trend will continue. Finally, in recent months agricultural CToT in Ukraine have actually increased significantly, reaching levels that exceed those in the protected EU. Farms that are not profitable under these conditions cannot realistically expect conditions to improve even more; at the moment ToT are as good as they are going to get!

4.2 Factoral terms of trade and income terms of trade in Ukraine

Above we argued that the only way that agriculture can adjust to adverse CToT lies in enhanced productivity. In the following we demonstrate that this has so far failed to materialise in Ukrainian agriculture. The CToT merely measures price parity and is, therefore, only an indirect indicator of the purchasing power of a given sector. As pointed out above, the IToT and FToT are direct indicators of purchasing power. Figure 10 presents data on the development of all three types of ToT index for Ukrainian agriculture since 1991. Based on figure 10 the following conclusions can be drawn:

1. The argument that declining price parity for agricultural output in Ukraine, has alone caused the decline in agriculture cannot be correct since, as already mentioned above, most of the decline in the CToT index occurred early in the 1990s and this index has actually increased since 1999.
2. There is little indication that the productivity and efficiency of Ukrainian agriculture has increased (see also table 2 above). The relationship between the CToT, IToT and FToT curves since 1994 suggest that improvements in sectoral purchasing power have been due to price changes and not productivity improvements.

Figure 10: Commodity, income and factoral terms of trade in Ukrainian agriculture*

Note: * CToT parameter has been computed as a ratio between the farm output selling price indices and producer price indices for all industrial products. Indicators of the rate of growth of gross output and labour productivity in agriculture have been used to compute IToT and SFToT.

Source: STATE STATISTICS COMMITTEE OF UKRAINE (2000b, 2000c).

One might argue that the lack of productivity improvements in Ukrainian agriculture to date is due to the fact that the deterioration of price parity (CToT) has been so dramatic that farmers have been unable to escape its impact. For example, it is argued that farms are so cash-strapped that they cannot make the investments needed to improve productivity. Nevertheless, it should be pointed out that:

1. The experience of other post-communist countries shows that despite similar reductions in price parity for agricultural products, farmers have been able to increase productivity (Hungary to a larger extent and Poland to a lesser extent, see figure 9 and table 2).
2. Investment is not the only source of productivity enhancement in agriculture. Ukrainian farms are often poorly structured and poorly managed, and therefore fail to realise the potential that exists even in their current undercapitalised state. Tapping existing reserves would improve the productivity of many farms. Indeed, before any lender will be willing to supply a farm with credit, he or she will first want to see that farm management has proven able to tap these reserves.⁸
3. As demonstrated above the initial reduction in price parity for agriculture was due to an initial 'shock' caused by a dramatic reduction of state subsidies combined with price liberalisation. Even if the Ukrainian Government wanted to, there is no way it could provide agriculture with the volume of subsidies and support that existed in the early 1990s. Hence, it is an illusion to believe that price parity can return to the levels that prevailed then, and it is irresponsible to suggest that this is politically feasible.
4. Paradoxically, even though agricultural policy makers constantly talk about the need to improve parity, Ukrainian agricultural policy actually tends to further depress parity. For exam-

⁸ See chapter 4 on *Rural Finance in Ukraine – Extending the Frontier*.

ple, the oilseed export tax leads to reduced output prices for oilseed producers. In the past, export bans have depressed farm gate prices for grain. The lack of competition in the grain marketing chain has reduced farm revenues by billions of UAH over the years.⁹

5 Conclusions and Recommendations

5.1 Conclusions

1. There are many different indicators of terms of trade. Each has its merits but some can be misleading. To identify 'price disparity' for agricultural products in Ukraine, the commodity terms of trade indicator is most frequently used. It shows the simple ratio of price indices for agricultural output and industrial products. However, compared with other terms of trade indicators (income and factoral terms of trade) the commodity terms of trade indicator is a poor barometer of a sector's purchasing power and profitability.
2. The results of empirical studies of terms of trade dynamics in agriculture point to steadily declining of commodity terms of trade for agricultural products world-wide. Given the characteristics of supply and demand in agriculture, this is to be expected. Declining commodity terms of trade do not necessarily imply declining purchasing power or profitability of farms, however. By becoming more productive, farms can counteract the effects of declining terms of trade.
3. The commodity terms of trade of Ukrainian agricultural deteriorated dramatically over 1991-1993. This was the natural result of the removal of massive economic distortions that existed in the Soviet Union. However, in recent years, commodity terms of trade in Ukrainian agriculture have improved.
4. Terms of trade computed on the basis of income and factoral concepts have lagged behind the commodity terms of trade. This means that over the last 8 years, agricultural productivity in Ukraine has not improved significantly or even declined.

5.2 Recommendations

1. Agricultural price support policy is no solution to the problem of price disparity. Agricultural price support can provide farmers with temporary relief, but as the world-wide trend of declining agricultural commodity terms of trade continues, the state would have to provide progressively more and more price support just to keep farmers at a given level. Clearly, such a policy would quickly become prohibitively expensive.
2. While the Ukrainian government certainly cannot afford to provide significant price support to Ukrainian farmers, it certainly can take steps to reform policy measures that currently reduce agricultural terms of trade and, thus, tax farmers. The oilseed export tax is an example of an agricultural policy measure that directly reduces price parity for Ukrainian farmers.
3. Rather than trying to stem the inevitable tide of declining agricultural terms of trade, agricultural policy should be directed at healthy Ukrainian farmers to increase their productivity. Supporting the emergence of functioning land and rural credit markets, for example, would represent important steps in this direction.¹⁰

⁹ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

¹⁰ See chapters 4 on *Rural Finance in Ukraine – Extending the Frontier* and chapter 14 on *A Market for Agricultural Land in Ukraine*.

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7 *Price Determination and Government Policy on Ukrainian Grain Markets*

Stephan von Cramon-Taubadel

1 Introduction

Grains, especially wheat, play a central role in Ukrainian agriculture and agricultural policy making. Grain is considered ‘strategic’, and the size of the grain harvest is a barometer of conditions in agriculture. Since Independence, Ukrainian grain production has, subject to the usual annual fluctuations, fallen considerably. This has generated a great deal of concern, analysis and policy advice from within and without Ukraine, and it has also led to concrete policy responses. On July 29, 2000, for example, President Kuchma signed Decree No. 832 „On immediate measures to stimulate grain production and to develop the grain market” in Ukraine.

Coming after a period in which the Government of Ukraine had taken a number of very encouraging reform steps, some elements of this Decree were quite controversial. Grain traders and many bi- and multilateral donors were among the Decree’s most vocal critics. These critics were concerned that agricultural policy makers in Ukraine might be backtracking on their commitment to market-oriented reform of Ukrainian grain markets. On July 17, the Senior IMF Representative in Ukraine together with the Chief of the World Bank Office in Ukraine and the Ambassador of the United States of America in Ukraine, in a letter to the Deputy Head of the Presidential Administration Haidutskiy, stated that Decree No. 832 presents a ‘serious threat’ to the process of economic reform in Ukraine, and urged that this Decree be re-examined.

Representatives of the Government of Ukraine (GOU) and the Presidential Administration (PA) were equally adamant in arguing that Decree No. 832 is nothing more than a legitimate attempt to monitor and stabilise grain markets at a time when production is very low and food security may be at risk. It was argued that the „*grain market in Ukraine is currently completely out of balance*“ and that the „*majority of countries all over the world have their state programs for the stimulation of grain production and the improvement of grain markets...*“.¹¹

The grain market developments that led to the signing of Decree No. 832, as well as the reactions to this Decree, provide an excellent opportunity to study both grain markets in Ukraine (and in particular, price determination on these markets) and policy makers’ understanding of how these markets function. In the following we analyse recent developments on grain markets in Ukraine against the background of Decree No. 832. We begin by discussing how Decree No. 832 was prepared and launched. We then consider the current situation on Ukraine’s grain market and prospects for its future development, including some simple forecasts of future grain price development. We close with policy recommendations.

2 The timing and transparency of Decree No. 832

Decree No. 832 came as a complete surprise to most, if not all, actors on Ukraine’s grain markets. It caught farms, input suppliers and grain traders off guard, and it appears to have caught most, if not all, of the GOU off guard as well. It completely by-passed institutions such as the *Commission for Agrarian Policy of the President of Ukraine* that were created with the express purpose of creating a forum for dialog and increased policy co-ordination and transparency.

Decree No. 832 was signed on June 29, 2000 as the grain harvest in Ukraine was entering full swing. It included, *inter alia*, a provision for export certification that immediately caused con-

¹¹ GOVERNMENT OF UKRAINE (2000).

cern on the part of grain traders.¹² Representatives of the GOU and the PA argued that this provision is not meant to control the grain trade. Instead, it is intended to help monitor the grain trade by forcing traders to quote ‘actual rather than reduced prices’ and by reducing the volume of barter transactions.¹³ Furthermore, Ukrainian policy makers pointed out that the actual implementation of this provision was, in fact, rather innocuous: export certification only cost some 30-40 US\$/t in 2000, and while certification had to be obtained from an accredited exchange, it apparently could be obtained for contracts that were not concluded on one of these exchanges.

These arguments missed an crucial point, however. When Decree No. 832 was released, traders had no way of knowing exactly how the export certification provision would be implemented in practice. Recall that in four consecutive years prior to 2000, grain traders in Ukraine were regularly confronted with export restrictions. These generally took the form of bans on the movement of grain across oblast and international borders. It is well documented that the GOU’s reaction to these bans was an ambiguous mixture of official reprimands and thinly veiled encouragement for the local authorities in question. In view of this history, it is perfectly understandable that many observers were very concerned that Decree No. 832 was simply a pretence for renewed state interference on Ukrainian grain markets in 2000.

In this connection, recall that in early 2000, the GOU had announced that it would not supply farms with inputs. Furthermore, in March 2000 Law No. 1565 “On the depreciation of taxes and other dues” cancelled practically all farm debts to the state. Together these steps implied that the GOU would not interfere with the grain harvest in 2000, since without having supplied farm inputs and without having to collect old farm debts the state would have no legitimate claim on farm output. For those who had experienced four years of regional bans on grain movement, these steps were welcome evidence of a new commitment to substantive agricultural reform. Indeed, for some observers these steps were almost too good to be true. In the course of 2000 many sceptics were actually expecting that agricultural policy makers in Ukraine would, somehow, find an excuse for interfering in grain markets. The timing and the vague wording of Decree No. 832 were ideally suited to confirming these fears.

Furthermore, while Decree No. 832 gave the Cabinet of Ministers two weeks from June 29, 2000 to implement export certification procedures, actual implementation took considerably longer. As late as September 2000, traders were reporting that customs officials were holding up export consignments because they had not received clear instructions on what constitutes appropriate certification. Moreover, while Decree No. 832 explicitly forbid “*restrictions on the interregional purchase of grain*”, such restrictions were commonplace nonetheless.¹⁴

In other words, Decree No. 832 clearly did lead to much uncertainty and some disruption of the grain trade in Ukraine just as the harvest was coming in and farms, input suppliers and traders were hoping to conclude transactions. For a country that was trying to convince the world that it is seriously committed to substantial agricultural reform – and this in an atmosphere of mistrust fostered by four years of state sponsored market disruption – the timing of Decree No. 832 was ill-advised and unnecessarily damaged Ukraine’s credibility in the area of agricultural policy reform.

What conclusions might be drawn for the future? Even if we accept the argument that export certification is required to help monitor and stabilise grain markets, Decree No. 832 should have been proposed and subjected to debate at least several month prior to June 29, 2000. In this way, and by involving bodies such as the Association of Agrarian Entrepreneurs and the Commission for

¹² The Cabinet of Ministers is called upon “*to implement a procedure under which the export of grain is done only through export contracts concluded and registered at commodity exchanges that are accredited...*”.

¹³ GOVERNMENT OF UKRAINE (2000).

¹⁴ Detailed lists of examples of interference in the movement of grain were compiled by the *Commission for Agrarian Policy of the President of Ukraine*. The extent of interference in grain marketing in 2000 was, however, less than in earlier years.

Agrarian Policy of the President of Ukraine, Ukrainian policy makers could have allowed for an open dialog on the pros and cons of certification (and of the other provisions of the Decree that are discussed below). Open dialog and debate involving all interested parties is a vital element of the democratic process in market economies; it does not guarantee that everyone is pleased with policy outcomes, but it does ensure that the policy process is seen as participatory and not as an arbitrary source of added risk for citizens and enterprises.

Tabling the Decree earlier in the year would also have made it possible to agree on the details of the implementation of export certification before rather than after its signing. Rather than plunging grain markets into turmoil at a critical moment, and rather than providing those who are cynical about Ukraine's commitment to agricultural reform with ammunition, policy makers could have demonstrated that Ukraine's policy process is open and transparent.

It might be argued that Decree No. 832 could not have been introduced earlier because it represented a reaction to the unexpectedly low grain harvest in 2000. This argument is not convincing. First, it was been clear at least since the spring of 2000 that the 2000 grain harvest would be no higher than in 1999, and probably lower.¹⁵ Second, Ukrainian policy makers defend Decree No. 832 and in particular the introduction of export certification by pointing to the need to avoid a repetition of events in 1999, when large quantities of grain were exported immediately after the harvest, leading to import demand in subsequent months. Even if export certification were an appropriate response to this phenomenon (it is not – see below), since this phenomenon had been well documented by the end of 1999, steps to avoid its repetition in 2000 could have been introduced much earlier than June 29.

3 Price determination on Ukrainian grain markets and the need for market regulation

The export certification provision of Decree No. 832 generated the most immediate concern in mid-2000. However, Decree No. 832 also included provisions for the introduction of a system of so-called 'pledge prices' to stabilise grain prices in Ukraine as well as provisions for enhancing the role of Khlib Ukrainy as a state agent on Ukrainian grain markets.

Along with the issue of export certification, these provisions of Decree No. 832 were and remain the focus of much debate. They reflect the fundamental conviction on the part of most agricultural policy makers in Ukraine that grain (and other agricultural commodity) markets must be regulated because the free play of market forces alone will lead to undesired outcomes.

In the following, the principles of price determination on Ukrainian grain markets will be outlined against the background of the key provisions of Decree No. 832. The aim is not simply to illustrate that some aspects of this Decree may have been ill-advised, but rather to illustrate that many undesired outcomes such as price instability on Ukrainian grain markets are not the result of unfettered markets or a lack of regulation. Instead, the opposite is true: Many of these outcomes are actually a product of the GOU's failure to effectively deregulate agricultural markets.

3.1 Export certification

As stated above, some agricultural policy makers in Ukraine argue that Decree No. 832 was necessary to avoid a repetition of events in 1999, when grain was exported at low prices immediately following the harvest, and then imported later in the year at much higher prices. There is no denying that this phenomenon was observed in 1999, and many Ukrainian analysts conclude that it

¹⁵ See for example GERMAN ADVISORY GROUP (2000). In this paper, released at the end of March 2000, we suggest that the GOU should publish more realistic harvest forecasts, and we expressly warn against using a low grain harvest in 2000 as an excuse for renewed government interference.

runs counter to Ukraine's national interests. At first glance this seems logical; why should a country export so much today that it is obliged to import tomorrow?

What is often overlooked is that the phenomenon of export followed by import is a perfectly rational response to excessive storage costs in Ukraine. It is true that traders could store rather than export grain in the fall, thus eliminating the need to import grain in the following spring and early summer. But it is well known that grain storage in Ukraine is very costly. Storage costs include the physical costs of handling grain in elevators, the opportunity cost of the capital that is tied up in grain stocks and the costs of quality and quantity losses in storage. Storage costs also include a risk premium that measures a trader's uncertainty regarding whether or not he will have free access to 'his' grain when he needs it.

All of these costs are much higher in Ukraine than in most other major grain producing countries. Ukraine's grain handling infrastructure is old and inefficient, and storage losses are high. Elevators in Ukraine often exercise their local monopoly power by charging very high prices for storage. Since interest rates in Ukraine are high, the opportunity cost of the capital tied up in grain stocks is also high by international comparison.¹⁶ Finally, storing grain in Ukraine is risky; stories abound of traders being denied access to their grain, of traders being given grain of a different quality and quantity than they had originally put in storage, etc.

In this environment, exporting today and importing tomorrow can make a lot of sense. In essence, when traders behave like this they are signalling that it is cheaper to 'store' Ukrainian grain abroad – by first exporting and then later importing – than it is to store Ukrainian grain in Ukraine.¹⁷ It is easy to accuse traders of being rapacious and irresponsible when this happens, but the real problem is that Ukraine's grain storage system, like its entire grain marketing system, remains monopolistic and inefficient.

Note also that it is not uncommon that a country both export and import the same commodity. This can be due to quality differences (the EU is a net exporter of feed barley but nevertheless imports malting barley) but also geography and transport costs. Hence, China often imports and exports grain simultaneously because it is easier to supply large coastal cities such as Shanghai by sea than from the Chinese hinterland, even as exports leave the country elsewhere.

Especially the latter argument might apply in the case of Ukraine: Given the high cost and general unreliability of grain transportation in Ukraine, it could be that supplying some parts of Western Ukraine with imported grain from Hungary, for example, and simultaneously exporting corresponding amounts of grain from South and Central Ukraine to third countries *via* Black Sea ports, is less expensive than shipping grain across Ukraine from South and Central regions to the West.¹⁸ This might remain true even if grain transportation in Ukraine were to become less expensive and unreliable. Transactions of this sort, referred to as 'intra-industry trade' are not uncommon in international trade in agricultural commodities today.

Ukrainian policy makers also defend export certification by pointing out that Ukrainian grain prices are highly volatile and arguing that this is due to uncontrolled speculative behaviour by traders. It is true that grain prices in Ukraine have fluctuated considerably in recent months. But what are the true causes of grain price volatility in Ukraine?

Two important causes are fluctuations in exchange rates and world market prices. Although the grain market in Ukraine is far from being completely liberalised, world market prices for grain do have an important impact on grain prices in Ukraine. Figure 1 shows that between the beginning

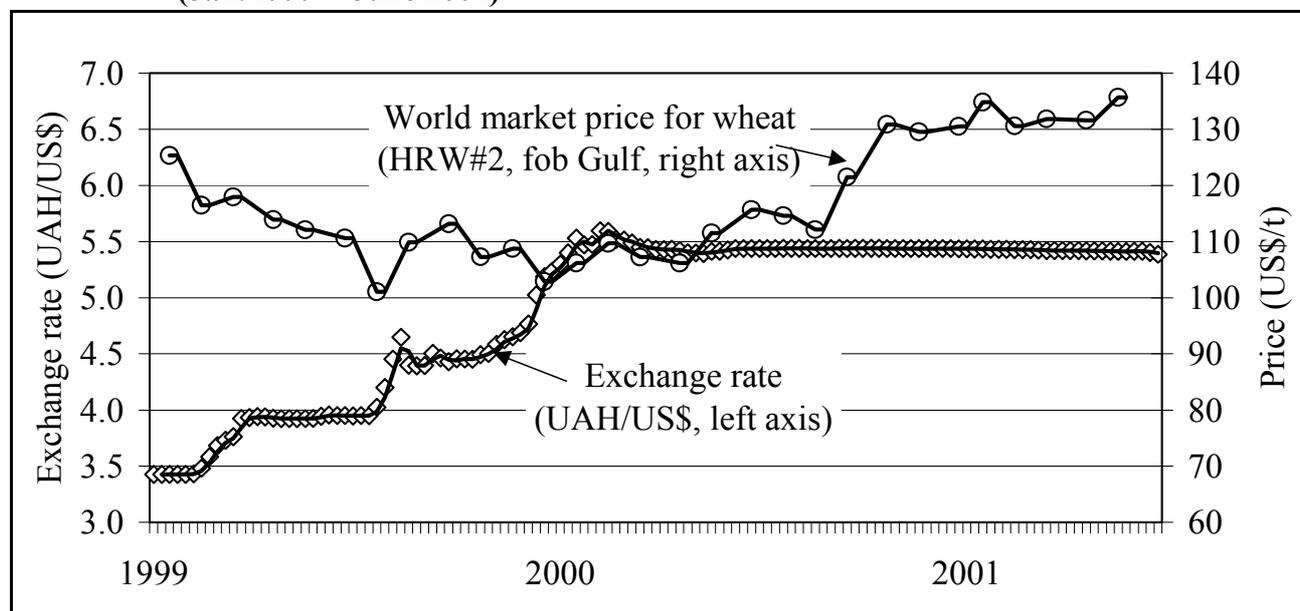
¹⁶ For example, a trader who stores 100,000 t of grain for 6 months in Ukraine has, at current market prices of 800 UAH/t, effectively tied up 80 mUAH for half a year.

¹⁷ Of course, the grain that is imported later is not the same grain that was exported months earlier. Ukrainian grain is only being 'stored' abroad in a figurative sense.

¹⁸ See chapter 10 on *Regional Agricultural Trade in Ukraine*.

of 1999 and today, the world market price for wheat has varied between roughly 100 and 135 US\$/t, falling in 1999 and strengthening in the course of 2000. While prices denominated in US\$ were falling in 1999, however, the Hryvnia devalued almost 37% *vis-à-vis* the US\$, from roughly 3.4 to roughly 5.4. Since the end of 1999, the UAH/US\$ rate has remained more or less constant at around 5.4.

Figure 1: The world market price for wheat and the UAH/US\$ exchange rate (Jan. 1999 – June 2001)



Source: UKRAGROCONSULT (various issues); USDA; Own calculations.

If we combine these two series of data we see that the world market price for wheat (FOB Gulf) expressed in UAH has increased from roughly 400 UAH/t in early 1999 to almost 740 UAH/t today (figure 2). In the course of 1999 alone, the world market price increased by almost 150 UAH/t due to exchange rate effects that overrode the slight decrease in US\$ terms. In 2000, the UAH/US\$ exchange rate remained more or less constant but the world market price for grain increased. Therefore, a large share of the grain price instability on Ukrainian markets is due to world market price and exchange rate fluctuations that have nothing to do with the behaviour of traders.

A second important cause of grain price instability on Ukrainian markets are the inflated marketing costs that were mentioned above in conjunction with storage. The German Advisory Group first demonstrated over 5 years ago that grain marketing costs in Ukraine are very high by international standards and that this reduces the so-called 'farm gate' prices that Ukrainian producers receive for grain.¹⁹ In late 1998 the German Advisory Group updated its analysis and provided evidence that while farmers in Germany receive a price that is equivalent to roughly 70% of the FOB export price for German grain, farmers in Ukraine receive only roughly 40% of the corresponding Ukrainian FOB price.²⁰ This difference between 70 and 40% represents a tax on agricultural producers in Ukraine that largely accrues to inefficient monopolists who provide storage, handling and transportation services.²¹

Up to the year 2000, inflated marketing costs lowered grain prices in Ukraine because Ukraine was a net exporter of grain and exporters subtract marketing costs from the world market price when calculating the farm gate price that they are prepared to pay Ukrainian producers. This

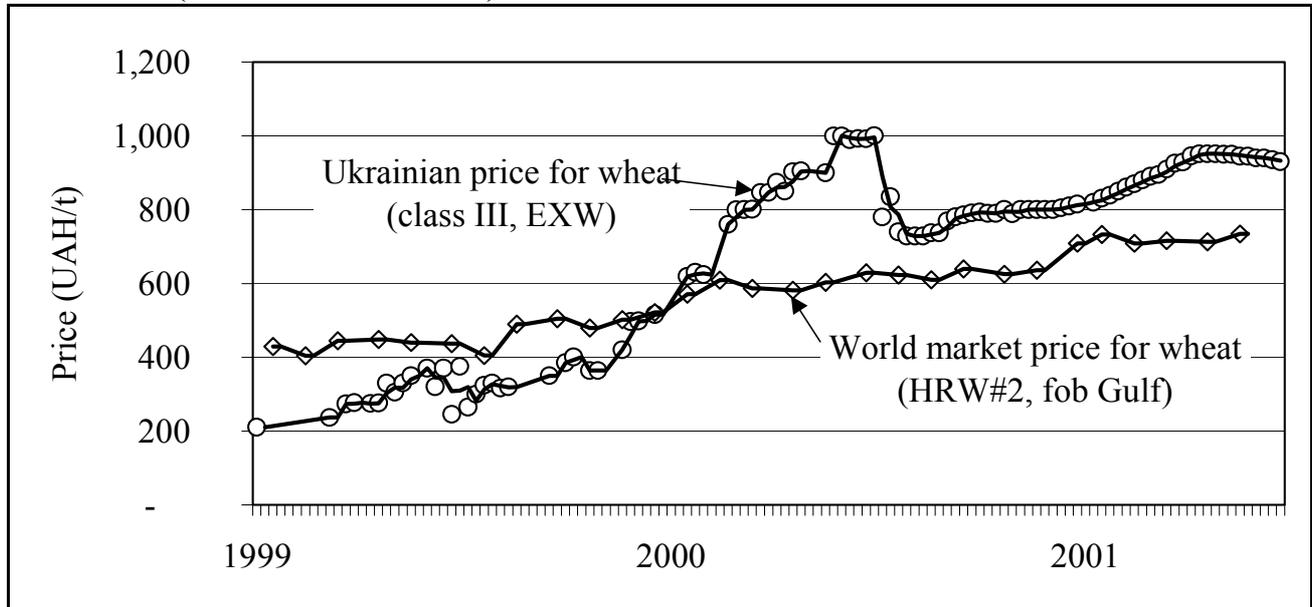
¹⁹ See GERMAN ADVISORY GROUP (1996).

²⁰ See GERMAN ADVISORY GROUP (1998).

²¹ See chapter 10 on *Regional Agricultural Trade in Ukraine* for an estimate of the impact that this tax has on farm earnings in Ukraine.

situation changed when Ukraine began to import grain in early 2000. In an import situation, traders buy grain on the world market and move it to consumers in Ukraine. In so doing, they are obliged to use the same inefficient marketing system that they use when they export, but in the opposite direction. Clearly, if an importer is going to make any profit at all, he will have to charge consumers in Ukraine a price that is at least equal to the sum of the world market price plus the cost of moving grain from the harbour to consumption centres.

Figure 2: Wheat price developments on the Ukrainian and world markets (Jan. 1999 – June 2001)



Source: UKRAGROCONSULT (various issues); USDA; Own calculations.

Hence, inflated marketing costs are subtracted from world market prices in an export situation, but they are added to world market prices in an import situation. When Ukraine shifted from an export to an import situation in early 2000, domestic grain prices rapidly increased by an amount that is equal to roughly twice the cost of moving grain from farms to world markets, or *vice versa*. Since this cost is exceedingly high in Ukraine, the jump in domestic prices was high as well. This is illustrated in figure 2. Prior to early 2000, domestic prices in Ukraine were considerably lower than world market prices due to the marketing cost ‘tax’ on Ukrainian producers. Since early 2000 domestic prices have been considerably higher than world market prices due to the corresponding marketing cost ‘tax’ on Ukrainian consumers.

Inspection of figure 2 reveals that while domestic prices were, on average, some 150 UAH/t below the world market level in the export situation prior to early 2000, at times they have been considerably more than 150 UAH/t above the world market level in the import situation since. This can be explained by the import duty of 40 Euro/t on grain imports. This represents a further cost – in addition to the cost of the grain itself and the cost of moving it to consumers in Ukraine – that traders must charge consumers when they sell imported grain.²²

What are the implications for Ukraine’s grain market policy in general and Decree No. 832 in particular?

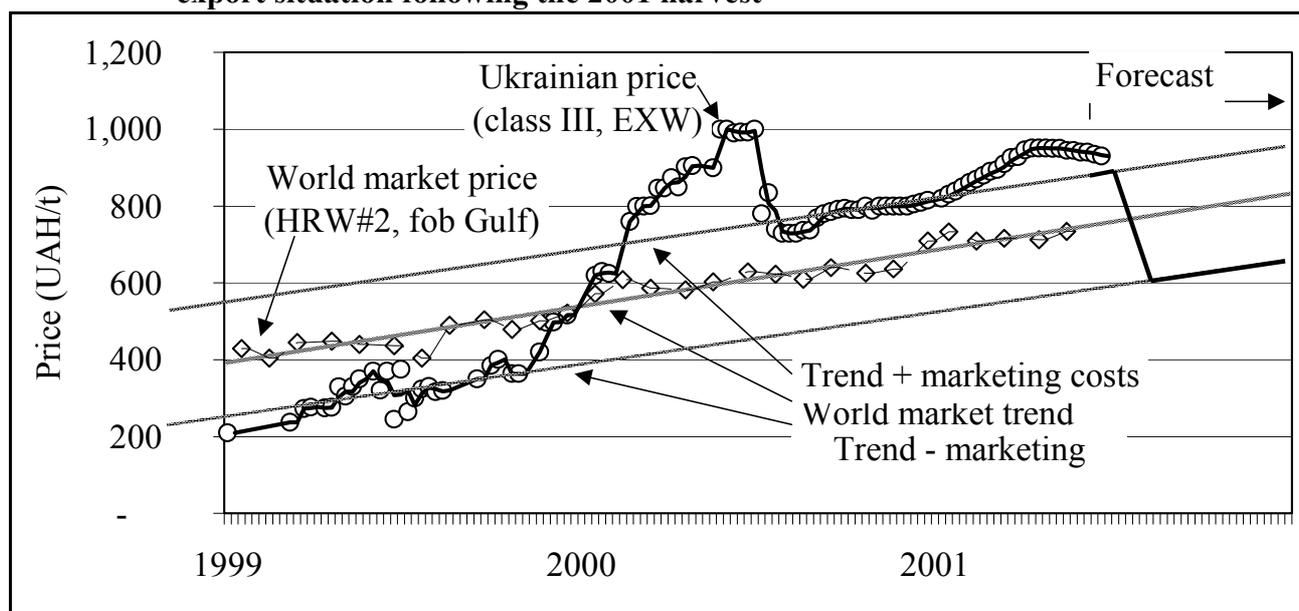
- First, price fluctuations on domestic grain markets in Ukraine since the beginning of 1999 have been partly caused by the devaluation of the Hryvnia, partly by inflated marketing

²² The impact of this import duty on domestic prices is not uniform, however, because not all importers are required to pay it. Chapter 9 on *Who Gains and Loses - Import Tariffs and Tariff Rate Quotas for Sugar and Grain in Ukraine* explores the implementation and impact of import duties in Ukrainian agriculture.

costs, and partly by import duties for grain. The first of these factors is the result of the financial crisis in late 1998, which can be traced to inappropriate macro-economic policies and a lack of structural reform by the GOU. The latter two factors are the direct result of inaction and action, respectively, on the part of agricultural policy makers in Ukraine. In other words, almost all of the price volatility that has been observed on Ukrainian grain markets since the beginning of 1999 can be attributed to Ukrainian policy makers. None of this volatility is due to irresponsible behaviour on the part of traders. Hence, it can be argued that by imposing export certification, policy makers are penalising others for their own mistakes.

- Second, in the years since Independence, far more could have been done to increase competition and curtail the abuse of monopoly power in the grain marketing chain in Ukraine. Failure to take the appropriate steps, together with other missing reforms, led to a dramatic decline in Ukrainian grain production since 1991 and, nine years later, to the net import situation in 2000. Together with the shift to a net import situation, inflated marketing costs have proven particularly destabilising, contributing to a rapid increase in grain prices and fuelling fears of food insecurity. If the marketing margin in Ukraine was one-half of its current size, which would bring it in line with international standards, wheat prices in Ukraine would have been some 100 UAH/t higher than they were prior to early 2000, and some 100 UAH/t lower after. This would have stabilised prices considerably. Export certification is a poor substitute for reforms that have been avoided for years.

Figure 3: The possible development of wheat prices in Ukraine given a return to a net export situation following the 2001 harvest



Source: UKRAGROCONSULT (various issues); USDA; Own calculations.

For the future, as soon as Ukraine returns to a net export situation, grain prices can be expected to plunge by an amount that is equal to twice the marketing margin. As this is being written (June 2001), the 2001 harvest is about to begin, and it appears certain that this harvest – which is forecast between 30 and 35 mill. t. by various analysts – will indeed return Ukraine to a net export situation. Figure 3 is a schematic depiction of what might be expected to happen as a result.²³ We see that prices could drop by some 300 UAH/t as the next harvest is brought in. If prices were to fall more in percentage terms than the harvest increases, producers could very well end up with less

²³ In figure 3 it is assumed that the world market price denominated in UAH/t continues to follow the trend of the last 30 months. Departures from this trend could occur due to changes in the world market price in US\$, due to changes in the UAH/\$ exchange rate, or due to a combination of both. At the moment none of these appears likely, although conditions could change quickly.

revenue in 2001 than 2000, despite an improved harvest! This instability has nothing to do with the behaviour of traders; it is entirely the result of a lack of effective reforms in the Ukrainian grain marketing system that is responsible for a) Ukraine's shift to a net import situation in 2000, and b) inflated marketing costs.²⁴

3.2 *Pledge prices and Khib Ukrainy*

Decree No. 832 also included provisions for the implementation of a so-called 'pledge price' system. This has obviously been modelled on the US 'loan rate' system for grains whereby farmers can deposit grain with state authorities in return for a payment equal to the loan rate ('pledge price' in Ukraine) and at a later date decide to either keep this payment and forfeit the grain, or to return the payment in return for their grain. In its defence of the Decree the GOU points out that many countries have similar "state programs for the stimulation of grain production".²⁵

There are several reasons why the GOU should be wary of implementing such a system. First, while it is true that other countries have employed similar measures, there is a clear trend away from agricultural price support world-wide. The EU, for example, reduced its support prices for grain by 30% over the mid-1990s and will reduce them a further 15% by 2002. At the moment, EU grain prices do not differ significantly from world market prices – i.e. there is almost no price support for grain in the EU at the moment.²⁶ The main reason for this trend away from price support are WTO commitments that were agreed to at the end of the Uruguay Round in 1993.²⁷ Ukraine would like to become a WTO member, and introducing a price support system now would only burden negotiations that are moving very slowly as it is.

Second, Ukraine cannot afford the expense of a truly effective price support system for grain, especially given that this expense is impossible to predict and could increase very rapidly. As discussed above, grain prices in Ukraine are volatile and can be expected to remain so. Given this volatility, what is a 'reasonable' pledge price for grain? Looking at price developments in recent months, one might be tempted to choose a level of perhaps 700 or 800 UAH/t for 3rd class wheat. Certainly, farmers have become accustomed to prices above this range in recent months. If the next harvest returns Ukraine to a net export position, however, prices will probably drop below this level (see above). If the GOU were forced to purchase only 2 mill. t of grain at a price that is just 50 UAH/t higher than the price at which this grain can be resold, costs of 100 mUAH would result.²⁸ Any government that operates a pledge price system is essentially engaging in speculation regarding future harvests, exchange rate developments and world market price changes. With so many possible 'safe' investments to choose from (for example in education, research, and infrastructure development) why should the GOU risk its scarce budgetary resources on speculation?

Of course, it might be argued that the pledge price will never be set as high as 700 or 800 UAH/t. Since the GOU is committed to a balanced budget, the amount of budgetary funding that could be directed towards a pledge price system is limited. Hence, the pledge price could be set at a 'safe' level that is unlikely to result in any significant purchases. Note that the pledge price for 3rd class wheat has, in fact, be set at 430 UAH/t. Prices are currently in the neighbourhood of 900

²⁴ We first made the forecast in figure 3 in November 2000. In the seven months since, prices have behaved as predicted. The real test of this forecast, however, will come with the harvest in July-August 2001. In June 2001, various Ukrainian authorities – including the Minister of Agriculture – stated that wheat prices could be expected to drop to 600-700 UAH/t following the coming harvest, in complete agreement with our forecast.

²⁵ See footnote 1.

²⁶ This does not mean that grain producers in the EU receive no support whatsoever. Since the mid-1990s they receive fixed payments per hectare of cropland. In principle, this form of producer support creates less economic distortions than price support.

²⁷ See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*.

²⁸ Note that according to one high-ranking advocate of Decree No. 832, purchases of 5 mill. t of grain would be sufficient to stabilise the grain market in Ukraine.

UAH/t (figure 3), and even if the forecast made above is correct, prices cannot be expected to fall as low as 430 UAH/t. Interestingly, it was recently announced that Khlib Ukrainy intends to purchase between 1.5 and 2 mill. t. of grain at the pledge price.²⁹ What farmer is going to voluntarily deposit 3rd class with a state agency in return for 430 UAH/t and the promise that this grain can be reclaimed in exchange for the 430 UAH/t at some future date, especially when the market price is much higher than 430 UAH/t and very likely to remain so? Or is Khlib Ukrainy confident that not all farmers will be in a position to choose freely?

In summary, the GOU cannot afford to set the pledge price at a level that provides meaningful support to farmers, and no farmer is going to want to take advantage of a pledge price that is so low as to provide no or even negative support. Since the pledge price has been set at a low level, and since state agents such as Khlib Ukrainy nonetheless plan to purchase at this price, could it be that some farmers will be forced to ‘pledge’ their grain following the coming harvest? Farmers have been forced to part with their grain at below market prices in the past in Ukraine – by means of regional export bans, certification practices, confiscation and the like. As the 2001 harvest begins, are we going to see a return to the practices of 1996 to 1999, when state intervention was used to ensure that a selected few made fabulous profits at the expense of Ukrainian farmers and Ukrainian agriculture?

Khlib Ukrainy was chosen as the state agent for the pledge price system because of its “existing material basis, infrastructure [and] experience on the grain market”.³⁰ The choice of Khlib Ukrainy raises several questions and concerns:

- First, in past negotiations with international donors, the GOU has made unequivocal commitments to privatise Khlib Ukrainy. This has not taken place. Providing Khlib Ukrainy with additional powers and responsibilities would appear to contradict these commitments.
- Second, the fact that other countries – such as Canada and Australia – have state grain trading agencies (the so-called ‘Wheat Boards’) is no justification for providing Khlib Ukrainy with new powers. The Wheat Boards in Canada and Australia do not implement pledge purchase systems (there are no such systems in Canada and Australia); the powers and responsibilities of the Wheat Boards in Canada and Australia have been significantly reduced in the last decade; and state trading agencies such as the Wheat Boards are going to be subject to very careful scrutiny in the coming round of WTO negotiations (it is likely that their powers will be reduced even more). Like price support, state trading agencies are policy tools of decades past. Why should Ukraine insist on travelling the same ‘dead-end’ agricultural policy roads that have proven so costly elsewhere?
- Finally, Khlib Ukrainy has a mixed reputation, to say the least. While it is true that Khlib Ukrainy does have significant ‘experience on the grain market’, this experience has not only been good. In the years since it began operation, Khlib Ukraine has amassed significant debts. In February 2000, the Court of Auditors of Ukraine reported that as of October 1, 1999, Khlib Ukrainy owed the state budget almost 1,26 bUAH.³¹ Khlib Ukrainy also owes money to Bank Ukraina (Khlib Ukrainy is this bank’s largest debtor). Bankruptcy proceedings were filed against Khlib Ukrainy in the summer of 1998; these proceedings are essentially suspended, however, because Khlib Ukrainy is – formally – in the process of privatisation. Finally, in 1998 Khlib Ukrainy was fined by the Anti-Monopoly for abusing monopoly power “*in the regional services market in grain procurement, processing and storage in Dnipropetrovsk oblast, Luhansk oblast, Lviv oblast, Mykolayiv oblast, Kharkiv oblast, Kher-*

²⁹ *Khlib Ukrainy* (Bread of Ukraine) is a state holding company that controls a large share of Ukraine’s grain storage and handling infrastructure, including many of the most important facilities (elevators etc.). According to Decree No. 832, Khlib Ukrainy will be the “state agent to ensure the state pledge purchase of grain”.

³⁰ See footnote 1.

³¹ See Rechnungshof der Ukraine (2000).

son oblast and Cherkassy oblasts".³² In other words, Khib Ukrainy is one of the inefficient monopolists in the grain marketing chain in Ukraine that were referred to in section 3.1 All in all, this is not a record that inspires confidence in Khib Ukrainy's competence as a major player on grain markets.

4 Policy recommendations

Decree No. 832 has demonstrated the importance of creating a transparent, participatory policy process. Future decrees should be tabled in draft form early enough to permit interested parties to inform themselves and develop and present their opinions.

Decree No. 832 has also demonstrated the importance of timing. Releasing a vaguely worded decree that calls for export certification just as the grain harvest is beginning is bound to create uncertainty. Regulations that affect grain markets in a given year should be finalised at least prior to the corresponding spring fieldwork, and preferably prior to the corresponding fall fieldwork, so that farmers, input suppliers and traders know the 'rules of the game' in advance.

Appropriate policies must be based on an accurate understanding of market conditions and market mechanisms including price determination. Traders did not cause the low harvest in 2000, nor are they responsible for grain price fluctuations in recent years. Declining production is a result of years of government interference in input supply and grain marketing prior to 2000. Recent grain price fluctuations have been caused primarily by exchange rate movements amplified by the shift from a net export to a net import position in Ukraine. This amplification would have been much weaker if the GOU had taken steps to improve the efficiency of the grain marketing chain in the past, and if had not imposed import duties for grain.

Based on an accurate diagnosis (see above) the GOU should concentrate on policy measures that are effective and feasible. Export certification does not address the true causes of declining production and instability. And Ukraine cannot afford a costly pledge price system and the speculation that it implies.

If we assume that Ukraine will return to a net export situation for grain in 2001, then domestic grain prices can be expected to fall considerably following the next harvest. The best way to limit this fall is to improve the efficiency of the grain marketing chain. Strengthening the role of Khib Ukrainy is counterproductive in this regard; Khib Ukrainy is one of the most important causes of inefficiency in Ukraine's grain marketing chain, not part of the solution.

The only way to improve the performance of the grain marketing chain is to open it to competition. Private investors, domestic and foreign, must be permitted to gain controlling interest of existing grain elevators (including those still owned by Khib Ukrainy), terminals and harbours and/or to build new facilities wherever they see fit. The list of facilities that are exempt from privatisation must be drastically shortened. The ban on barriers to the free movement of grain within Ukraine, for example at oblast borders, must be enforced with rigour.

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8 *Promoting Food Security in Ukraine*

LUDWIG STRIEWE, VICTORIA GALUSHKO & STEPHAN VON CRAMON-TAUBADEL

1 Introduction

At the beginning of the 21st century Ukraine is once again plagued by the problem of under-nutrition and hunger. A large part of the population cannot afford to buy enough food for an active and healthy life, and some have to rely just on bread and tea and are falling short of a sufficient caloric intake. However, the current situation differs greatly from the Soviet-style food shortages when the USSR was experiencing poor harvests and had to import grain, as in the early seventies. As will be argued in this paper, it is not food availability which is the current problem but rather the impoverishment of large parts of the population. Many Ukrainians spend more than two thirds of their income on food. Hence, they are hardly able to buy other necessities such as clothing or medicine. The impoverishment of a large part of the population and the accompanying worsening nutritional status of so many is one of the most challenging problems in Ukraine and needs to be remedied urgently. Without a doubt, this problem is also of an ethical nature. It is generally accepted in most societies that sufficient food is a human right.

When malnutrition and under-nutrition are not acknowledged, a country's political stability can be endangered. Certain political groups in Ukraine already complain that it was the reform process that gave rise to the falling living standard and the increasing income inequalities. They refer to the 'golden age' of the USSR when everybody could afford to buy at least all necessary staple foods, and they claim that the state must ensure that there is enough food for everybody.¹

How should Ukrainian policymakers deal with the food security problem? What are the causes of malnutrition and under-nutrition and what are the best policies to ensure that everybody in Ukraine can avoid them? Clearly, appropriate policy formulation must rest on accurate analysis. In this paper we will argue that the analysis upon which state intervention in food-markets in Ukraine had been based in the past was not accurate. Oblast governors have been trying to fix bread prices and to control the grain and bread markets. Imports of milling wheat and even food aid shipments have been widely discussed. Many Ukrainian analysts see some kind of 'food shortage' as the main reason for the current food insecurity.

This paper will provide a much broader view of the problem of food security. Referring to the findings of AMARTYA SEN, the 1998 Nobel prize-winner in economics, it will be shown that insufficient food availability in a certain country or region is just one possible cause of food insecurity – and very often not the crucial one. Food security has its roots in the ability of people to get enough food by producing or by purchasing it. Only policy formulations that focus on the consumer's ability to secure food, rather than production, can achieve the goal of food security in a cost-effective manner.

The structure of this study is as follows. Section 2 defines the term 'food security' and analyses the main reasons for food insecurity. Section 3 provides an overview of the current income situation in Ukraine, and section 4 presents an analysis of the causes of food insecurity and the policy alternatives to deal with it. In section 5 these findings are summarised and policy recommendations made.

¹ According to (COURTIS *ET AL.* 1999) in the period after 1918, it was mostly Communist countries which experienced famines, leading to the deaths of hundreds of thousands, and in some cases millions of people. Again, in the 1980s, two African countries that claimed to be Marxist-Leninist, Ethiopia and Mozambique, were the only countries to suffer deadly famines; not to forget the famine in North Korea in the late nineties and at the turn of the millennium.

2 The concept of food security

In the early 1970s, rising fertiliser prices, spurred by the OPEC oil crisis, bad grain harvests in many countries (including a very bad one in the Soviet Union) and gradually increasing demand caused world-wide grain reserves to shrink and prices to rise. Many states, especially grain-importing countries, were concerned about their ability to secure sufficient food for their populations. In general, the food security problem was seen as being linked almost exclusively to food production. This view changed in the 1980's, when it became obvious that despite an increasing food supply – world-wide carry-over stocks grew from under 140 mill. t (mt) in 1975 and 1976 to over 300 mt in the mid-1980s – the number of the hungry continued to increase (FOSTER 1992).

Box 1: The concept of malnutrition

The terms malnutrition, under-nutrition and hunger are difficult to define and even more difficult to measure. This creates problems for the formulation of policies. If, for instance, targeted food aid or income-support programs are planned, a clear definition of those who are going to be supported and their identification is crucial for the success of these programs. Very often these are the strongest constraints for the formulation of policies (see chapter 4).

In this paper we rely on FOSTER's (1992, p. 13ff) definition of malnutrition based on findings of the nutritionist MAYER (1976). He identifies four types of malnutrition: (1) over-nutrition, (2) secondary malnutrition, (3) dietary deficiency, and (4) under-nutrition. Over-nutrition is a severe problem in richer countries and for higher income groups in poorer countries and is beyond the scope of this paper. The term secondary malnutrition refers to a situation in which an individual has a condition or illness that prevents him from properly digesting or absorbing some of his food. This will not be addressed here, either.

Dietary deficiencies are very likely to occur in situations in which people are impoverished and cannot afford to buy certain foodstuffs that are needed for a healthy life. Vitamin-rich food, for example, is difficult to obtain for poor people in Ukraine, especially in the wintertime when fruit and vegetables are expensive. This can cause their susceptibility to illness to rise.

Under-nutrition occurs when individuals simply do not get enough food and are short of the calories or protein necessary for normal growth. Under-nutrition can have many effects which are especially serious for children. It diminishes the body's immune response, causes low weight-for-age and can effect a child's mental development.

There exist a wide variety of different definitions of food security. MAXWELL and FRANKENBERG (1992) propose a very comprehensive and compact definition, according to which **food security is defined as secure access at all times to sufficient food for a healthy and active life.**

This observation made scientists think about other approaches to food security. Instead of food availability at the international, national or regional level, the access of individuals and families to food became the focal point of interest. It was the pioneering work of AMARTYA SEN in his book *Poverty and Famines – An Essay on Entitlement and Deprivation* (1981) that gave us a different and much broader view of food security. His work concentrates on the investigation of the causes of malnutrition, hunger and famines. He found that famines in recent history often occurred in situations in which the harvests and the overall food supply in a country or a region were at or above the average level in that region. The Bangladesh famine of 1974, for instance, hit the country when the per capita availability of food grains was actually above the average level of the previous ten years.

SEN introduced the so-called **entitlement approach**. According to this approach the food consumption of individuals, families or social groups depends on what they are able to acquire. Although this seems rather obvious, it had in the past all too often been forgotten in the analysis of the causes of malnutrition and hunger. The view SEN took to analyse the causes of hunger was not to say that the production of food is unimportant or to be neglected. But he stressed that the availability of sufficient food in a region alone does not ensure that everybody has enough to eat. A person's food security depends much more on his or her endowments, working capacity and other production factors and his or her **exchange entitlements**, i.e. the ability to exchange these endowments for food.

Hence, food security can be endangered by a decrease in a person's endowment (e.g. alienation of land, or loss of ability to work due to ill health), or due to an unfavourable shift in exchange entitlements caused by a loss of employment, a fall in wages or a rise in food prices. A bad harvest is just one of many factors that can reduce endowments and/or exchange entitlements and thus threaten an individual's food security (DRÈZE, SEN 1989, p. 23).

These findings make it clear that food security cannot really be measured at the national or regional level. Even if a country is a net exporter of food, some vulnerable low-income groups within the population may still suffer from malnutrition. They may not be able to grow their own produce or they may not be integrated into supportive social networks such as families or well functioning neighbourhoods.

The basic idea of the entitlement approach is summarised in the so-called food equation. According to this formula, the individual or household is assured of food security if the following equation is fulfilled.

$$(FR_{HH} - FP_{HH}) * p_F \leq I_{HH} + AL_{HH}$$

where:

FR_{HH} = Food consumption requirement of the Household

FP_{HH} = Household food production

p_F = Price of food

I_{HH} = Household income

AL_{HH} = Liquid assets for purchasing food

This equation states that a household is food secure if it is able to meet its basic food needs through its own production, through the amount of food it is able to buy on the market as well as through gifts from relatives and so on. To be able to buy necessary food on the market, a household has to have a high enough income (the right side of the equation). This can be derived from different sources, e.g. wages, pensions, rents, the revenue from selling household production or assets, etc. It is also clear that households can adjust to differing situations. They can substitute cheaper products for those for which prices have risen. Or they can even give up the consumption of high value products that are not essential. Hence, all elements in the food equation can be adjusted to some extent, all of which has to be taken into account when policies are formulated.

The entitlement approach and the food equation are extremely important concepts for the analysis of malnutrition and hunger, and are, therefore, important for the formulation of policies to combat these scourges. Adequate grain production in a region is neither a sufficient nor a necessary condition for the food security of all households and individuals in that region. Policies that try to secure a level of productive self-sufficiency in a given region will not necessarily guarantee food security for its population. We will return to this topic in section 4.

3 Some aspects of food security in Ukraine

It has already been noted in the previous section that food security cannot be measured in terms of the average supply of food products. Even if the average Ukrainian has enough food for an active and healthy life, this certainly does not hold true for each individual Ukrainian. Income is unevenly distributed among the population, and therefore many people fall short of meeting their basic needs.

The following analysis is based on income and price data which reflect the purchasing power of Ukrainian citizens. We recognise that an investigation of the entitlements of different groups within the population would be the more accurate way to evaluate the general food security situation. The income and price approach, however, is acceptable, since the main objective of this section is to show differences within the population and the different strategies for adaptation chosen by these groups. Precise identification of the groups or individuals suffering most would have to be based on household budget surveys and consumption figures. Instead, we concentrate on the concept of purchasing power, which equals income divided by price. Purchasing power can be augmented by

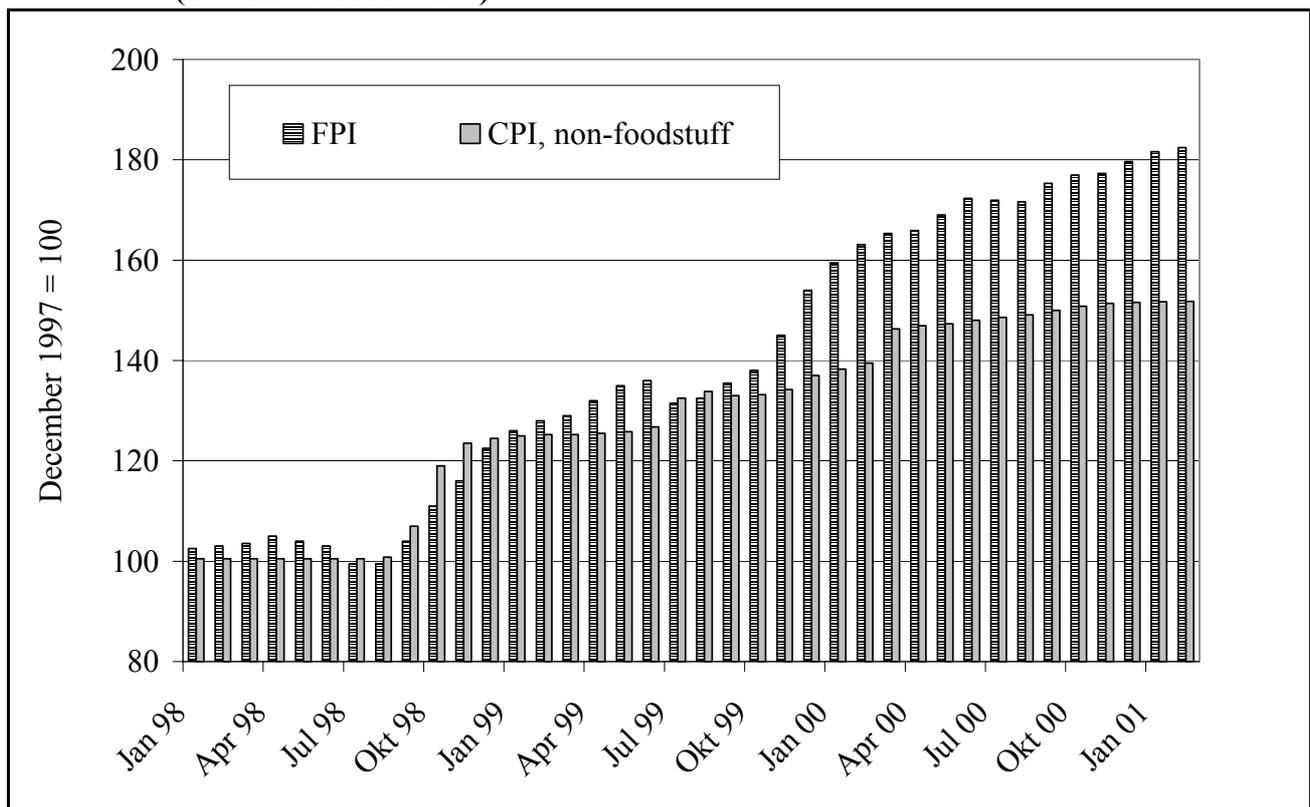
increases in income or by decreases in prices. For most foods, consumption increases as income increases and *vice versa*. The food consumption of low-income families is considerably more sensitive to changes in income and food prices than that of high-income consumers. Food price increases make it more difficult for the poor to meet their food requirements.

Being influenced by a multiplicity of factors such as supply, demand, world prices, etc., food prices vary constantly. The question is whether changes in food prices have been matched by corresponding changes in income in recent Ukrainian history. Investigating the correlation between food-stuff prices and income increases over the last few years in Ukraine is the subject of this section.

3.1 Consumer price and food price developments

Inflation can be measured in terms of the consumer price index (CPI), the food price index (FPI), nominal wages and the resulting real wages. The CPI is the most comprehensive notion and comprises the prices of a representative basket of consumer goods, in which individual prices are weighted according to their share in the consumption of a 'typical' consumer or household. The general CPI, therefore, does not take into account the different consumption patterns of different income groups within the population. Individuals and households who face high price increases for items of which they consume an overproportional share will suffer more from inflation than individuals or households whose consumption shares correspond to those in the CPI basket.

Figure 1: The CPI for non-foodstuffs and the FPI in Ukraine, January 1998 – January 2001 (December 1997 = 100)

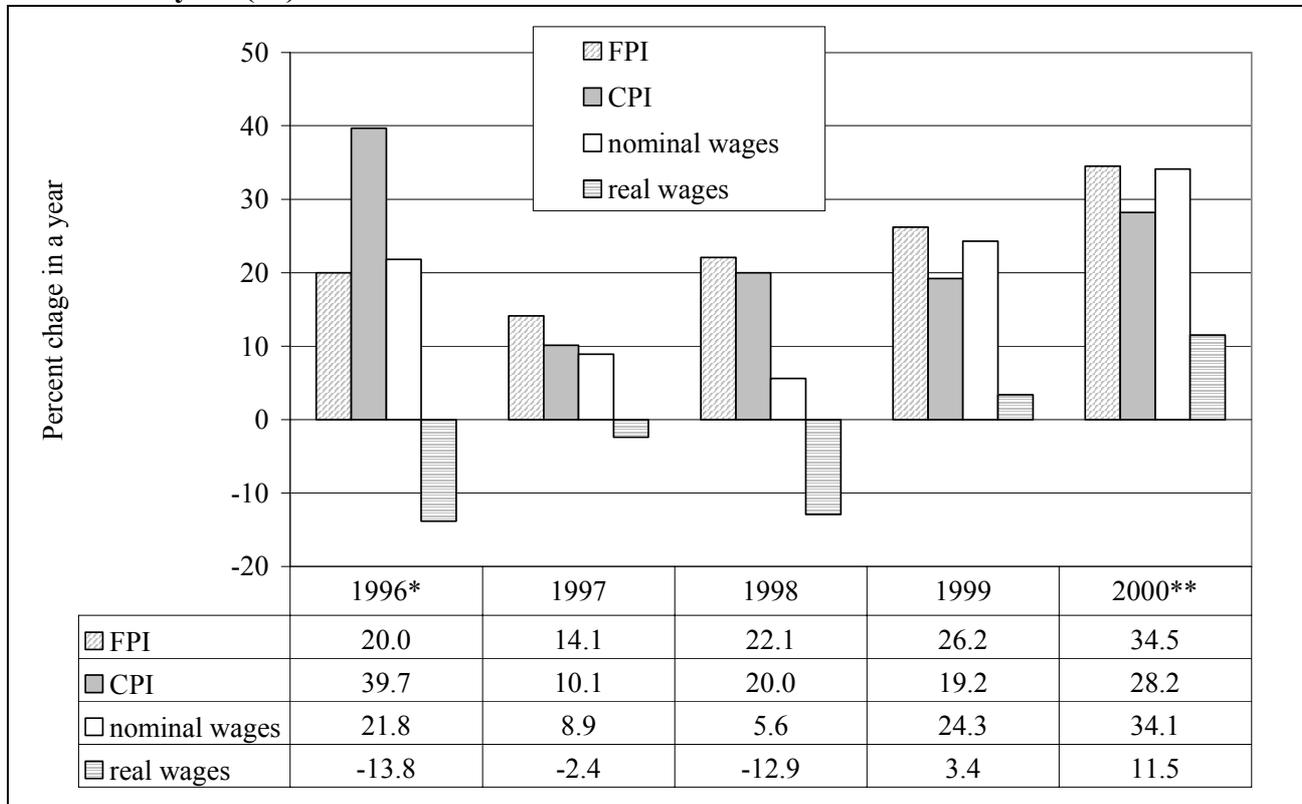


Sources: CASE, HIID (2000), No. 28 (2000) and No. 36 (2001).

In figure 1 the FPI and the CPI for non-foodstuffs in Ukraine are compared. The figure quite clearly shows that prices rose only slightly in the first half of 1998. Then, the Rouble- and the Hryvnia-crises led to a sharp increase in both indices from August 1998 on. Note that the FPI grows faster than the CPI for non-foodstuffs in the spring of every year. Later in the year, after harvest time, the FPI decreases. However, in 1999, the FPI increase greatly exceeded that of the CPI for non-foodstuffs. In July 1999 both indices stood at about 130% compared to the base period in December 1997. Then the FPI rose to more than 180% in January 2001, whereas the CPI for non-

foodstuffs ‘only’ rose to 150%. These price increases for food were caused by the change in the trade situation, i.e. the change from the net export to a net import situation for some major food products. But few people recognised that the price increase was sharpened by high import tariffs on major food products such as grain and sugar. Hence, government policies have contributed considerably to increasing food prices since 1999.

Figure 2: Changes in CPI, FPI, and nominal and real wages compared with the preceding year (%)



Source: *- data for 1996-1999: STATE COMMITTEE FOR STATISTICS (b) (2000).

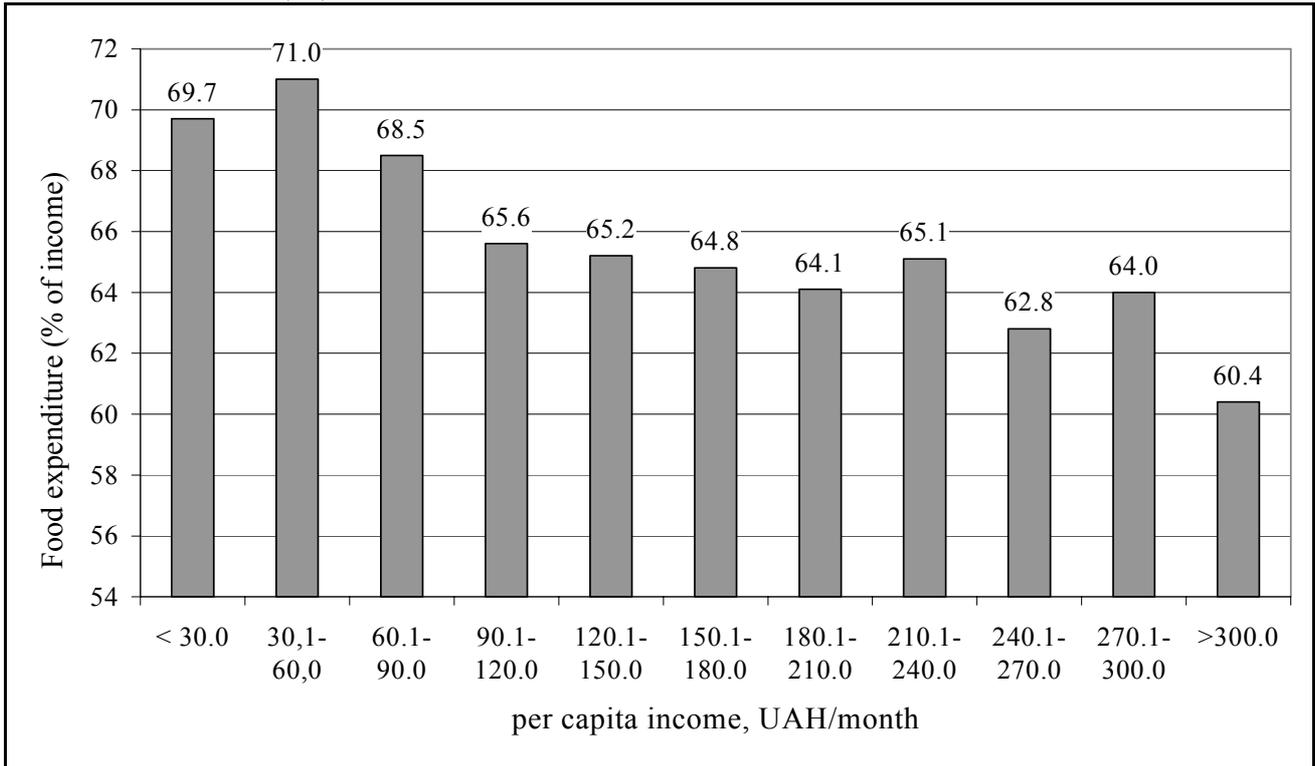
** - data for 2000: UEPLAC (2000). Case, HIID, No. 36 (2001).

Figure 2 shows that during 1996-1998, CPI and FPI growth considerably surpassed nominal wage growth leading to a drop in real wages. In 1999 a slight increase in real wages occurred although prices for foodstuffs grew faster than nominal wages. Since 1997, however, FPI growth has exceeded nominal wage growth, meaning that people are spending more and more on food. Purchasing power has diminished over the last years, both in terms of all consumption and in terms of foodstuffs.

3.2 Expenditure on food

However, these averages tell us little about the real situation within the population. While food price increases do not have a great impact on the living standard of high-income families, for low-income groups, who spend a much larger share of their income on food (see figure 3), a fast rising FPI can have disastrous implications. In 1997, families with a per capita money income of less than 90 UAH per month, for example, spent about 70% of their income on food. The poorest part of the population even spent money in excess of their incomes on food. Better-off families – having a monthly income over 210 UAH – spent only about 40% of their incomes on food.

Figure 3: Monthly food expenditures by Ukrainians according to per capita monthly income in 1998 (%)



Source: State Committee for Statistics (1999b).

Figure 4a: Per capita meat consumption in Ukraine (kg/year)

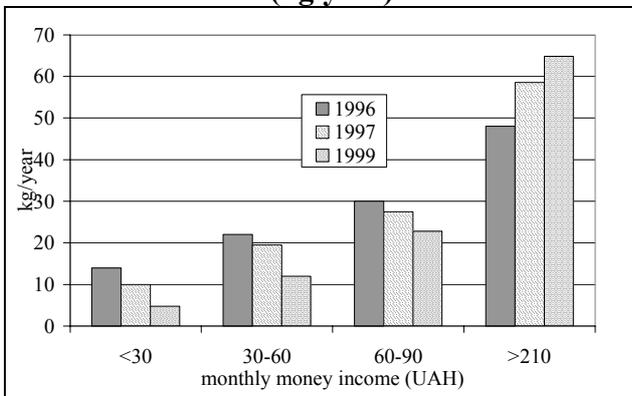


Figure 4b: Per capita consumption of dairy products in Ukraine (kg/year)

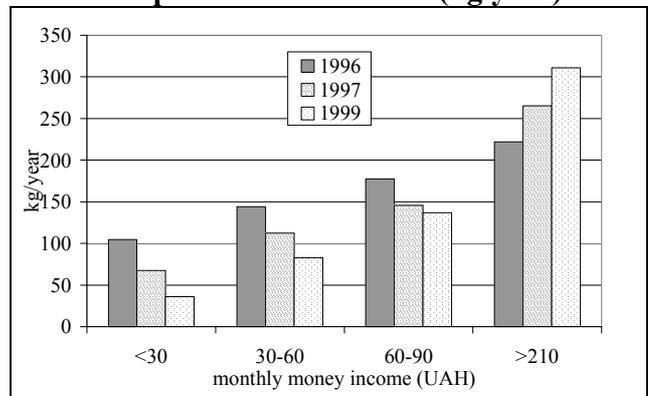


Figure 4c: Per capita bread consumption in Ukraine (kg/year)

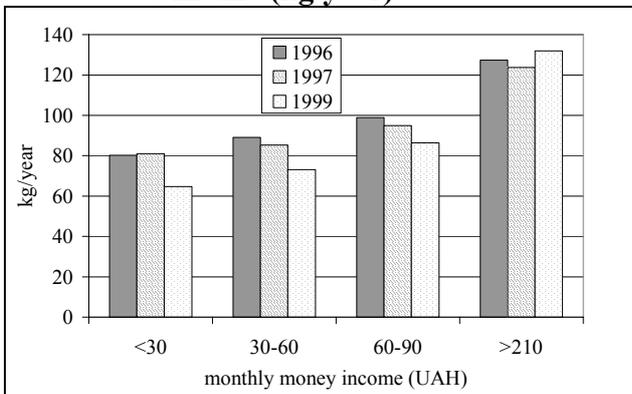
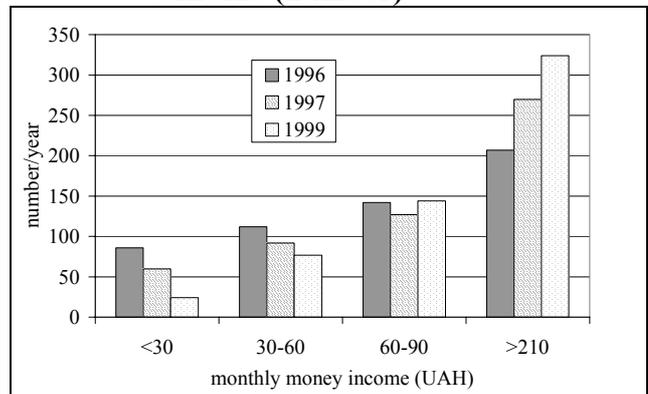


Figure 4d: Per capita consumption of eggs in Ukraine (number)

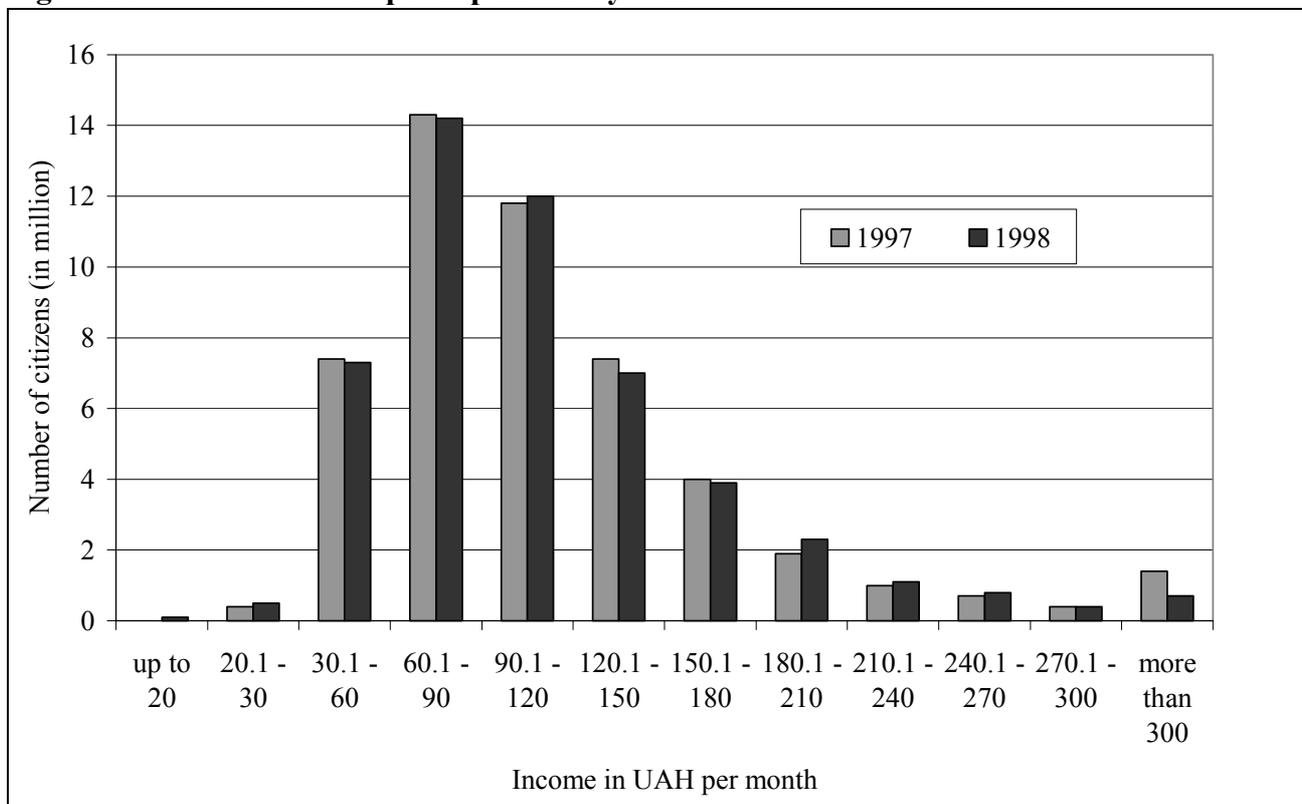


Source: STATE COMMITTEE FOR STATISTICS (1997) and (2000).

Low-income families respond to even tiny price increases by reducing their consumption not only of ‘luxury’ foodstuffs such as meat and fish, but also of such necessary food staples as milk, bread, etc. This can be seen in figures 4a through 4d, which depict the relationships between income levels and consumption patterns in 1996, 1997 and 1999. As prices have increased, consumption by low-income families has declined while consumption by families whose money income is over 210 UAH per month has increased. Low-income families were forced to buy less of each product in 1999, compared to 1996 and 1997. Obviously, poor people substituted other food staples such as bread in order to survive. However, the price of bread increased over this period as well.

This wouldn’t be quite so serious if low-income families comprised only small share of total population. Unfortunately, this is not the case, as can be seen from figure 5. In 1997 49.8% of the population had an income of less than 90 UAH/month, while the cost of a minimum food basket was approximately 64 UAH. The figures for 1998 are even worse. As these income groups have to spend most of their income on food, they cannot afford proper medical treatment and have to sacrifice something else for each additional food item, or they have to sacrifice food to buy something else. Luckily, many people can rely to some extent on home grown food products to help them survive.

Figure 5: Distribution of per capita money income in Ukraine 1997 and 1998



Source: STATE COMMITTEE FOR STATISTICS (b) (various issues).

One of the most vulnerable groups in Ukraine are the pensioners. With the small size of their pensions, many pensioners are not able to afford even a minimum food basket. Other social groups who must struggle to make ends meet are families with children and single mothers.

4 The role of the government in ensuring food security

“To ensure food security requires no more than a certain level of household income plus a well-functioning market for staple foods” (PINSTRUP-ANDERSON, 1998). This statement combines all of the aspects of food security that we have discussed so far. It therefore becomes obvious what kind of policies are needed to tackle the problem of food security, namely policies that increase household incomes, especially those of the most vulnerable people, and policies that improve the function-

ing of the market. In this section, a wide variety of policies that might be employed to ensure food security will be discussed. It will be shown that some of the measures that look quite attractive at a first glance will actually fail to enhance food security, or they will be extremely expensive compared with other strategies. The question of food availability will be discussed first. Special attention will be given to the proper functioning of markets, to trade policies and to the question of self-sufficiency. In the second and third parts of this section we will discuss food aid and income, related aspects of the food security problem.

4.1 Functioning food markets

Price formation on food markets is not fundamentally different from price formation on other markets, provided they are liberalised. This price formation is presented in standard supply and demand diagrams (see below), which depict the relationships between the prices that prevail on the market, the quantities supplied by producers and the quantities demanded by consumers.

In economic cost-benefit analysis, a liberalised market without government intervention is often taken as the starting or 'reference' point. The imposition of export or import taxes or any other government intervention is then compared with the situation that would prevail in this reference situation. This in turn permits one to look at the question of who loses and who wins due to the policy measure in question, and whether society in general wins or loses.

In the absence of trade barriers, the price of an internationally tradable product is determined by the world market price for that product. Domestic supply changes, caused by production variations from year to year, or demand changes, caused by changes in available incomes or in tastes, do not affect domestic prices, provided one disregards some special effects that are not relevant to our investigation.² The reason is obvious. Where no trade barriers exist, producers and traders have the option to either export their products or to sell them on the domestic market. Their decision will be based on the prices that are offered on these markets, and they will sell where they get the highest possible price. If this happens to be on the export market, the export of the product in question will reduce the domestic supply. Obviously, this will cause domestic prices to increase. Once they reach the world market price, however, it will no longer be profitable to export. Therefore, the market mechanism will ensure that domestic prices move together with world market prices, and the better the market functions, the better domestic and world market prices will be linked. This is commonly referred to as 'market integration'. When price changes in one location (e.g. the world market) are transmitted to an other location (e.g. the domestic market), these markets are said to be integrated.

4.1.1 The effects of implicitly subsidised consumption

Implicit subsidies are those that are not directly paid from the state budget. Instead, the state establishes price limits, trade barriers or other measures that have an impact on domestic prices and thus, the same effect as subsidies. The export tax on sunflower seeds is an example of an implicit subsidy that benefits the oil-processing plants in Ukraine (and taxes oilseed producers).

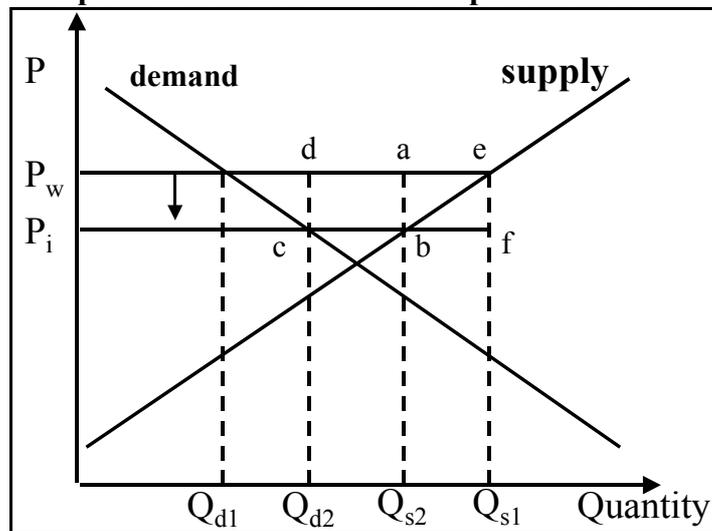
Policies aimed at lowering the price of food products through market interventions, resulting in implicit subsidies for consumers, are used in many low-income countries, including Ukraine. They include: non-competitive procurement of agricultural products from farmers, below-world-market food prices set by law, trade controls, and an overvalued domestic currency. These measures all have a price depressing effect on food products and, thus, on the prices agricultural producers receive for their products.

The advantages of such policies for the government are obvious: They result in only minor budgetary expenses. The government sets the price in the market below the level farmers would re-

² An example of such a special effect is the domestic price shift that takes place when a country moves from a net import to a net export position, or *vice versa*. This is discussed in detail in chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

ceive without government intervention. As a consequence, agricultural producers lose. The difference between the depressed price the farmer gets for his output and the world market price is a tax to the farmer.

Figure 6: The effects of price interventions and of explicit subsidies on the market



Source: Own depiction.

In fact, implicit subsidies are even more expensive for the economy as a whole than direct subsidies, i.e. government expenditures. This is shown in figure 6. Suppose the government imposes an export tax on a product such as wheat. Domestic prices will fall from P_w (the world market price) to P_i ($= P_w$ minus the export tax). As a result, farmers get less for what they produce. Instead of getting P_w for Q_{s2} they now only get P_i . Hence, their loss is the difference in prices ($P_w - P_i$) times the quantity produced (Q_{s2}). In figure 6 this is the area $P_w a b P_i$. Of course, the export tax will raise tax revenues equal to the quantity produced Q_{s2} minus the quantity consumed Q_{d2} times the export tax. This is depicted by the area $a b c d$ in figure 6. Note that the effects we have been discussing so far are of a purely distributive nature. Income is taken from farmers and is given partly to consumers and partly to the state budget. If the objective of the government were to tax 'rich' producers and subsidise 'poor' consumers with the by-product of raising tax revenues, this policy would be appropriate. However, this is not the entire story and several other effects need to be considered.

The first effect is that indirect taxation serves as a production disincentive. Since agricultural production is reduced from Q_{s1} to Q_{s2} , farmers lose an additional amount of income equivalent to the area $a b e$.³ Farmers will produce less because the price has fallen and they will prefer to shift resources to the production of other products. To illustrate this point, consider the export tax policy practised by the government of Argentina between 1940 and 1972. Among the consequences of this production-discouraging policy were that employment in agriculture declined and that agricultural productivity grew more slowly than in other countries, despite Argentina's excellent agricultural soils and climate.

A second effect is that consumption increases from Q_{d1} to Q_{d2} as prices are depressed in the market and fall below the world market level. In fact, this is one of the desired results of the implicit subsidy, provided this additional consumption actually reaches the target group – the poor. Unfortunately, an implicit subsidy cannot be targeted at all. It is true that the poor will benefit from lower

³ Producers lose the additional amount $a b e$ only (not $a b f e$), since the area $b f e$ (the area under the supply curve) represents the additional cost of producing the amount $Q_{s1} - Q_{s2}$. The total loss to producers is equal to $P_w e b P_i$, which economists refer to as the change in 'producer surplus' that results from the export tax. Producer surplus is defined as the excess of revenue over cost. Detailed explanations can be found in standard micro-economic textbooks.

market prices for grain (i.e. bread), but so will the rich.⁴ Hence, for every additional Hryvnia of purchasing power that reaches the poor, producers must make sacrifices worth a multiple of that amount. Only a part of the cheaper grain is consumed by the poor, the balance is consumed by people not belonging to the target group.⁵

4.1.2 Explicit consumption subsidies

In contrast to implicit subsidies, explicit subsidies take the form of direct market interventions. For instance, the government buys grain on the domestic or international markets at the world market price P_w and then re-sells it at the domestic price P_i on the domestic market. In this admittedly simplified scenario, the price which producers receive is not influenced at all by the subsidy. Hence, all production-discouraging effects are avoided. However, such a policy results in budget expenditure. The entire amount consumed domestically at the depressed price (Q_{d2} in figure 6) times the price difference between the world market price P_w and the domestic price P_i has to be financed by the government (area $P_w d c P_i$). Obviously, the distortions on the demand side remain: (a) not only the needy but all consumers are subsidised, and (b) consumers are encouraged to waste the subsidised product by its artificially low price. Furthermore, the government has to administer measures to ensure that the cheap products are not re-sold to on the world market, where prices are higher. Due to the high budgetary expenditures, governments will hesitate to implement such policies, although they are less distortive than indirect subsidies.

Box 2: Price intervention in the sugar market

As in Soviet times, queues were seen in front of sugar shops in Ukraine during the second quarter of 1999. According to government data, the average sugar price had increased by 25 to 40% in May 1999 (even more in the Autonomous Republic of Crimea), and on average people had to pay 2 to 2.3 UAH/kg (in the Autonomous Republic of Crimea even 3 UAH/kg) for sugar. Wholesalers believed this price rise to be due to the fact that the stocks built up during 1998 were slowly depleting. This is just part of the story. In contrast to the official explanation, it was actually government intervention that caused prices to rise. A liberal trade regime without any import and export restrictions would have ensured stable or even falling prices in Ukraine as world market prices were much lower and world market supplies plentiful. The depletion of stocks would not have influenced the price if there had not been an earlier government intervention in the market place.

This sugar market intervention is a very illustrative example of a poorly designed policy. First, some local administrators declared that ‘speculators’ had driven up prices. Therefore, the government felt compelled to set a price ceiling for sugar. On December 12, 1998 the Kyiv City administration passed Resolution №2440, according to which sugar for ‘privileged categories of the population’ was to be delivered from the state’s reserves to city shops at 0.95 UAH per kilogram. The maximum retail price for sugar in the commercial network was set at 1.10 UAH/kg. On April 9, 1999 the Kyiv City administration passed a second resolution, №530 ‘On providing the population of Kyiv City with sugar and butter’. In it the government set the sugar price at 0.95 UAH/kg for ‘privileged categories of the population’ and at 1.15 UAH/kg for the commercial network. Legal entities were not permitted to dispose sugar at higher prices.

One would think that this measure could have led to the desired result, since it was taken with the intention of keeping the sugar market stable, and combating speculators and monopolists to protect the consumer. However, at this time the real procurement price from sugar plants was 1.19 UAH/kg. Since factory prices were higher than the legislated retail sugar prices (at which sugar had to be sold), the government agreed to provide everyone who ‘desired to sell sugar’ with sugar from the state’s reserve

⁴ It has to be noted that grain only accounts a part of the cost of bread. Thus, reducing grain prices will not reduce bread prices by the same percentage. Depending on the structures of the milling, baking and retailing sectors, part of the cost reduction resulting from purchases of cheaper grain may simply be absorbed in larger margins between millers and consumers.

⁵ This experience was made in many socialist countries in the past. As consumer prices were depressed to artificially low levels *via* implicit subsidies for consumers, food (for example bread) was often used animal feed. The result was a massive waste of resources. Hence, implicit subsidies are a very inefficient means of increasing food security.

at a price of 0.90 UAH/kg. To limit its exposure, the city administration limited the total amount to no more than 3,000 t of sugar by decreeing that that was all that was needed for the next half-year.

This led to two major problems. First, in order to buy sugar from the state reserve at 0.90 UAH/kg, every shop manager had to apply to the local administration. Since the sugar could be sold at the retail level for 1.15 UAH/kg, the trade margin amounted to some 27%, which was very attractive. It was decided to limit the number of shops that could take advantage of this opportunity in every district. All the shops that were not included on these 'sugar lists' were cut off from the sugar supply and disappeared from the market. Second, Resolution No. 530 was binding for legal entities only. Private persons were allowed to dispose of sugar on the market at any price below 1.50 UAH/kg. Of course, therefore, not all 'preferential sugar' ended up being sold over the shop counter. Traders who had access to 'preferential sugar' had an incentive to sell it privately for between 1.30 and 1.50 UAH/kg.

Hence, the government intervention on the sugar market did not change the price in the market place at all, and therefore, didn't change the access of the poor to sugar. It must have been very expensive for the authorities first to have bought the sugar and then to have re-sold it at lower prices, and on top of that to have incurred all the costs of distribution and administration.

4.1.3 Self-sufficiency

Very often, food security is equated with self-sufficiency, i.e. the ability of a country to produce 100% of what it consumes domestically. In Ukraine, for example, some fear that the country cannot feed its citizens if the agricultural sector falls short of producing enough food grain for the population or cannot provide 1.5 mill. t of sugar every year. Clearly, the real catastrophe is that Ukraine has so far failed to produce much more grain than it consumes on its fantastic black soils, thus forgoing huge potential export revenues. On the other hand, self-sufficiency itself is very questionable goal. In fact, **self-sufficiency does not ensure food security**. The reasons are the following:

1. As we have discussed above, the fact that a country can produce the required aggregate amount of a certain food item for its own consumption does not ensure that all its citizens can afford to buy enough of that food item.
2. The self-sufficiency of a country in a given year does not ensure that the country will be food secure in critical times. Modern agriculture depends heavily on internationally traded inputs (e.g. energy). If a country cannot guarantee a sufficient supply of these inputs in a critical situation, food self-sufficiency is not guaranteed either. In extreme embargo or war situations, fuel and chemical imports could be halted, and overall domestic food production could shrink significantly. In fact, Ukraine is a prominent example of this situation. It depends heavily on Russian energy imports. Its agriculture would collapse without this energy, no matter what agricultural prices and measures the government might try to implement.
3. Countries that pursue food self-sufficiency to achieve food security incur large costs. They subsidise the production of certain products, although it would be more efficient (a) to concentrate on producing goods for which the country possesses particular advantages and to export these, and (b) to buy those products on the world market which are in short supply domestically. In fact, with a liberal trade regime, farmers and traders would automatically react in this way. As JOHNSON (1996) has stated: "*The only real assurances of food security are a liberal trading system for agricultural products, and peace*".

4.1.4 Buffer stocks

Some governments maintain buffer stocks in order to ensure the supply of foodstuffs. Again, this kind of policy at best ensures a stable supply of food, but not the ability of the poor to buy it. Furthermore, maintaining large buffer stocks can be extremely expensive. First, this is due to the fact that in Ukraine physical storage losses are high compared with other countries. Second, storage costs depend heavily on prevailing interest rates. Storing 1 mill. t of grain, worth say 800 mUAH, for six month at an interest rate of 40% costs 160 mUAH. Under such conditions it might often be

less expensive to export grain at harvest time and to re-import it from the world market later in the year when it is needed for domestic consumption.⁶ Obviously, some food stocks may be necessary to smooth out seasonal variations: However, this can best be done by private market participants. Furthermore, long-term and large quantity storage of food reserves has proven not only to be very costly but also difficult to manage. As the size of stocks increases, their marginal benefit decreases and marginal costs rise sharply. There are several reasons for this. For buffer stocks to be effective they must be stored for several years; the amortisation costs of storage facilities must also be borne in years when they are not used; excess supply often cannot be stored because storage space is limited. Again, if a high degree of stability is sought, large buffer stocks are unlikely to be effective compared with a flexible trade policy. Therefore, it is preferable to put in place and rely on appropriate food production, distribution, and trade policies. Storage costs are far greater than the costs of borrowing or of carrying extra cash reserves so as to be able to import product when the occasion demands (REUTLINGER & VAN HOLST PELLEKAAN, 1996).

4.2 Food aid programs

Food aid has been an important form of assistance to reduce food shortages in developing and some transition countries. Humanitarian aid is a normal response to inadequate food supply and undernourishment in less fortunate countries.⁷ Food aid is granted for various purposes:

1. To alleviate the immediate consequences of food shortages. These can be due to natural disasters such as drought and emergencies such as war, or due to the negative consequences of ill-advised economic and agricultural policies.
2. To constitute an input into economic and social development programmes, in particular through labour-intensive public work projects and through nutritional programmes for vulnerable groups.

Often food aid is provided to be sold in the recipient country. The proceeds can then be used to finance development projects, such as rural public infrastructure projects, or to target income assistance to the poor. In some cases, food aid is provided directly to workers employed in development projects in the form of so-called 'food-for-work' programs (see section 4.3.1 below).

The volume and composition of food aid is linked to the accumulation of surpluses of certain products in donor countries. That is, food aid tends to be given not only when and in the form that recipients require, but also when and in the form that is most suitable to donors who wish to dispose of surplus production. In recent years, new WTO regulations have restricted the use of export subsidies. Without export subsidies, countries such as the EU and the US find it difficult to dispose of their surplus production while simultaneously maintaining high domestic prices. In such a situation, food aid can represent a 'loophole' that provides a welcome means of disposing of surpluses.

4.2.1 The problems raised by food aid

Food aid has its pros and cons. Although food aid can play an important role in helping to meet urgent food requirements, it also raises a number of problems. It can have adverse effects on domestic agricultural production, on income distribution and even the food security of parts of the population. It can have adverse effects on international trade and it can lead to problems with management, rent seeking and corruption (see OECD, 1974).

⁶ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

⁷ The low grain harvest in Ukraine in 2000 caused the Government of Ukraine (GoU) to consider requesting food aid. It was announced in May 2000 that Ukraine intended to ask the US Government to supply food aid in the form of 500,000 t of feed corn and 200,000 t of soybeans under its so-called PL-480 program. At the end of September 2000 it was announced that Ukraine planned to import 600,000-800,000 t of grain from the US under the US Government's PL-480 and GSM-102 programmes. This application was rejected by the US government in January 2001.

The effects of food aid on the distribution of income are complex. In so far as food aid contributes to lower food prices, it will improve the food security of those who have the means to purchase food. By lowering food prices for all (both rich and poor), however, food aid is a very unfocused type of aid. Furthermore, depressed food prices also translate into reduced income for those who earn their livings by producing food. If food producers belong to the poorest individuals in a given country, food aid can, paradoxically, exacerbate poverty and hunger.

4.2.2 The impact of food aid on agricultural production

Food aid is sometimes criticised because of its possible adverse effects on agricultural production as additional supplies can have a disincentive effect on production by reducing prices. In order to assess to what extent food aid may influence domestic production, we need to estimate the possible impact of food aid on domestic grain prices.

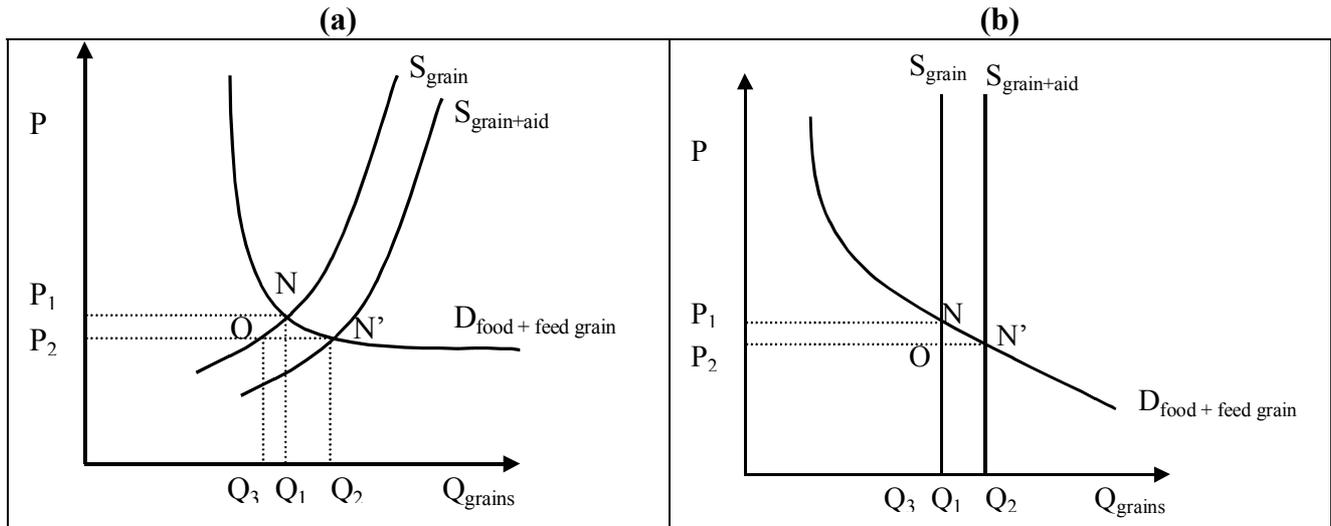
Figure 7(a) is a representation of demand and supply curves for grain in Ukraine. S_{grain} is a supply curve that shows what quantities of domestic grain will be produced at different prices. Food aid will shift this supply curve horizontally to the right by a constant amount (to $S_{\text{grain+aid}}$). Thus, the volume of food aid is equivalent to the distance between Q_2 and Q_3 . This rightward shift of the supply curve will cause the equilibrium price to fall from P_1 to P_2 , thus discouraging production. The market equilibrium point will shift from N to N' , and domestic production of grain will fall from Q_1 to Q_3 . As a result, the incomes of domestic grain producers will fall. Total losses to farmers are equal to the area $P_1 NOP_2$.⁸

Hence, food aid can have the same effect as a tax on production. How large will this effect be in reality? This depends on the 'elasticities of demand and supply'. An elasticity is a parameter which describes how much one variable (for example, a quantity) varies as a function of another variable (for example, a price). Elasticities describe such relationships in relative, in other words percentage terms; this makes it easier to compare markets in which different physical and monetary units are used (i.e. UAH and t as opposed to US\$ and bushels). The price elasticity of demand (ε_D) is defined as the percentage change in quantity demanded ($\% \Delta Q_D$) that is induced by a one percent change in the market price ($\% \Delta P$):

$$\varepsilon_D = \frac{\% \Delta Q_D}{\% \Delta P} \quad (1)$$

The demand for many agricultural products is rather inelastic, in other words, quantity demanded does not vary greatly as a function of price. This can be explained by the fact that food is necessary to support a healthy and active life. People can refrain from buying cars, appliances and even clothes, but no one can live long without food. Of course, the elasticity of demand also depends on stockholding behaviour. Demand for grain will be more elastic when prices are low, because storage becomes increasingly attractive as stockholders anticipate that prices will likely increase in the future. Demand will be less elastic when prices are high and stockholders must expect that prices can only fall. This explains why the demand curve for grain is rather steep at high prices and tends to be almost parallel with the quantity axis at low prices. Because the percentage changes in price and quantity have opposite signs, the elasticity of demand is a negative number. The elasticity of supply is defined analogously and is positive, as price increases lead to increasing quantities supplied.

⁸ This is the change in what economists refer to a producer surplus. See footnote 3.

Figure 7: The influence of food aid on the domestic price of grain

Source: Own depiction.

Own production of grain in 2000 in Ukraine was estimated at 22.2 mill. t. So, without food aid and imports, 22.2 mill. t would have been supplied in the market. If the government had accepted all of the food aid that was mentioned or rumoured in the media in the summer of 2000, 500,000 t of feed corn, 200,000 t of soybeans and a further 600,000-800,000 t of unspecified grain would have been added to this domestic supply. Note that while shipments of corn and soybeans are meant to be used to feed livestock, they will nevertheless have an impact on the grain market as a whole, since they compete directly with wheat which can be used for both feed and human consumption. Altogether, this volume of food aid would have shifted the supply curve to the right by roughly 1.4 mill. t from 22.2 to 23.6 mill. t.

To estimate the resulting impact on prices and incomes, assume first that the current domestic grain price without food aid (P_1) is 800 UAH/t.⁹ Assume further that supply is completely inelastic in the short-term, in other words:

$$\varepsilon_s = \frac{\% \Delta Q_s}{\% \Delta P} = 0 \quad (2)$$

This assumption is plausible because in the short-term the farmers will not be able to re-allocate resources and change production plans. Therefore, no matter what price is offered, the quantity supplied will remain more or less the same in the current marketing year.¹⁰ This assumption also simplifies the estimation of price and income effects considerably, as it permits us to redraw figure 7(a) as figure 7(b).

Rearranging equation (1) permits us to calculate the domestic price reduction as follows:

$$\% \Delta P = \frac{\% \Delta Q_D}{\varepsilon_D} \quad (3)$$

⁹ According to the UKRAGROCONSULT (Weekly #44, Oct. 30 – Nov. 6, 2000), the EXW price of class III wheat at the end of October was 800 UAH/t.

¹⁰ Of course, as prices and incomes fall, grain production will become less attractive to producers, and they will allocate less resources to grain production in the following years than would otherwise have been the case. Hence, while the short run elasticity of supply is roughly equal to 0, the long run elasticity will be higher.

Furthermore, total losses to domestic farmers can be calculated multiplying the price reduction by the quantity produced domestically (i.e. by calculating the volume of the rectangle $P_1 NOP_2$ in figure 7(b)).

Food aid of 1.4 mill. t amounts to 6.3% of anticipated domestic grain production in 2000. Assume that the elasticity of the demand for grain is equal to -1 .

$$\% \Delta P = \frac{6.3}{-1} = -6.3 \quad (4)$$

Hence, domestic grain prices would drop by 6.3% as a result of the proposed food aid. Given a market price of roughly 800 UAH/t, this percentage reduction amounts to approximately 50.4 UAH/t. This price reduction applied to a total harvest of 22.2 mill. t implies a total income reduction for producers of almost 1.12 bUAH. Of course, this result depends on the assumed elasticity of demand, ε_D . While ε_D has been estimated econometrically for many countries, the lack of reliable data and stable time series makes this estimation very difficult in the case of Ukraine. Rather than assume a fixed value, we present the results of calculations with a range of possible values of ε_D (table 1). Note that the extreme values of 0 and $-\infty$ are not very likely, and that for all intermediate values, whether we assume an elastic or an inelastic demand response, food aid results in significant losses for farmers in Ukraine. This effect of humanitarian food deliveries is well documented in Russia, where deliveries of pork and poultry from the US, among others, have had a devastating impact on local producers.

Table 1: Price reductions as a function of the elasticity of demand

	Elasticity of demand (ε_D)	Percentage change in price ($\% \Delta P$)	Price reduction (in UAH/t)	Losses to farmers (mill. UAH)
Perfectly elastic	$-\infty$	0	0	0
Elastic	-2.5	-2.52	-20.2	448
	-2.0	-3.15	-25.2	559
	-1.5	-4.20	-33.6	746
Unit elasticity	-1.0	-6.30	-50.4	1,119
Inelastic	-0.7	-9.00	-72.0	1,598
Perfectly inelastic	0	∞	∞	∞

Source: Own calculations.

Experience shows that the benefit of food aid varies greatly according to whether or not it is properly managed. Food aid is effective when directed to those who will benefit most, i.e. when it is channelled to the poor *via* food-for-work programs and similar schemes. If food aid takes the form of feed grain, as was discussed in Ukraine in the year 2000, this could make a contribution to increasing livestock production (i.e. meat and dairy products) and, in turn, reduce the prices of these commodities. But these are products that the poorest in Ukraine can least afford to buy whether prices are at the current level or slightly reduced.

Of course, food aid can also take the form of food grain for human consumption, and will reduce grain prices in general as demonstrated and estimated above (table 1). While there is no doubt that this will also help the poor, the price effect will be relatively small (the estimates in table 1 point to a price reduction of perhaps 3-9%), especially in view of the fact that grain prices only account for a fraction of the retail price of bread. Furthermore, as mentioned above, price reductions benefit all consumers, including the rich. If the government is serious about helping the food insecure, it should target aid to the poor and not grant 'blanket' subsidies to all consumers. And if it is serious

about reducing and stabilising grain prices, then it should take steps to reduce the exercise of monopoly power by state and para-statal enterprises in the grain marketing channel.¹¹

Most donor countries provide food aid on a grant basis. In this case it is given free of charge to the recipient government or some non-government organisation (NGO). How the money is used depends on who finally gets to sell or use the aid. On the one hand food aid can be sold, for example by the recipient government or an NGO, and the proceeds channelled a counterpart fund that can be used to finance development projects. For example, such a fund could be used to support agriculture (i.e. to finance agriculture research and extension services, to create rural infrastructure, or to fund agricultural colleges and universities), or to target aid directly to the poor and food insecure (for example *via* income transfers, food-for-work programs, etc.).

On the other hand the government could simply give the aid to certain firms (traders or users), thus providing them with a subsidy equal to the market value of the food aid shipment. In this cases, the danger of corruption and rent seeking behaviour in connection with food aid is very real. The managers of large feed processing enterprises and traders with political contacts will lobby for shares of the 'free' corn and soybeans, and the managers of large flour mills and bakeries will lobby for shares of 'free' milling wheat.¹² Policy makers will come under extensive pressure to direct aid towards those who promise various types of political support. One possible danger is that the food aid might first 'disappear' into some form of 'state reserve', which is considered 'strategic' and therefore not subject to rigorous public accounting. Hidden from public scrutiny, the authorities in question could then grant favours and serve their political clients with impunity.

4.3 Policies that aim at increasing the income of the poor

Besides policies to increase food availability and the use of food aid, a further means of enhancing food security is increasing the income of the poor. In the medium and long run, solid economic growth combined with an efficient social security system are the best ways to ensure that the poor are few in number and provided with necessary support. Among the factors that foster economic growth are high levels of schooling, good health (measured by life expectancy), a balanced government budget, the rule of law, low inflation and favourable terms of trade (BARRO, 1997).

However, how can the authorities in Ukraine deal with the problem of poverty-induced food insecurity in the short run? How can the Ukrainian government ensure that the poor will have enough income to meet their basic needs? How can this objective be reached without impeding economic growth, and how can it be financed? It is not an easy task to provide everybody with sufficient income in times when the government is as short of money as in Ukraine nowadays. The Ukrainian government and many local authorities, therefore, have been relying heavily on policy measures that have minor effects on their budgets, i.e. the implicit subsidisation of the poor *via* reduced food prices (see section 4.1.1).

Undoubtedly, these policies have been hindering economic growth and reducing profits in the agricultural sector. Unprofitable enterprises cannot pay wages and cannot distribute profits. At least 22% of the Ukrainian workforce relies directly on agriculture, not counting all of the other groups whose wealth depends to some extent on agriculture. Many agricultural policy measures that the Ukrainian authorities have taken so far have had very negative consequences for this large segment of the population and the economy as a whole, and there is no evidence that these policies have increased food security in Ukraine. The economy as a whole has suffered from them. It is therefore essential to think of other measures to help the poor to secure sufficient income to meet their basic needs.

¹¹ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

¹² This situation is perfectly analogous to that of the traders and processors with good political contacts who benefit from tariff rate quotas in Ukraine (see chapter 9 on *Who Gains and Loses – Import Tariffs and Import Rate Quotas for Sugar and Grain in Ukraine*).

4.3.1 Targeted income transfers

Both the targeting of income or food transfers and the identification of the needy are difficult tasks. Regarding identifying the needy, one must distinguish between two potential mistakes: First, individuals who are not truly needy might accidentally be identified as such. This problem, as costly as it can be – the Chernobyl fund is a well-known example – is, nonetheless, less disturbing than the second problem. This is the situation in which individuals who are needy are not identified as such and are not helped at all by the relief program. We will not go into details concerning the definition of the needy, but will only discuss the advantages and disadvantages of different support schemes that transfer income from the rich to the poor. Several different policies exist for targeted income transfer:¹³

1. **Employment creation and food-for-work programs:** The creation of jobs for the needy can undoubtedly improve their situation. Programs that create jobs, although often difficult to implement efficiently, have several advantages. They can help to improve the social acceptance of necessary structural changes. They are often less costly than direct income subsidies. By means of these programs, investment projects can be realised that are useful for society, such as road construction or the renovation of industrially polluted areas. However, such programs can not provide any relief for individuals who are not able to work. Hence, additional programs are needed to help these groups through direct income transfers.
2. If a government wants to reach all the needy, **direct income transfers** to those who cannot afford to buy enough food for an active and healthy life and who cannot take part in other programs are indispensable. In fact, if the problem of identification or targeting can be solved, direct income support is the most efficient means of improving the nutritional situation of the poor. It is often better to ensure that people have enough money than to provide them directly with food. This might surprise at first sight, but research has established that the increase in the caloric intake of groups who receive food in kind is only a certain percentage of the calories actually transferred. In most countries this share is between 40 and 60% (FOSTER 1992). The reason is that even the poorest have other needs than just food. In order to satisfy these other needs they sell or exchange the food they have been given. Hence, program designers who try to improve the food security of the poor must decide whether to provide food in kind or direct income subsidies (cash). In fact, there are strong arguments for the latter. First, cash is much more easily distributed and stored than food, which is more difficult to transport etc. Second, if the recipients of food in kind try to exchange food for other items, they incur losses because the exchange of products is costly (i.e. takes time, etc.). Hence, for a given amount of expenditure by the government, recipients will get a smaller amount of real income when it is received in the form of food rather than cash.
3. **Food stamps** have a face value that can be used in any food store to purchase food at market value. The first food stamp plan used was that of the US. Under this scheme, families get stamps with a cash value depending on their household food needs. Families must purchase these stamps for an amount of money which depends on income. This makes it possible to adjust the food-linked income transfer to the needs of the family and, therefore, extends limited government food welfare funds to a broader segment of the population.

Of course, there are many other income-enhancing relief schemes for the needy. Most of them are variations of the schemes discussed above, such as explicit food subsidies from donor organisations (which have turned out to be very problematic as seen in 1999 in Russia), famine and disaster relief (which is not appropriate for the problems the Ukrainian population faces), or direct

¹³ The most widely used measure is a progressive tax regime, i.e. a tax regime that takes a greater percentage of earnings from the rich than from the poor. The proceeds from this tax can then be used to fund social programs that primarily benefit the poor.

distribution programs like school lunch programs (which are special cases of direct income support in cash or in kind).

4.3.2 Overcoming the problems of direct income transfers

Ukrainian policymakers might raise the following objections:

1. The targeting of the direct income transfers is difficult. Although it is known how much official cash income individuals or families have, the authorities do not have sufficient information about the unofficial income of many individuals, nor do they know enough about the household production of many families and the income which is derived from this production.
2. Targeted income transfers may fail due to misuse and corruption. The Chernobyl fund is an illustrative example, as Chernobyl certificates were given many individuals who were not victims of the catastrophe. Hence, the targeting failed even for a program where identification was comparatively easy.
3. One might criticise job creation and food-for-work programs as a contradiction at a time when the government is trying to shut down many unprofitable former state enterprises and is thus destroying many jobs. One could even argue that the subsidisation of certain industries (mining, for example) is effectively a job creation program. If job creation is good, then why are these subsidies so heavily criticised by many foreign advisors?
4. Raising funds for targeted income transfer is nearly impossible in Ukraine at this time. There are many needy in Ukraine whose income would have to be increased by large amounts. It would be impossible to support them all through targeted subsidies while maintaining budget discipline.

All these objections are justified to a point. Addressing the first two problems is undoubtedly not very easy. On the other hand, certain techniques exist that can help to improve the targeting process. By setting the wage in job creation or food-for-work programs at a level at or even below the minimum wage, one will attract only those who have even lower incomes. This process is called self-targeting. Other techniques that are self-targeting are, for example, food-for-work programs where part of the income is paid by providing certain services within the program. If these services are not exchangeable – a daily lunch that is provided to the employees, for instance, can not be exchanged – the income transfer will directly benefit only the target group. Hence, the needy identify themselves as truly needy simply by applying for the program. Misuse of funds is not very likely since in order to benefit from the program the applicant has to work.

Addressing the third argument listed above is easier. Subsidising the needy through jobs in the public service, or, even worse, through subsidies to a largely unprofitable mining industry, is a very inefficient way of transferring income to the needy. The coal mines in Ukraine were subsidised at a level of 3.8% of GDP in 1997, which amounted to over 3.5 bUAH (GERMAN ADVISORY GROUP, 1998). Hence, each of the 500,000 coal miners in Ukraine was subsidised by more than 7,000 UAH per year! As this certainly is more than their average annual salary, much of this subsidy obviously did not end up in the pockets of coal miners and, hence, did little to improve their food security. Hence, a direct income transfer would have cost less and achieved much more in this regard.

This brings us to the fourth point. It is true that the Ukrainian government would have a difficult time raising enough money to fund sufficient income transfers to all of the poor in Ukraine. On the other hand, if direct and indirect subsidies to agriculture, coal mines and other industries were reduced, considerable sums of money would be freed for other uses such as helping the poor. In 1998 and 1999, subsidies to agriculture amounted to 3% of total Ukrainian GDP.¹⁴ As mentioned

¹⁴ See chapter 11 on *WTO Accession and Agricultural Policy in Ukraine*.

above, subsidies to the coal mining industry were of a similar order of magnitude. These subsidies tied up money that could have helped many of the poorest considerably. And they have reduced economic growth since Independence, reducing tax revenues today and thus further limiting the government's ability to afford social security programs that could improve food security.

5 Policy recommendations

The food security problem in Ukraine needs urgent attention for several reasons, of which the most important is ethical. A well-designed strategy to improve food security must be based on accurate analysis and effective measures.

1. Functioning food markets are an indispensable prerequisite to ensure that people all over Ukraine have access to food. A liberal trade regime without direct government intervention can best guarantee access to food for everybody. Therefore, the state should make every effort to enforce its own Law "On State Regulation of Import of Agricultural Products" (Article 5), which states that "*...local governments are forbidden to ban movement of goods among rayons and oblasts, to oblige farmers to deal with particular food processors and purchasers of agricultural products, as well as to set minimum farm-gate and wholesale prices*". Food price controls and trade barriers at the oblast, rayon or city levels are severe impediments to trade, and ultimately hurt the poor.
2. A policy that focuses on ensuring self-sufficiency is, contrary to common belief, not an appropriate means of ensuring food security. Policies aimed at self-sufficiency in those products for which Ukraine has no comparative advantage can be very costly for the whole economy and should be avoided.
3. Large strategic grain stocks established to stabilise supply have proven to be extremely expensive in many countries. Much more effective, as discussed in STRIEWE & VON CRAMON-TAUBADEL (1999, p. 74), is to ensure free market access for all companies that wish to set up storage, processing or retail facilities in a liberalised market.
4. The government can greatly improve the functioning of markets and thus food security by developing a comprehensive market and price information system, comprising the collection analysis and dissemination of data.
5. Food aid provides resources that can stimulate development and increase food security. Although food aid is widely accepted as a potentially useful tool, it is not without pitfalls. Food aid can sometimes generate more negative effects than benefits. The most substantial argument against food aid is that it reduces prices in the recipient country, thus creating disincentives for local production. Furthermore, there is a danger that the income transfer that is implicit in food aid shipments could exacerbate Ukraine's problems with corruption and rent-seeking. If it accepts food aid, the Government of Ukraine should take steps to minimise these dangers. The responsibility for the distribution of food aid should be given to an independent organisation that is under no pressure to grant aid to political favourites, but rather has a mandate to ensure that aid is channelled to the truly needy.
6. Policies need to be developed to ensure that everybody has sufficient income to be able to cover basic food needs. The government's success in paying all pension arrears in 2000 was probably one of the most effective steps ever taken in Ukraine to improve the nutritional status of a key target group (pensioners). A well-targeted social policy is needed to redistribute income in favour of those whose incomes fall short of meeting basic needs. The most efficient way to reach this goal is to establish self-targeting support schemes such as employment programs which pay the minimum wage, or food-for-work programs.
7. The most effective way to ensure food security in the long run is to ensure that the Ukrainian economy continues to grow as it has since late 1999. While economic growth *per se* does not

guarantee food security, it is a necessary condition for the implementation of an effective set of social security programs that can.

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9 *Who Gains and Loses – Import Tariffs and Tariff Rate Quotas for Sugar and Grain in Ukraine*

LUDWIG STRIEWE

1 Introduction

In recent years Ukraine has become a net importer of important agricultural products such as sugar and grain. In an import situation, tariffs take effect and support domestic prices in Ukraine above world market price levels. At the same time, importers and processors of wheat and sugar have lobbied for tariff rate quotas that make it possible to import predetermined quantities of these products at significantly reduced tariff rates.¹ In February 2001, for example, traders were calling for the implementation of a tariff rate quota (TRQ) for wheat of between 500,000 and 700,000 t (UKRAINIAN NEWS, February 19, 2001). And the President signed a law on a 260,000 t sugar import quota on June 18, 2001. What are the effects of tariffs and tariff rate quotas, and is Ukraine well-advised to implement them? The following chapter looks into these questions.

2 The impact and distributional effects of tariffs and tariff rate quotas

2.1 Tariffs

To understand the impact of import tariffs, it is useful to compare the situation with an import tariff with the corresponding free trade situation. If no tariff or non-tariff barriers to trade apply, domestic prices will be closely linked to world market prices. If a country is a net importer of a specific product, domestic prices will tend to equal world market prices plus a margin that accounts for the cost of moving the product in question from the country's border to consumers at inland points.² The resulting domestic price is referred to as the 'import parity price'. For example, if the world market price for grain is 100 US\$/t and the cost of moving grain from Odesa to Kyiv is 20 US\$/t, then the import parity price in Kyiv will equal 120 US\$/t. If, however, a per unit tariff applies to imports of this product, the domestic price will increase to a level that is equal to the free trade import parity price plus this tariff (see figure 1). Hence, import tariffs increase domestic prices. This has the following impact on supply and demand:

1. Increased domestic prices stimulate domestic supply as illustrated in the first panel of figure 1. Domestic supply increases from S_{q_f} to S_{q_i} as the domestic price increases from the free trade import parity price (p_f) to the import parity price plus tariff (p_i).
2. As the domestic price increases, domestic demand falls from D_{q_f} to D_{q_i} . The magnitude of this demand effect (and the supply effect under point 1 above) depends on the elasticity of demand (supply) for the product in question.³
3. The implementation of an import tariff not only changes the quantities supplied and demanded but also generates important distributional effects. For each t of sugar or grain that was produced prior to the implementation of the tariff, domestic producers now receive a price that is increased by the amount of this tariff. Furthermore, producers also produce more

¹ Import tariffs also apply to a wide variety of other agricultural products and tariff rate quotas have also been applied or requested for hops and corn in the past. Lobbying by domestic breweries in 1999 led to the implementation of a tariff rate quota of 50,000 t at a tariff rate of 0% for malt.

² See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

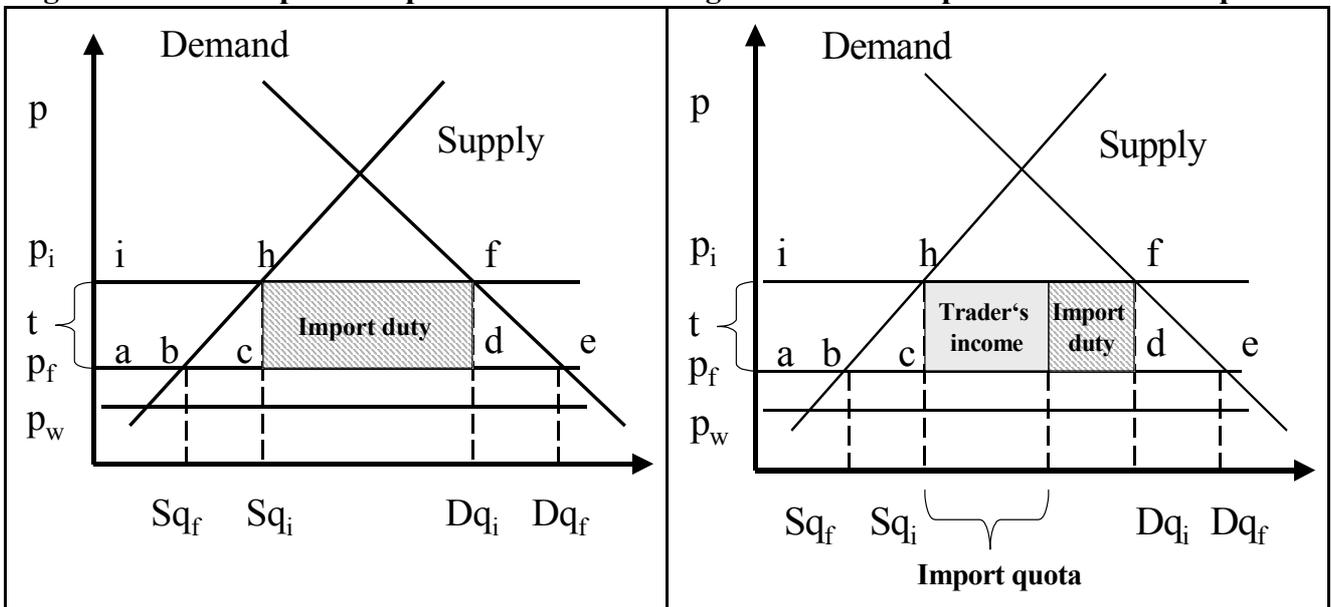
³ The elasticity concept is explained in section 4.2 of chapter 8 on *Promoting Food Security in Ukraine*.

due to the tariff-induced price increase. Altogether, producers benefit by an amount that is equal to the area abhi in figure 1.⁴

4. At the same time consumers lose due to the implementation of the tariff. First, they must pay a higher price for each unit of the product in question that they still demanded after the implementation of the tariff. Second, due to the implementation of the tariff they consume less than before. Altogether, consumers lose an amount that is equivalent to the area aefi in figure 1.⁵
5. For the state, the implementation of the import tariff leads to revenue. Each unit that is imported after the implementation of the tariff (as can be seen in figure 1, the import volume falls from the amount $(Dq_f - Sq_f)$ without the tariff to the amount $(Dq_i - Sq_i)$ with the tariff) generates an amount of revenue equal to the per unit tariff, t . Altogether, therefore, the tariff leads to budget revenue equivalent to the area cdhf in figure 1. If producer gains, consumer losses and government revenue gains are added up, we see that the implementation of the tariff leads to net welfare losses for a country as a whole in the amount of the triangles bch plus def.

Figure 1: The impact of a per unit tariff

Figure 2: The impact of a tariff rate quota



Notes: p_w = world market price; p_f = free trade import parity price; p_i = import parity price with per unit tariff; t = per unit tariff.

In other words, the tariff causes consumers to lose more than producers and the state budget gain. This does not mean that the tariff is necessarily a bad policy; whether a policy is good or bad is a normative question that depends on society's distributional preferences and cannot be answered in an objective scientific manner. Nevertheless, it is important that policy makers realise that there are hidden but substantive economic costs associated with tariffs and other policies that lead to departures from free trade (see VON CRAMON-TAUBADEL & STRIEWE, 1999, chapter 1).

2.2 Tariff rate quotas

The impact of a TRQ can be derived from the discussion of the simple tariff just provided. In figure 1 without the TRQ, traders purchase an amount equal to $(Dq_i - Sq_i)$ at a price of p_w on the

⁴ This is the so-called producer surplus that is explained in greater detail in chapter 10 on *Regional Agricultural Trade in Ukraine*.

⁵ This is equivalent to the so-called consumer surplus that is explained in more detail in chapter 10 on *Regional Agricultural Trade in Ukraine*.

world market, they pay an import tariff of t , and then they move the product in question to inland markets, selling it for a final price of p_i . This situation changes if a TRQ is implemented as depicted in figure 2. As long as the size of this TRQ is less than the amount that would be imported under the implementation of a simple tariff (i.e. the quantity $Dq_i - Sq_i$), then this TRQ will have no impact on the final domestic price. This price will remain at the level p_i and there is no reason why importers would voluntarily sell below this price. Instead, the TRQ simply means that importers will not have to pay tariffs on a part of their total imports. As a result, importers will realise an additional profit equal to the amount of the tariff on each unit of imports that falls under the TRQ. In figure 2, this additional profit is depicted by the shaded area labelled quota rent. The TRQ has no impact on the net welfare losses caused by the tariff as outlined above, but it does have an important distributional implication. In comparison with the situation without the TRQ, a portion of the government's tariff revenue now flows directly to importers.

Of course, importers will be very interested in benefiting from excess profits in the form of the quota rent. However, only those importers who do receive a share of the TRQ will benefit from it. As a result, importers can be expected to lobby the government for shares of the TRQ. For example, they might attempt to bribe government officials or they might promise campaign support for officials facing re-election. It is clear that at the limit, importers will be prepared to spend an amount that is almost as large as the quota rent itself on lobby activities designed to capture this rent. Any part of the quota rent that is spent on lobby activities must be added to the net welfare loss of the tariff itself, since it represents entirely non-productive use of scarce resources. Hence, if TRQ is simply distributed by the government to certain importers, it not only results in a loss of government revenue but may also fuel corruption and generates net welfare losses above and beyond those already caused by the import tariff.

These effects can be avoided if the TRQ is not simply distributed free of charge to importers, but rather auctioned. To receive the right to import without having to pay tariffs, an importer will be willing to bid an amount that is less than or equal to the amount of the tariff per unit of imports. Hence, depending on the relative bargaining powers of the government on the one hand and the importers on the other, the government can expect to receive revenue from a TRQ auction that is less than or equal to the quota rent itself.⁶

In figure 2 it can be seen that the TRQ cannot exceed the volume of imports that would flow in the situation with the tariff alone ($Dq_i - Sq_i$). If the TRQ exceeds this amount, domestic prices will fall below the level p_i . If TRQ in excess of the import volume under free trade conditions ($Dq_f - Sq_f$) is granted, then this TRQ will be worthless in the eyes of importers, the domestic price will fall to the import parity price without tariffs (p_f) and there will be no quota rent associated with the TRQ. Often, importers will have an incentive to collude with the aim of reducing import volumes and maximising the quota rent. If importers are successful in doing so, available TRQ may not be fully utilised, in other words the actual volume of imports will be less than the amount of TRQ that has been granted to importers.

3 Tariff rate quotas for sugar and grain in Ukraine

What is the impact of TRQs in Ukraine? To provide answers to this question we begin with an overview of Ukraine's import policy for sugar and wheat.

⁶ For example, on November 27, 2000, a TRQ for raw sugar was auctioned off by the Russian government. For 3.65 mill. t of TRQ, total auction revenues of 214 mUS\$ were generated (USDA/FAS 2000: Russian Federation, Russian Sugar Tariff Rate Import Quota Auction. Voluntary Report. USDA GAIN Report #RS0060). If this TRQ had not been auctioned off but rather simply granted to importers, the government would not have received the 214 mUS\$ of revenue and importers would have realised increased profits equal to this amount. This is a large amount of money; in the absence of a transparent auction procedure it is easy to imagine that many importers would be tempted to offer government officials significant bribes in return for receiving a share of this TRQ.

3.1 Ukraine's import regimes for sugar and wheat since 1998

Table 1 provides an overview of the import tariffs that applied to sugar and wheat in Ukraine between 1998 and March 2001. For all sugar products, an *ad valorem* tariff of 50% applies together with a minimum per unit tariff of 100 €/t for raw sugar and 300€/t for white sugar. The corresponding tariffs for wheat are 30% and 40€/t respectively.⁷

Table 1: Import tariffs for sugar and wheat between 1998 and March 2001

	Normal tariff	Minimum tariff
Sugar	50% <i>ad valorem</i>	no less than 300 €/t
Raw sugar	50% <i>ad valorem</i>	no less than 100 €/t
Wheat	30% <i>ad valorem</i>	no less than 40 €/t

Source: Law of Ukraine "On State Regulation of Agricultural Imports in Ukraine" dated July 17, 1997.

As can be seen in table 2, numerous exceptions to these standard tariff rates have been made in the past. For example, in 1998 a TRQ of 300,000 t of raw sugar at a reduced tariff rate of 15% (but no less than 50 €/t) was opened. By August 1, 1998, however, only 114,000 t of this TRQ had been used. Hence, for the remaining amount of TRQ the applicable tariff rate was reduced to only 1 €/t. In the summer of 1999 a TRQ of 60,000 t of raw sugar at a tariff rate of 1% (but no less than 1 €/t) was established and in the summer of 2000 a TRQ of 260,000 t of raw sugar at a tariff rate of 5 €/t was created.

Table 2: The history of tariff rate quotas for wheat and sugar in Ukraine

Date	Event
April 21, 1998	A presidential decree creates a TRQ of 300,000 t for sugar to be used by August 1, 1998. Conditions: reduced tariff rate of 15% but no less than 50 €/t.
Summer 1998	By August 1, only 114,000 of a potential 300,000 t of raw sugar had been imported within the TRQ created in April.
October 1998	The tariff that applies to the remaining TRQ of 186,000 t (300,000 t – 114,000 t) is lowered from 50 €/t to 1 €/t. Nevertheless, as of early 1999, no corresponding imports take place.
July 16, 1999	Parliament creates a new TRQ for raw sugar for the year 1999. For 60,000 t, the reduced tariff rate is 1% <i>ad valorem</i> but not less than 1 €/t.
December 1999	The Cabinet of Ministers Resolution No. 2348 from December 22, 1999, creates a TRQ of 1,438,000 t of milling wheat designed to ensure that the population is adequately supplied with bread and baked goods. This TRQ is available until September 1, 2001, at a tariff rate of 0.01% <i>ad valorem</i> .
April 2000	The Cabinet of Ministers proposes to Parliament the creation of a TRQ for raw sugar of 350,000 t. However, this proposal meets with opposition in Parliament's agricultural committee. Proponents of the TRQ argue that it must be approved quickly in view of the expected sugar deficit of 340,000 t in the summer of 2000.
May 24, 2000	The Cabinet of Ministers and Parliament agree to a TRQ of 260,000 t of raw sugar at a tariff rate of 5 €/t. Parliament passes the corresponding Law on June 8, and it is signed by the President on June 26, 2000. This TRQ is granted until September 1, 2000.
July 3, 2000	The government of Ukraine passes regulations for the implementation of the 260,000 t TRQ for sugar and its distribution among sugar processing enterprises.
Summer 2000	The following sugar processing enterprises benefit from the TRQ for raw sugar: DubnoSakhar (Rivne oblast), Palmyra (Cherkassy oblast), Shelton- Mykolayiv (Mykolayiv oblast), Myronovsky sugar refinery (Kyiv oblast), and Kotovsky sugar refinery (Odesa oblast)
December 2000	The Ministry of Agriculture signals that a special additional TRQ for raw sugar could be opened in May after farmers have finished sowing sugar beets. Sugar processors present a proposal that would open a TRQ for 450,000 t of raw sugar at a rate of 5 €/t.
December 2000	Of the existing 260,000 t of TRQ for raw sugar that were created in mid-2000, only 230,000 t are

⁷ *Ad valorem* and per unit tariffs both lead to the effects that were discussed above in section 2. They do have slightly different implications for the domestic price fluctuations that result from world market price changes, because the *ad valorem* tariff is applied as a multiple of the world market price whereas the per unit tariff acts as an additive constant.

	actually imported by September 1, 2000.
February 2001	A draft law calling for a TRQ of 450,000 t of raw sugar is introduced in Parliament. This draft is rejected by the agricultural committee and debate is postponed until May. According to this draft Law (No. 7024) only enterprises that processed a minimum of 35,000 t and sold a minimum of 20,000 t of sugar in the year 2000 would be entitled to receive a share of this TRQ. The Ministry of Agriculture proposes that the minimum price of sugar be increased by 25-30% to 2,500-2,600 UAH/t in the 2001/2002 marketing year and that the minimum price for sugar beet be increased by 15-22% to 160-170 UAH/t.
February 2001	Grain traders warn that milling wheat is in short supply on Ukrainian markets and suggest that a TRQ be implemented.
June 2001	The President signs the Law on a 260,000 t sugar import quota.

Source: UNIAN (various issues). UKRAGROCONSULT (various issues). USDA.

As Ukraine became a net importer of milling wheat towards the end of 1999 the question of TRQ for this product also became topical. As wheat prices increase dramatically in December 1999, and shortages of milling wheat were reported in some regions, a TRQ of 1,438,000 t of milling wheat at a reduced tariff rate of 0.01% was opened. In order to take advantage of this TRQ, importers had to receive permission from local administrations. According to USDA/FAS information (GAIN REPORT No. UP0010) this TRQ led to imports of 347,000 t of wheat in the year 2000, primarily from Hungary, the Slovak Republic and Kazakhstan.

3.2 The impact of tariff rate quotas on Ukrainian sugar markets

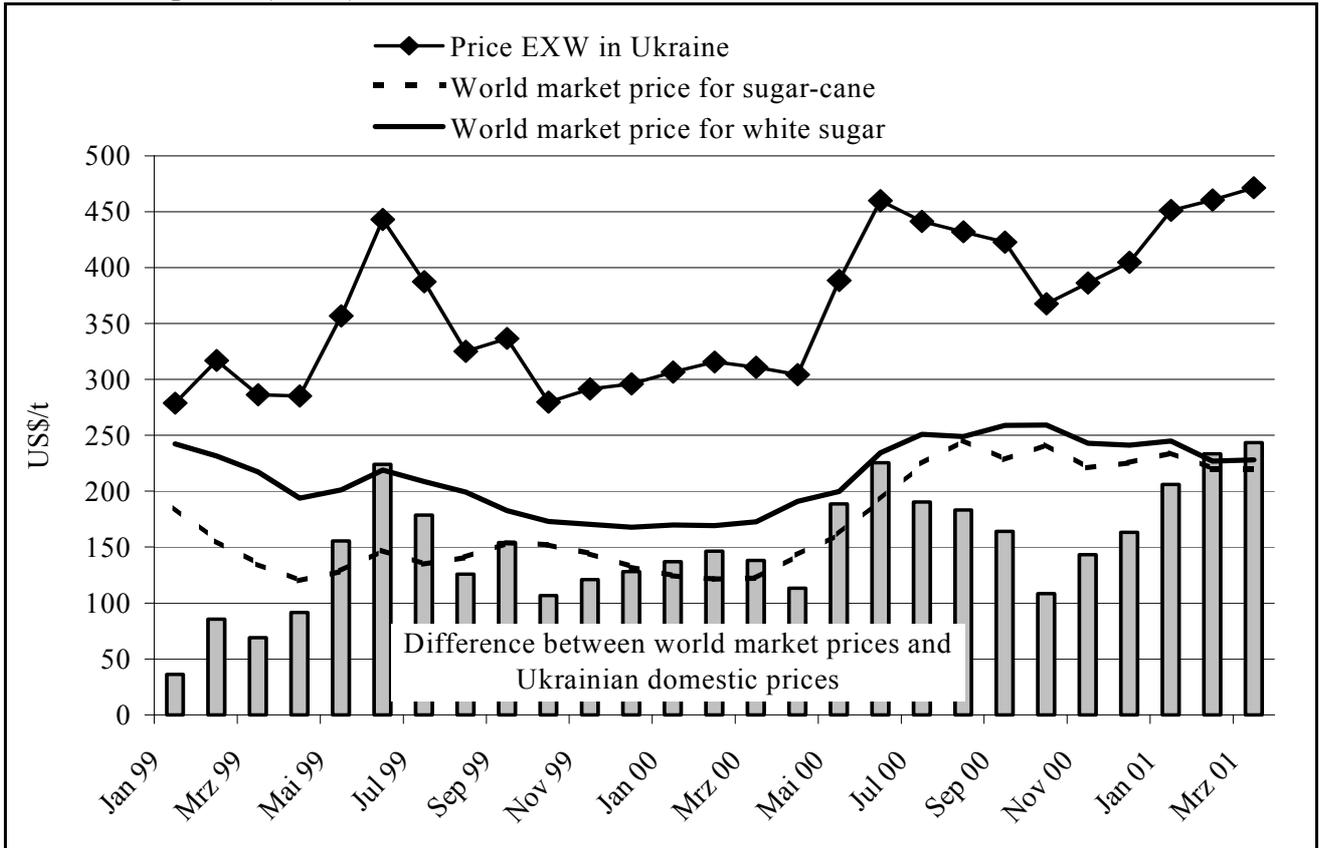
The TRQs discussed above had obvious effects on Ukrainian sugar markets. In figure 3, Ukrainian prices for white sugar as well as world market prices for white sugar and raw sugar and the difference between Ukrainian and world market white sugar prices are presented. World market prices for white sugar are always higher than world market prices for raw sugar, and the average ratio between these prices is roughly 1.2 : 1, although short run deviations from this ratio do occur. The Ukrainian white sugar price (EXW) is considerably higher than the world market prices for white sugar or raw sugar. The difference between Ukrainian and world market prices for white sugar has, in the last three years, always been lowest in the fall, falling to a level of roughly 100 US\$/t (figure 3). Between the fall and the following summer, especially the months of June and July, the Ukrainian domestic price climbs continuously to a level in excess of 200 US\$/t above the world market price.

Ukraine is in an import situation, so domestic prices in Ukraine would not fall to world market levels even without import tariffs for sugar. As discussed above, they would fall to an import parity level that is equal to the world market price plus the marketing costs associated with moving sugar from the world market to Ukrainian consumers. Nevertheless, it is also clear that import tariffs on sugar do tax Ukrainian consumers. If we assume an average import tariff for sugar of only 100 US\$/t, and Ukrainian domestic consumption of 1,6 mill. t of sugar, then the import tariff leads to additional annual consumer expenditure of 160 mUS\$ (864 mUAH) or 0.5% of Ukrainian GNP.

The impact of TRQ can be seen in figure 4, which combines the price information depicted in figure 3 with data on Ukrainian imports and exports of sugar. Taking the year 2000 as an example, it can be seen that in the spring of that year, while a TRQ for sugar was being hotly debated in political circles, imports were very low and domestic prices increased strongly from roughly 300 to 460 US\$/t. Following the signing of the law that opened a TRQ for sugar in June 2000, imports increased dramatically; in July and August 207,600 t of sugar were imported.⁸ Despite these imports, domestic prices only fell by roughly 20-30 US\$/t, or 6%.

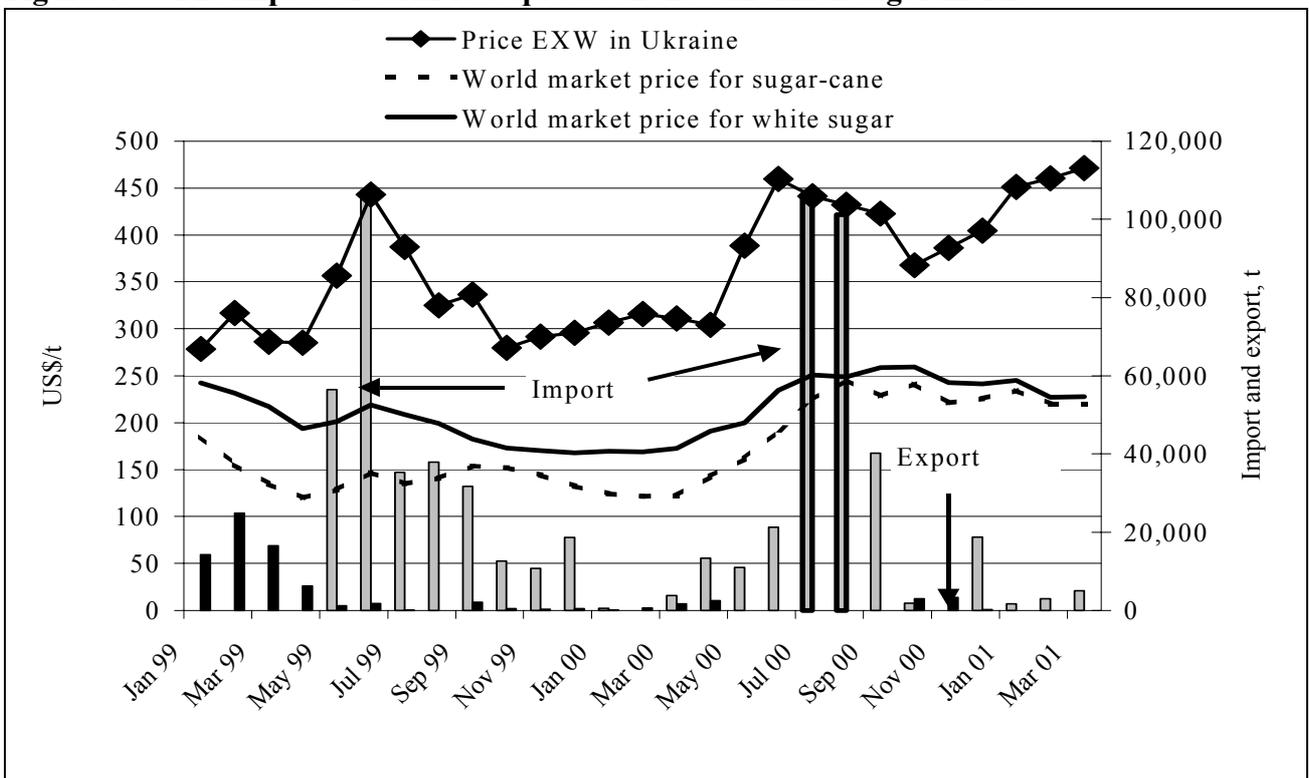
⁸ Many traders believe that Ukraine's actual imports of sugar have considerably exceeded official imports in recent years, since a great deal of sugar is smuggled into Ukraine illegally from Russia and, in the year 2000, increasingly from Moldova and Poland (see UKRAGROCONSULT No. 16, 2001).

Figure 3: World market prices for raw sugar and white sugar and Ukrainian white sugar prices (US\$/t)



Source: UKRAGROCONSULT (1999, 2000 and 2001); USDA, Sugar and Sweetener Outlook Report, January 2001; prices from the LIFFE and CSCE exchanges in London (raw sugar) and New York (white sugar), respectively.

Figure 4: The impact of tariff rate quotas on the Ukrainian sugar market



Note: Between October 1999 and September 2000, official imports totalled 331,000 t of sugar including 63,000 t of white sugar and 268,000 t of raw sugar. Trade quantities for the months January through March 2001 are estimated.

Source: See figure 3.

These numbers allow us to calculate roughly the volume of additional profits (quota rents) that importers and/or processors were able to derive from the TRQs. In table 3, the import quantities in July and August 2000 are multiplied by the difference between white sugar prices in Ukraine and on world markets.

Table 3: Calculating the quota rents for raw sugar importers in the year 2000

Month	Imports (t)	Price difference between domestic and world market (US\$/t)	Price difference minus marketing and transport costs (US\$/t)	Estimated quota rent (US\$)
July	106,400	190	140	14,896,000
August	101,200	183	133	13,459,600
Sum				28,355,600

Source: Own calculations.

Of course, the full difference between domestic and world market prices does not accrue to importers, because part of this difference must be used to cover the costs of transportation and marketing as well as the remaining tariff of 5 €/t.⁹ For this reason, the price difference between domestic Ukrainian and world market prices for white sugar is reduced by estimated marketing and transport costs of 50 US\$/t to derive the quota rent per t. Hence, the per unit quota rent in the third column of table 3, and the estimated volume of quota rents in the fourth column, can be considered lower bound estimates. We see that the total quota rents amounted to almost 28.4 mUS\$. Without the TRQ, this money would have represented budget revenues for the Ukrainian government. Due to the use of the TRQ, selected, privileged sugar importers and processors were subsidised to the tune of 28.4 mUS\$ or almost 153 mUAH.

3.3 The impact of import tariffs on Ukrainian wheat markets

As depicted in figure 5, the Ukrainian wheat market can be analysed in a similar fashion.¹⁰ Towards the end of 1999, Ukrainian wheat prices began to increase dramatically, reaching roughly 180 US\$/t by mid-2000. At the same time, world market prices remained constant at roughly 110-120 US\$/t. Traders report that the CIF import price of wheat at Ukrainian harbours in early 2000 was roughly 127 US\$/t.

Using the information in figure 5 and a number of simple assumptions, it is possible to calculate the rents associated with TRQs for wheat in Ukraine. Assume that most of the TRQ imports took place in the months April to June, when market prices in Ukraine were between 160 and 180 US\$/t. Furthermore, assume that importers did not have to pay value added tax. Based on a CIF price of 127 US\$/t plus costs of transportation and marketing of roughly 17 US\$/t (depending on the import region in Ukraine these costs vary between 15 and 20 US\$/t), we see that importers who did not have to pay import tariffs could supply wheat at a price of roughly 144 US\$/t on domestic Ukrainian markets. Since the market price in Ukraine was between 160 and 180 US\$/t, the quota rent per t of imported wheat lay between 16 and 36 US\$/t. Based on TRQ imports of 347,000 t of wheat, total quota rents must have amounted to somewhere between 5,5 and 12,5 mUS\$. Again, this money represents foregone budget revenue for the government of Ukraine and excess profit for privileged importers.

⁹ The cost of processing raw sugar into white sugar in Ukraine does not need to be explicitly accounted for in these calculations, since they are carried out on a white sugar basis.

¹⁰ For more information on grain price determination see chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

Figure 5: The impact of tariff rate quotas on the Ukrainian wheat market

Source: UKRAGROCONSULT (various issues); USDA; Own calculations.

4 Policy recommendations

As long as Ukraine remains a net importer of agricultural products such as sugar, TRQs will be hotly debated. Whether or not such TRQs should be granted, when they should be granted, at what reduced tariff rates, and to whom; all of these questions are of great professional and personal interest to specific firms and individuals in Ukraine. It is clear that different groups will have different interests. In the case of sugar, for example, sugar beet producers will be opposed to the granting of TRQs as these will tend to reduce domestic prices (if they have any effect on prices at all). At the same time, however, it is clear that traders and processors of sugar will lobby for TRQs with significantly reduced tariff rates. The main results of the analysis above are:

1. An important political argument that is often advanced in favour of TRQs is that they will lower 'excessive' domestic prices. This does not appear to have been the case in Ukraine in recent years. As discussed above, moreover, there is no reason to expect TRQs to lower domestic prices, as long as the volume of TRQ granted is not excessive (see section 2 for details). In recent years, TRQs for wheat and sugar in Ukraine have not been fully utilised. This suggests that importers are colluding with the express aim of ensuring that TRQs do not lead to domestic price reductions. After all, importers are primarily interested in maximising quota rents.
2. Due to TRQs, the Ukrainian government loses tariff revenue. For sugar alone, reduced revenue due to TRQs in the year 2000 is estimated at 153 mUAH.
3. It is often argued in the case of sugar that sugar processors create jobs, economic activity and, as result, tax revenue in the form of profit and income taxes. However, this cannot be used to justify TRQs for sugar, because without these TRQs, the same amounts of sugar

would be imported and processed. TRQs simply have the effect of channelling these imports to specific, privileged processors.

4. Proponents of TRQs also argue that they are necessary to ensure that more sugar is processed in Ukraine. After all, it is argued, it cannot be in Ukraine's best interest that Russia and Belarus import and process raw sugar, and that the resulting white sugar is smuggled into Ukraine so that processing takes place abroad while Ukrainian sugar refineries operate far below capacity. True, but this problem could be solved by simply reducing the tariffs that apply to imported raw sugar in Ukraine. What is the sense of first setting a high tariff for imported sugar in Ukraine, thus increasing the costs of processing and reducing the competitiveness of domestic refineries, and then introducing a TRQ to negate these effects again? The only possible explanation (not justification) for this policy can be that it enables policy makers to provide a few privileged sugar refineries with subsidies at the expense of Ukrainian consumers. There can be no justification for the Ukrainian system of TRQs for sugar and wheat in terms of economic efficiency. Instead, this system is simply a way of first creating significant rents at the expense of consumers (*via* tariffs) and then distributing these rents to the most successful lobbyists (*via* TRQs).
5. TRQs are permitted in principle by WTO regulations. However, since Ukraine does not have a fixed TRQ regime but rather varies its TRQs and their preferential effects from year to year, the Ukrainian system is not fully compatible with WTO regulations. Furthermore, the issue of TRQs is likely to be one of the most important and hotly debated issues in the next round of WTO negotiations.
6. Recent years have shown that Ukraine's government, parliament and its administration have spent a great deal of time and energy debating and implementing TRQs. At any given time, a number of proposed laws on the introduction or modification of TRQs are binding capacities that could be dedicated to other, much more important laws such as the land code, or bank reform. In other words, policy makers in Ukraine waste a considerable amount of time and effort determining who should receive what privileges in the form of TRQs. This time could be better spent creating conditions for growth in agriculture and the economy as a whole.

As outlined in section 2, import tariffs lead to net welfare losses. Hence, the first best solution would be to significantly reduce or even eliminate import tariffs for agricultural products in Ukraine. This would simultaneously eliminate the need for TRQs and all the problems associated with these quotas. Domestic prices in Ukraine would fall, thus increasing the real incomes of Ukrainian consumers. This option is especially attractive in the case of grain. As outlined in chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets* it is very likely that grain prices in Ukraine will fall considerably when Ukraine returns to a net export position following the harvest in 2001. By reducing import tariffs on grain, it would be possible to initiate this price decline now, thus making it less precipitous on.

Eliminating or at least significantly reducing import tariffs is also the most sensible policy from an economic point of view in the case of sugar. Consumers would pay less for sugar and the competitiveness of Ukraine's domestic sugar processing industry would increase. Of course, this would reduce the competitiveness of Ukraine's domestic sugar beet production, and this production could fall further.¹¹ Therefore, for political reasons it is unlikely that import tariffs for sugar will be eliminated completely. It would, nevertheless, make sense to reduce import tariffs for sugar somewhat, for example to 20 or 30%, and eliminate the use of TRQs. In this way, a certain amount of protection for sugar beet producers could be maintained, sugar refineries' access to low-priced raw

¹¹ See chapter 15 on *The Present and Future Profitability of Sugar Production in Ukraine* for a detailed discussion of the competitiveness of sugar production in Ukraine.

sugar from world markets could be ensured, and the numerous negative effects of TRQs and their distribution avoided. This solution would have the following advantages:

1. The state would no longer forego tariff revenues;
2. Sugar beet producers and processors could plan on the basis of a simple and transparent system;
3. Domestic sugar prices would be stabilised and the current seasonal fluctuations reduced; and
4. The reduction of tariffs and the associated reduction of domestic sugar prices in Ukraine would bring Ukrainian markets more in line with markets in neighbouring countries, thus reducing the incentives to smuggle sugar into Ukraine.

Finally, Ukrainian consumers would benefit in the form of lower prices and the corruption and political 'games' associated with the creation and distribution of quota rents in Ukraine would come to an end.

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10 Regional Agricultural Trade Model in Ukraine

SERGIY ZORYA

1 Introduction

Almost ten years ago A.A. Nikonov, President of the Soviet Academy of Agricultural Science, said: "... *The shortcomings in the storage, transport and processing of agricultural products mean that it simply makes no sense to increase agricultural output*" (cited in STRIEWE, 1998). In 1998, the German Advisory Group determined that farmers in Ukraine receive only roughly 40% of the FOB price of the grain they produce, as compared with roughly 70% in Germany (see STRIEWE & VON CRAMON-TAUBADEL 1999). The reason Ukrainian farmers received so much less for their grain lies in Ukraine's inefficient and monopolistic grain marketing industry, something which has also been analysed by VALDES (1997) and SEDIK & KOBUTA (1999). In 2000, Ukraine became a net importer of grain and excessive marketing costs translated into very high grain prices for Ukrainian farmers.¹ Hence, excessive marketing costs have a negative impact on Ukrainian farmers in a net export situation, and a positive impact in a net import situation. However, Ukraine is composed of consumers as well as farmers. Clearly, consumers' interests will be the opposite of farmers'; consumers prefer low prices, and benefit when excessive marketing costs drive domestic prices even lower than they would otherwise be in an export situation. Conversely, excessive marketing costs mean that consumers pay even more in an import situation. The conflicting interests of consumers and producers of grain have important implications if we do not consider Ukraine as a whole, but instead acknowledge that Ukraine is made up of regions, some of which (e.g. Vinnytsya oblast) produce large grain surpluses, while others (e.g. Donetsk oblast) are grain deficit regions. Clearly, producer interests will dominate in the former, while consumer interests dominate in the latter.

To cast more light on these issues, the detailed model of regional agricultural trade in Ukraine has been developed. The model can be used to analyse the impact of reducing marketing costs on Ukrainian exports and imports, on intra-Ukrainian movements of agricultural commodities and food, as well as on farm prices and margins. Using the model it is possible to address the following questions:

- How much do farmers and traders in Ukraine lose as a result of excessive marketing costs?
- Which regions in particular would benefit (lose) as a result of a reduction of these costs?
- Which infrastructure investments would generate the greatest returns in the form of welfare-enhancing agricultural trade in Ukraine?
- What are the economic costs that result from administrative barriers to inter-oblast trade that greatly reduce market integration in Ukraine?
- What potentially welfare-enhancing intra-Ukrainian trade is being hindered by such barriers, and what improvements in price stability (and hence, food security) could such trade generate?
- How do producer and consumer welfare at the national and regional levels react to changes in world market prices and/or agricultural policy in Ukraine?

¹ The phenomenon is analysed in chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

2 A model of regional agricultural trade in Ukraine

2.1 The nature of the model

In order to obtain insights into the regional trade of agricultural commodities in Ukraine, a spatial equilibrium model based on the TAKAYAMA & JUDGE Quadratic Programming approach has been developed. This model mathematically formulates supply and demand functions for agricultural commodities at the oblast level in Ukraine, as well as transport activities between oblasts, and export (or import) activities. The model determines optimal trade flows for a given situation (regional production and consumption as well as world market prices) by maximising producer and consumer surpluses, which is equivalent to minimising transport costs. In addition to aggregate data on trade flows at national level, the model produces comprehensive data at the regional level: producer and consumer welfare, supply and demand, domestic prices as well as the changes in these variables that are triggered by exogenous and endogenous shocks such as changes in world market prices.

Although the model is static and only provides a simplified picture of market dynamics, it still serves as a useful tool for analysing Ukrainian agricultural markets and estimating the impact of endogenous and exogenous shocks on regional welfare in Ukraine.

2.2 Data and parameters

Generally, any agricultural commodity can be modelled using the framework outlined above. Both export and import situations can be modelled, but not both simultaneously (only net international trade flows are considered). To illustrate the use of this model it is applied to Ukrainian **wheat markets** in this chapter. The export situation that prevailed in 1999/2000 is modelled. This example not only allows us to illustrate the use of the model, it also provides some interesting and topical results for policy makers in Ukraine.

Data quality is a serious concern in Ukraine. In addition, much data is not available officially. Therefore, most model parameters have been calculated based on official statistical data and information received from traders. As the quality of data is a very important precondition for the success of the model, data sources are explained in detail in the following.

Wheat supply at the oblast level equals production of wheat (STATE STATISTICS COMMITTEE OF UKRAINE, 2000) in oblasts *minus* wheat losses (UKRAGROCONSULT, 1999) distributed among oblasts on the basis of wheat sowing areas (APK PARTNER, 1999).

Wheat demand at the oblast level equals food wheat demand + feed wheat demand + seed demand. Food wheat demand equals total food wheat consumption (UKRAGROCONSULT, 1999) distributed among oblasts on the basis of population (UEPLAC, 2000). Feed wheat demand equals total feed wheat usage (UKRAGROCONSULT, 1999) distributed among oblasts on the basis of converted livestock units;² seed wheat demand equals sowed areas of winter and spring wheat in each oblast multiplied by average seeding norms in Ukraine.³

Supply elasticities⁴ are assumed to be very low in the short run when wheat production mainly depends on the availability of inputs, rather than future price expectations. Therefore, the supply elasticities equal 0.2 in net exporting oblasts, and 0.1 in net importing oblasts.

Demand elasticities are estimated on the basis of livestock numbers (relatively elastic demand) and the population at the oblast level (relatively inelastic demand). Elasticities of demand

² Data on actual number of cattle, pigs and poultry in the oblasts of Ukraine – State Statistics Committee of Ukraine; conversion coefficients (Cattle = 1, pig = 1/12, poultry = 1/100) - KTBL: Taschenbuch Landwirtschaft, 1998/1999.

³ Seeding norms are average for winter wheat (150-200 kg) and spring wheat (160-250) – UKRAGROCONSULT (1999).

⁴ The concept of elasticity is explained in section 4.2 of chapter 8 on *Promoting Food Security in Ukraine*.

vary from -0.4 to -0.8 . The larger the population and livestock numbers, the higher the (absolute) elasticity.

Marketing cost data was provided by agricultural traders such as *TradiGrain Ukraine Ltd.* and *Kyiv Atlantic Ltd.* Export marketing costs include elevator storage and handling, rail costs (other than transportation), DAF rail handling and customs costs, sea port handling, weight losses, certification, additional expenses (for example, business trip costs), as well as financial and transaction costs. The model also includes harvest losses and losses during farm storage, which are not included in marketing costs, but used for the domestic price and welfare calculations.

Rail transportation costs: A transportation matrix was developed based on actual rail tariffs at the end of 1999. The matrix shows the cost of transportation of one t of wheat between any two oblasts within Ukraine and from any oblast centre to FOB and/or DAF export points.

Seaport capacities were provided by the staff of the agricultural journal APK PARTNER. The model assumes no constraints within suggested capacities, i.e. exporters can export grain freely through the Odesa, Illichivsk, Mykolayiv, and Kherson seaports within determined capacities without experiencing problems with the availability of wagons, the timely fulfilment of port clearing procedures, etc.

DAF export capacities: As Ukraine exports wheat to Russia and Belarus, DAF export points are included in the model. The DAF capacities in the model are estimated on the basis of actual 1999 wheat exports to these countries (STATE CUSTOMS COMMITTEE OF UKRAINE, 1999).

World market price: The world market price FOB Odesa is assumed to equal 105 US\$/t which roughly corresponds to the situation in 1999/2000.

2.3 The structure of the model

The model is designed using GAMS software.⁵ GAMS incorporates ideas drawn from relational database theory and mathematical programming and merges these ideas to suit the needs of strategic models. Relational database theory provides a structured framework for developing general data organisation and transformation capabilities. Mathematical programming provides a way of describing a problem and a variety of methods for solving it.

In the model, gains and losses are expressed as changes in aggregate producers' and consumers' surpluses.⁶ The balance of producer and consumer welfare changes depends on whether an oblast is in an import or export situation (figure 1). Ukraine is generally a wheat exporter (with the exception of the 2000/2001 marketing year), therefore, the 'total' sub-figure reflects the export situation.

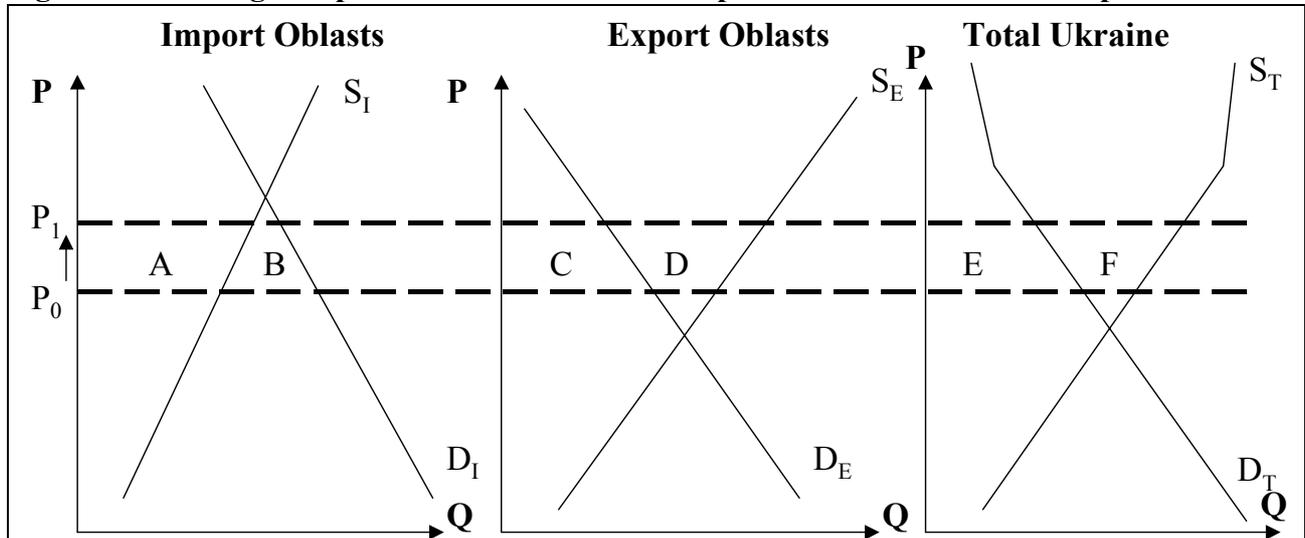
In the import oblasts, an increase in the wheat price from P_0 to P_1 (for example due to increasing world market prices) increases producer welfare by an amount equivalent to the area A, and decreases consumer welfare by A+B. Consumers lose more than producers win, and B measures the net social loss. In the export oblasts, producer surplus increases by C+D, while consumer surplus is reduced by C. Thus, D is the net social gain. Aggregating these effects, the total increase in producer welfare is E+F (= A+C+D) and the total decrease in consumer welfare is E (= A+B+C). The net welfare change due to the price increase is therefore E+F-E = F = D-B. In the net export situation D>B and the net welfare change due to the price increase is positive. In a net import situation, the

⁵ I would like to thank Martin Banse for help with GAMS.

⁶ Producers' surplus equals the aggregate net profits of individual producers. It is calculated as the difference between gross sales revenues (quantity supplied times prices) and gross total costs (the area under the supply curve). Consumers' surplus is the sum of individual consumer utility surpluses. It is equal to the aggregate willingness to pay (area under the demand curve) minus total aggregate expenditure (quantity demanded times price). These concepts are explained in greater detail in standard micro-economic textbooks.

opposite is true. Note that this simple depiction abstracts from the costs of marketing grain, both to or from world markets and between oblasts. Considering these costs would complicate figure 1 considerably and is therefore not attempted here. The model described here is, however, designed to consider marketing costs explicitly.

Figure 1: Changes in producer and consumer surpluses due to an increase in prices



Mathematically the model is based on the optimisation of the following objective function:

$$L = \sum_{i=1}^{25} [PS(q_i^s)] + \sum_{i=1}^{25} [CS(q_i^d)] + \sum_{i=1}^{25} \sum_{j=1}^{25} TCU_{i,j}(q_{i,j}) + \sum_{i=1}^{25} \sum_{n=1}^8 TCE_{i,n}(q_{i,n})$$

where:

L = social welfare

i = 1,2,...,25 oblasts

PS_i = producer surplus in oblast i

CS_i = consumer surplus in oblast i

q_i^s = quantity of wheat supplied in oblast i

q_i^d = quantity of wheat demanded in oblast i

$TCU_{i,j}$ = transportation cost between oblast i and oblast j

$q_{i,j}$ = quantity of wheat transported from oblast i to oblast j

$TCE_{i,n}$ = transportation costs between oblast i and FOB port or DAF station n

n = 1,2,...,8 export points (FOB port or DAF station)

$q_{i,n}$ = quantity of wheat transported from oblast i export point n

Social welfare L is maximised subject to the constraint that all quantities supplied, demanded and transported are greater than or equal to 0.

3 Illustrating use of the model

In the following, the three scenarios are used to illustrate the use of the model and to derive several policy recommendations. The scenarios are summarised in the table 1 and explained in detail below.

Table 1: Different scenarios in the model

Item	Scenario 1	Scenario 2	Scenario 3
Marketing costs	Reduce by average 50%	Reduce by average 50%	Regional export bans
Domestic supply	Same as in base period	Increase by 25%	Same as in base period

3.1 Scenario 1: Reducing marketing costs

Scenario 1 is designed to cast some light on the implications of excessive grain marketing costs for agricultural development in Ukraine. In this scenario, all marketing costs (except rail and transportation fees) are reduced by 50%, to a level comparable to Western Europe. In some cases, marketing costs in Ukraine are more or less than twice as high as in Western Europe, but for simplicity the reduction coefficient 50% was used throughout. Concerning the cost of obtaining certificates, not only the associated fees but other transaction costs as well are important. These costs often significantly inflate the real costs of certification.⁷

Rail transportation costs are not changed in the simulation. Generally, rail transportation fees in Ukraine are lower than in Germany (see, for example, STRIEWE, 1998). However, the transaction costs of railway transportation in Ukraine are very high. These transaction costs are often the result of the *Ukrzaliznytsya* monopoly. For example, the railway charges a wagon-lock fee (security locks) which amounts 0.30 US\$/t. Traders argue that grain transportation does not require such locks – they do not guarantee grain security and make little sense for such a product as grain. Furthermore, traders today demand not only transport services, but logistic service as well. And these logistic services are almost non-existent in Ukraine today. Nevertheless, as these constraints are very difficult to measure, railway costs are assumed to remain constant in scenario 1, except for the elimination of the wagon-lock fee.

Harvest and farm storage losses are reduced by factor of three in scenario 1. STRIEWE (1998) estimated harvest losses to be 7 US\$/t of grain, and farm storage and handling losses to be an additional 7 US\$/t. SHPYCHAK (1998) measured the grain harvest losses in Ukraine to average 180 kg/t or 18 US\$/t (at a world market price of 100 US\$/t). These losses are very high compared with Western standards. Harvest and farm losses in Germany, for example, are estimated to be 3.9 US\$/t (STRIEWE, 1998).

The simulation of scenario 1 casts light on the following questions:

3.1.1 How much do farmers and consumers in Ukraine lose as a result of which specific excessive marketing costs?

The results of scenario 1 with the reduction of different marketing costs are shown in table 2.

Table 2: Changes in total producers' and consumers' surpluses and transportation costs due to reductions in marketing costs (mUS\$)

	All costs	Seaport handling	Elevator costs	Harvest and farm losses	Certification	Weight losses during marketing	Other costs*
Producer surplus	321.4	81.7	38.3	128.2	9.8	7.9	55.5
Consumer surplus	-263.0	-68.3	-29.5	-102.6	-8.1	-7.3	-47.2
Transportation costs	61.6	15.7	7.2	24.1	2.0	1.6	11.0
Total social welfare	120.0	29.1	16.0	49.7	3.7	2.2	19.3

Note: * Security locks, financial costs, trade margin and additional expenses.

Source: Own calculations.

⁷ Traders argue that certification procedures take a long time. It takes 15 days to get a radiological certificate, for example. One trader stated that the quickest export terms for grain in Ukraine is around 4 weeks.

Table 2 shows that the 50% reduction in marketing costs leads to an increase in producer surplus of 321.4 mUS\$ (13.5%), a decrease in consumer surplus of 263 mUS\$ (29.3%), and an increase in transportation costs by 61.6 mUS\$ (24.5%) due to an increase in wheat trade that outweighs reduced prices. The change in total social welfare (producer surplus *plus* consumer surplus *plus* transportation costs) is estimated to be 120 mUS\$. The total producer improvement of 321 mUS\$ is equivalent to 23 US\$/t of wheat marketed in the 1999/2000 marketing year, or 54.5 US\$/ha of the harvested area under wheat in 1999.⁸

The most excessive marketing costs are seaport handling and elevator handling costs. The reduction of these costs alone would increase producer surplus by 120 mUS\$. This roughly equals the improvement in producer welfare that results from the reduction of the harvest and farm handling losses (128.2 mUS\$).

3.1.2 Which regions would benefit from a reduction in marketing costs?

Benefits and losses are distributed among oblasts depending on their export or import situation. Producers benefit the most in export oblasts with high wheat production, high supply elasticities, and locations close to seaports and DAF points. Consumer losses are largest in import oblasts with high human and livestock populations, high demand elasticities, and locations far from seaports or DAF export points.

The corresponding results of scenario 1 are reproduced in table 3. After reducing marketing costs by 50%, the oblasts in which producers benefit by 10 mUS\$ or more are: Autonomous Republic of Crimea, Vinnytsya oblast, Dnipropetrovsk oblast, Donetsk oblast, Zaporizhyya oblast, Kyiv oblast, Kirovohrad oblast, Odesa oblast, Mykolayiv oblast, Kherson oblast, Poltava oblast, Sumy oblast, Cherkassy oblast, Khmelnytskyi oblast, and Kharkiv oblast. Odesa oblast, Mykolayiv oblast, and Kherson oblast are significantly affected by the decrease of the seaport handling costs due to their proximity to FOB export points, and Kharkiv oblast to the DAF point. Again, adjusting wheat marketing costs to Western Europe levels would bring Ukrainian farmers an additional 321 mUS\$ per year.

Among oblasts with the largest reductions in consumer welfare are Autonomous Republic of Crimea, Vinnytsya oblast, Dnipropetrovsk oblast, Donetsk oblast, Kyiv oblast, Kharkiv oblast, Odesa oblast, Luhansk oblast, and Lviv oblast. The largest consumer losses occur in Donetsk oblast, while the smallest occur in Chernivtsi oblast.

The simulation also makes it possible to estimate the benefits and losses (gain in producer welfare minus loss in consumer welfare) by oblast. If the increase in producer surplus is higher (smaller) than the reduction in consumer surplus, the oblast realises a net benefit (loss). Most oblasts realise net benefits, reflecting the fact that most are net grain exporters. The largest net benefits occur in Vinnytsya oblast, Kirovohrad oblast, Zaporizhyya oblast, Mykolayiv oblast, Odesa oblast, Poltava oblast, and Kherson oblast. The net loss oblasts are Donetsk oblast, Ivano-Frankivsk, Transcarpathian oblast, and Luhansk oblast. Gains and losses are roughly equivalent in Autonomous Republic of Crimea, Volhynia oblast, Dnipropetrovsk oblast, and Kyiv oblast.

The results in tables 2 and 3 show that the consuming population loses as a result of improved wheat trade prospects due to reduced marketing costs. Generally, the elasticity of demand for bread products is very low due to weak substitution possibilities. However, bread prices are determined not only by the supply of wheat but also by the efficiency of the processing industry, the retail chain, etc. Increasing wheat prices by 10% will not necessarily lead to an increase in the price of bread products by 10% because wheat is just one component of the total cost of producing bread. Furthermore, although consumers are negatively affected by falling marketing costs in the export

⁸ For these calculations, domestic production in 1999 is estimated to be 13.6 mill. t and harvested area 5.9 mill. ha (STATE STATISTICS COMMITTEE OF UKRAINE, 2000).

situation, they gain significantly in an import situation such as prevailed in the 2000/2001 marketing year. Generally, a more efficient marketing chain would reduce price volatility making it easier for consumers and producers to plan and policy makers to implement dependable policies. Finally, in the long run increased growth in agriculture due to decreasing grain marketing costs would generate higher economic growth and incomes in Ukraine. Under these conditions, consumers would be in a better position to absorb increased food prices. Indeed, this is another argument for intensifying structural economic reforms, market liberalisation, competition, and institution building in Ukraine.⁹

Table 3: Simulation of marketing cost reduction at the oblast level (mUS\$)

	Changes in producer surplus	Changes in consumer surplus	Net changes
Autonomous Republic of Crimea	13.0	-12.1	0.9
Vinnycya oblast	19.6	-12.1	7.5
Volhynia oblast	6.3	-5.8	0.5
Dnipropetrovsk oblast	18.2	-18.0	0.2
Donetsk oblast	11.0	-22.1	-11.1
Zhytomyr oblast	7.9	-8.3	-0.4
Transcarpathian oblast	0.9	-6.4	-5.5
Zaporizhyya oblast	17.4	-10.5	6.9
Ivano-Frankivsk	2.6	-7.1	-4.5
Kyiv oblast	16.1	-15.8	0.3
Kirovohrad oblast	19.5	-7.9	11.6
Luhansk oblast	5.5	-12.8	-7.3
Lviv oblast	7.3	-12.9	-5.6
Mykolayiv oblast	22.2	-7.5	14.7
Odesa oblast	33.2	-15.6	17.6
Poltava oblast	19.5	-11.1	8.4
Rivne oblast	4.9	-6.1	-1.2
Sumy oblast	11.1	-7.8	3.3
Ternopil oblast	6.8	-7.3	-0.5
Kharkiv oblast	21.1	-15.6	5.5
Kherson oblast	21.2	-8.4	12.8
Khmelnytsky oblast	11.6	-7.5	4.1
Cherkassy oblast	14.9	-10.2	4.7
Chernivtsi oblast	2.7	-5.1	-2.4
Chernihiv oblast	7.0	-8.9	-1.9
Total	321.4	-262.9	58.5

Source: Own calculations.

3.1.3 Which infrastructure investments would generate the greatest return in the form of welfare-enhancing grain trade in Ukraine?

STRIEWE (1998) argues that the main impediments to the creation of an efficient marketing and transportation system for trade of grain and oilseeds in Ukraine are the following: overdue privatisation of *Khlib Ukrainy*; high storage and other elevator service fees; high transaction costs for river transportation; bottlenecks and high handling fees in the seaports; certification procedures; and, high weight losses and financial costs.

⁹ However, there is no question that many Ukrainians are already food insecure and would suffer greatly from increased grain prices. Possible policy responses are discussed in chapter 8 on *Promoting Food Security in Ukraine*.

The simulation of scenario 1 suggests that the most welfare-enhancing infrastructure investments would be in seaports, storage and transportation infrastructure, as well as harvesting technology (see table 2).

The cost of the **seaport handling** of one t of grain is about 12 US\$ in Ukraine. The seaports of Ukraine represent a bottleneck for the export of grain. Low handling speed, the lack of facilities to load vessels of a capacity of more than 50 thousand t, and poor organisation are responsible for their low efficiency (STRIEWE, 1998). Investments in seaport infrastructure would generate additional port incomes and encourage more exports.

Many traders argue that **storage costs** (fees, but also storage losses etc.) in Ukraine are higher than in most other grain producing countries. STRIEWE (1998) estimates the storage costs in Ukraine to be twice as high as in Western Europe. In 1997, CARANA CORPORATION concluded that the grain distribution chain in Ukraine needed immediate demonopolisation and privatisation. The low efficiency of storage services in Ukraine is exemplified by the fact that most grain and oilseed exports take place in the first several months after harvest – in a sense 'storage' is currently taking place abroad.¹⁰ Therefore, investments in storage facilities are crucial for agricultural development and economic growth in Ukraine.

Rail transportation fees appear low in Ukraine, but the transaction costs associated with rail transportation are large, as discussed above. The monopoly position enjoyed by *Ukrzaliznytsya* gives it the opportunity to continuously increase rail fees; from January 1998 to May 2001, rail fees have been increased six times. This reduces certainty and transparency in the grain trade business and, thus, increases marketing costs

Transportation of grain by water is generally less expensive than other modes of transportation over medium and long distances. **River transport** in Ukraine is cheaper than rail transport on the basis of fee per km, but it is not used due to the lack of infrastructure and high transaction costs:¹¹

- small barge capacities (500 t instead of the 1,000 t capacities which traders need);
- the low depth of the Dnipro near most elevators does not make loading possible;
- the small number of river elevators with required infrastructure;
- navigation on the Dnipro generally ceases in November. *Ukrrihflot* argues that it could tranship grain after November, but that transportation costs and times would rise substantially;
- *Ukrrihflot* does not have enough barges in its disposal. Traders must order barges one month in advance, while rail wagon ordering can take as little as 3-4 days; and
- weak guarantees of timely grain supply to the sea ports.

The development of Dnipro infrastructure could significantly increase efficiency by making transportation less expensive and more convenient. The Dnipro could play the same role in Ukraine as the Mississippi does in the United States. While the Dnipro could not replace all rail transportation, it could significantly relieve the rail transportation network and increase competition, leading to improvements in the quality of rail services.

Harvest and farm handling losses greatly reduce farmers' welfare. The model simulations show the importance of reducing these losses. To reduce these losses, farmers need access to modern machinery and inputs. This, in turn, requires a viable rural and farm credit system¹² and an elimination of barriers to imported agricultural technology.

¹⁰ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

¹¹ Information about river transportation was obtained from *TradiGrain Ukraine*.

¹² See chapter 4 on *Rural Finance in Ukraine – Extending the Frontier*.

3.2 *The impact of increased wheat production*

In 1999/2000 marketing year, wheat supply was slightly more than demand in Ukraine. In order to show how producer and consumer welfare would change if wheat production was significantly higher, scenario 2 models a 25% increase in the wheat supply in each oblast (see table 1). This increase in production could be caused by decreased marketing costs, farm restructuring, technical change, improved policies, etc.¹³

The results of scenario 2 are the following. If production was 25% higher than in 1999/2000, a reduction of marketing costs by 50% would increase the producer surplus by 401.7 mUS\$ and decrease the consumer surpluses by 401.7 mUS\$. In comparison with scenario 1, therefore, producers would receive an additional 80.3 mUS\$, while consumers would notice no changes in their welfare. These producer gains are equivalent to an additional 13.6 US\$/ha of harvested wheat area compared with scenario 1 (assuming no change in the harvested area).

3.3 *The impact of regional bans on grain movement*

In 1996, some oblast authorities declared bans on grain exports, ostensibly to secure repayment for inputs that had been delivered in the spring as well as assorted tax debts etc. In each of the following three years (1997-99), regional export bans and confiscation of grain and oilseeds were employed in a similar manner, and in each year, the need to collect payment for earlier input deliveries and debts was the pretence used to justify these measures.¹⁴

It is important to realise that one oblast's ban has a **negative** influence on many oblasts. To empirically estimate this influence, scenario 3 is simulated (table 1). Regional bans are modelled by assuming very high transportation costs between the oblast(s) in question and other oblasts.¹⁵ Grain flows, as a result, 'avoid' the banned oblast. This has an impact on many domestic and international grain trade flows in Ukraine.

Vinnycya oblast was chosen to demonstrate the effects of the regional bans.¹⁶ According to the simulation results, a ban in Vinnycya oblast reduces the total producer surplus in Ukraine by 78.8 mUS\$ and increases total transportation costs 18.3 mUS\$, while total consumer surplus increases by 92.8 mUS\$. Producer surplus falls due to increased transportation costs (and consequently falling farm-gate prices) as traders attempt to avoid the oblast that has imposed the ban.

Table 4 presents the effects of the ban on producer and consumer surpluses at the oblast level. The ban in Vinnycya oblast affects other oblasts in different way. The Southern and Eastern oblasts do not suffer at all. These are net surplus oblasts that have direct access to export points without using Vinnycya oblast for wheat transportation. Producers in Northern and Western oblasts are hurt the most, while consumers in these oblast benefit. Altogether, twelve oblasts are affected and producer losses are larger than consumer gains, so Ukraine as a whole loses due to the ban in Vinnycya oblast.¹⁷

¹³ For example, the government's withdrawal from providing farm inputs in 2000 has greatly improved conditions in farming, and can be expected to increase production in the medium run. See chapter 2 on *Agricultural Policy Reform in Ukraine: Sequencing and Results*.

¹⁴ See chapter 2 on *Agricultural Policy Reform in Ukraine: Sequencing and Results*.

¹⁵ The assumed prohibitive railway costs are 100 US\$/t of wheat.

¹⁶ Vinnitsa is located in the centre of Ukraine and much grain is transported through this oblast under 'normal' conditions. By comparison, an export ban by Kyiv oblast would not affect other oblasts as significantly.

¹⁷ It should be noted that the model assumes no constraints for railway business, i.e. there is availability of wagons, free access to ways of avoiding the oblast that has imposed the ban, no bottlenecks, etc. If such constraints are taken into consideration, the costs of regional export bans would probably be much higher than presented in table 4.

Table 4: Changes in producer and consumer surpluses due to the grain movement ban in Vinnycyia oblast (mUS\$)

	Surplus Changes	
	PS	CS
Vinnycyia oblast	-64.2	70.9
Volhynia oblast	-1.3	1.3
Zhytomyr oblast	-1.5	1.8
Transcarpathian oblast	-0.3	2.4
Ivano-Frankivsk	-1.0	2.9
Kyiv oblast	-1.1	1.2
Lviv oblast	-1.5	2.9
Rivne oblast	-1.0	1.3
Ternopil oblast	-2.1	2.5
Khmelnysky oblast	-3.6	2.6
Cherkassy oblast	-0.2	0.2
Chernihiv oblast	-1.2	2.7
Total (without changes in Vinnycyia oblast)	-14.8	21.8

Source: Own calculations.

4 Possible future uses of the model and extensions

The model presented here is based on some strong assumptions. Like any other model, its results must be interpreted with caution; they represent indications of direction and magnitude, not point estimates. But it does cast light on some important aspects of grain marketing and grain policy in Ukraine. And it could also be used for a variety of other important applications:

1. The model could be applied to the import situation as well. This would be especially pertinent to the situation that prevailed in 2000/2001 for wheat and sugar.
2. The model could be expanded to include constraints such as price imperfections or transportation constraints. The current model assumes perfect price transmission between oblasts and the world market and no constraints on the movement of grain. In reality, there are important physical bottlenecks in the grain transport system that could have an important impact on the results of the model.
3. The model could help analyse policy tools such as the pledge price system for grains or the sugar production quota. The model could provide estimates of the cost and benefits of such policy tools, increasing transparency and the government's ability to make appropriate policy choices.
4. The model could be expanded to cover a broader set of agricultural products. For example, along with grains, products such as sugar and oilseeds could be included, with more sophisticated modelling methods used to capture linkages in production (competition between crops for available inputs such as land) and the fact that some agricultural inputs such as grain are inputs in other agricultural production processes (i.e. livestock). The only requirement for this task is reliable agricultural data. In this way, the effects of agricultural policy tools on agriculture as a whole could be estimated.

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11 WTO Accession and Agricultural Policy in Ukraine

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1 Introduction

Agriculture and agricultural trade play a significant role in the Ukrainian economy. The Ukrainian Government considers agriculture to be a strategic sector which needs strong state support. But ten years of mostly Soviet-style intervention in agriculture have resulted in huge welfare losses for farms and society as a whole. Self-sufficiency policy, significant barriers to foreign and domestic trade in agricultural products and inputs, combined with Government intervention in agrobusiness and an absence of market institutions has led to the stagnation of the sector.

A country's trade policy determines the transmission of price signals from the world market to domestic markets and, thus, has a vital influence on domestic resource allocation and a country's ability to exploit its comparative advantage. To ensure that domestic markets receive appropriate price signals, a country must be fully integrated into the world trade system. To this end, membership in the World Trade Organisation (WTO) is a sufficient and perhaps even a necessary condition.

Ukraine submitted an official application for WTO accession in November 1993. The first meeting of the Working Party on Ukraine's WTO accession was held in February 1995. In early 2001, after six meetings of the Working Party, it appears that Ukraine is still a long way from membership.

The purpose of this paper is to test the compatibility of current agricultural policies in Ukraine with the letter and spirit of the WTO's requirements, as well as to propose policy recommendations that would guide Ukrainian agricultural policy towards a market-oriented, liberal framework. The paper is organised as follows. We begin with a short introduction to the WTO, an analysis of the benefits of WTO membership for Ukraine, and an update of the status of Ukraine's efforts to join the WTO in section 2. In section 3 we outline major elements of the Uruguay Round Agreements on Agriculture and on Sanitary and Phytosanitary Measures, as well as shortcomings of these Agreements and changes that might emerge from the coming Millennium Round. Section 4 presents an analysis of current agricultural policies in Ukraine and their compatibility with WTO requirements. In section 4 we also analyse special issues associated with WTO accession for transition economies and Ukraine's preparation for the Millennium Round. Section 5 concludes with policy recommendations designed to ease Ukraine's accession to the WTO.

2 The World Trade Organisation (WTO)

2.1 What is the WTO?

The WTO emerged out of the General Agreement on Tariffs and Trade (GATT) in 1993. Like the GATT, the WTO deals with the rules governing trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible.¹

The result is assurance. Consumers and producers know that they can enjoy secure supplies and a larger selection of the finished products, components, raw materials and services they require. Producers and exporters know that foreign markets for their products will remain open. The result is also a more prosperous, peaceful and accountable economic world. Decisions in the WTO are typically taken by consensus among all member countries and they are ratified by members' parliaments. Trade friction is channelled into the WTO's dispute settlement process, where the focus is on

¹ See the WTO web site presentation "*The WTO in Brief...*" – <http://www.wto.org>.

interpreting agreements and commitments and ensuring that countries' trade policies conform with them. This reduces the risk of disputes spilling over into political or military conflict. By lowering trade barriers, the WTO's system can also contribute to breaking down other barriers between peoples and nations.

At the heart of the system – known as the multilateral trading system – are the WTO's agreements, negotiated and signed by a large majority of the world's trading nations, and ratified in their parliaments. These agreements are the legal ground-rules for international commerce. Essentially, the agreements are contracts, in which member countries reciprocally guarantee important trade rights. They also bind Governments to keep their trade policies within agreed limits to everybody's benefit. The agreements are negotiated and signed by governments. But their purpose is to help producers of goods and services, exporters, and importers conduct their business. The goal is to improve the welfare of the peoples of the member countries.

2.2 *The importance of WTO membership for Ukraine*

For a small country² such as Ukraine, which has much less international 'clout' than the USA or the EU, it is important to be a member of a 'club' with transparent and non-discriminatory rules. The benefits from WTO membership for Ukraine's agriculture and economy as a whole fall into three main categories:

1. Before WTO accession can occur, and in order to make accession possible, Ukraine will have to strengthen its agricultural policies and institutions;
2. WTO membership will improve the ease and security of Ukraine's access to major export markets; and
3. WTO membership will provide Ukraine with access to a trade dispute settlement mechanism (ZDENEK & LAIRD, 1997).

In the following, we will consider these issues in turn.

Domestic Policies and Institutions: Under central planning the Government controlled trade flows *via* state trade enterprises. Other institutions governing the international exchange of goods and services, such as standards, phytosanitary provisions, and state purchasing, did not conform to internationally accepted norms, or were non-existent. Moreover, Government administered production processes provided little or no role for private property, private initiatives and price signals for resource allocation.

In the area of agriculture, WTO membership requires that policy conform to the rules established in the Agreement on Agriculture and the Agreement on Sanitary and Phytosanitary Measures, both of which are part of the Uruguay Round Agreement (URA). To become a WTO member, Ukraine would have to adjust its policies to conform with all WTO Agreements. The WTO is an all-or-nothing organisation and not a menu from which one can pick and choose (SATCHIT, 1999). Hence, Ukraine must be prepared to make comprehensive economic and institutional reforms. Beyond agriculture, WTO membership would also require that Ukraine's policies and institutions be brought into line with the provisions governing trade in goods in general as well as trade in services related aspects of intellectual property rights (TRIPS).

Therefore, pursuing the goal of WTO membership will strengthen Ukraine's transition to a market economy by requiring comprehensive economic reform and the creation of market-oriented institutions in agriculture and other sectors. Ukraine will not secure WTO membership unless it demonstrates that its trade and domestic policies are fundamentally market-oriented.

² Economically speaking, a country's size depends on its share in international trade.

In this regard, it is important to note that the WTO does not dictate a Government's policy; in fact it is the member Governments who dictate to the WTO. Furthermore, the WTO agreements make no explicit requirement that a member have a market economy.³ The Ukrainian Government would remain free to choose its agricultural and trade policies. However, the WTO does encourage market-oriented good policies. Under WTO rules, once a country has decided to liberalise a sector of trade, it becomes difficult (expensive) to reverse this decision. Moreover, WTO rules discourage a range of especially distortive policies such as export taxes or non-tariff barriers. For Governments the result is discipline and the resolve to withstand domestic protectionist pressures that might arise. Quite often, Governments use the WTO as a welcome external constraint on their policies: "We cannot do this because it would violate our WTO commitments".⁴ By requiring that trade policies be applied to all trading partners equally (so-called 'non-discrimination'), and by providing transparency and clear criteria for regulations dealing with safety and standards of products, WTO membership can also reduce the scope and incentives for corruption.

While WTO membership can foster the reform process, the Ukrainian Government would be ill-advised to argue that reforms must be carried out to make membership possible. As RODRIK (1997) argues, reforms are good for the economy as a whole and should be adopted for this reason, not because they are dictated by the demands of international economic integration. Membership in the WTO could help Ukraine chose the right reforms and avoid the temptation to back-step at later stages in the reform process, but reform is necessary first and foremost to improve the standard of living in Ukraine and not to please an anonymous multilateral institution. Hence, it is the former and not the latter that the Government of Ukraine should stress when 'selling' its reforms to the public.

Finally, Ukrainian Government officials will learn important skills as they engage in trade and policy analysis and monitoring for WTO accession and as a WTO member.⁵ Training in the newest policy analysis techniques is an important part of the so-called 'technical assistance' provided to WTO members.

Market Access: Two major dimensions of market access are of importance to Ukraine. First is the extension of permanent and unconditional Most Favoured Nation (MFN) status that accompanies WTO membership. At present, Ukraine has been granted MFN treatment voluntary by major trading partners such as the EU and the USA. But nothing guarantees that these partners will continue to grant such treatment.

Second, WTO membership can help terminate the designation of Ukraine as a 'non-market economy' by major trade partners. This designation allows these partners to apply different, less transparent and potentially discriminatory practices in the determination of anti-dumping and safeguard measures against Ukraine. As the WTO does not require that a member must be a market economy, WTO membership would not automatically terminate the designation of Ukraine as a non-market economy. But WTO accession would help to convince trading partners that Ukraine is committed to becoming a market economy.

Dispute Settlement: Access to an impartial and binding dispute settlement mechanism whose decisions have a significant chance of being enforced is a very important potential benefit for all small countries participating in international trade. The WTO's dispute settlement mechanism has, in the short time since its establishment, succeeded in enabling members, large and small, to get

³ The only explicit provision regarding this matter is GATT Article XVII which calls for notification of enterprises engaging in state trading practices. However, Article XVII was not intended to address problems that arise when the bulk of external trade is controlled by the state. Indeed, the old GATT accommodated under special protocol several centrally planned economies such as Romania and Czechoslovakia. Moreover, Cuba was a member of the GATT and became a founding member of the WTO.

⁴ See "10 benefits of the WTO trading system" – <http://www.wto.org>.

⁵ Surveillance of national trade policies is a fundamentally important activity running throughout the work of the WTO. At the centre of this work is the Trade Policy Review Mechanism (TPRM).

satisfaction on grievances stemming from the trade practices of other members that cause material injury (MICHALOPOULOS, 1998). While the WTO cannot make all countries equal, it can reduce inequalities by giving smaller countries such as Ukraine more voice, and by freeing the major powers from the complexity of having to negotiate trade agreements with each of their numerous trading partners.

2.3 The status of Ukraine's efforts to join the WTO

The odyssey of Ukraine's accession to GATT/WTO began almost ten years ago, when the Soviet Union partly liberalised its foreign trade (KAVASS & SKRYNKA, 1999). After the break-up of the Soviet Union and Council for Mutual Economic Co-operation (CMEA),⁶ Ukraine began to look for new international markets. As it was not a GATT member, other countries often imposed high import duties and non-tariff restrictions such as quotas on Ukrainian goods.

In the light of this treatment, Ukraine became aware of the benefits of joining the GATT (KAVASS & SKRYNKA, 1999). On November 20, 1993, Ukraine submitted an official application for GATT accession and on July 26, 1994, Ukraine submitted a Memorandum on Foreign Trade to the GATT Working Party (WP). Since 1995, there have been seven meetings of the WP.⁷ The establishment of the WTO as the successor to the GATT added many new requirements for prospective members. Judging by the documents it submitted to the WTO, Ukraine was clearly not prepared for this new challenge (KAVASS & SKRYNKA, 1999).

Today Ukraine remains a long way from joining the WTO. Ukraine's application for the WTO membership is effectively stalled, as the WP has not met since July 2000 (KALINOVA, 1999). Many fundamental aspects of Ukrainian trade in agricultural products are not clear to the WP. First, Ukraine's Memorandum on Foreign Trade only provides general information on Ukraine's agricultural sector and provides little definite information on Ukraine's agricultural policies. Many issues that are covered by the Uruguay Round Agreement on Agriculture (URAA), are not dealt with in Ukraine's Memorandum. Specifically, the WP has requested that Ukraine supply more detailed explanation of the system of Government regulations and import restrictions in the area of agricultural products.⁸ In addition, it has repeatedly asked for a comprehensive description of the system of state support for agricultural producers.⁹ Furthermore, many aspects of Ukraine's sanitary and phytosanitary policies have not been clearly presented to the WP.

Of course, it is not surprising that Ukraine has not been able to provide the required information to the WP; its agricultural policy is poorly defined and has been in a constant state of flux. Hence, a necessary condition for Ukrainian membership in the WTO is that the Government of Ukraine design and implement a consistent agricultural policy.

3 Agriculture and the GATT/WTO

3.1 Agriculture prior to the Uruguay Round

Formally, agricultural trade has been covered by GATT rules since it was founded in 1948. However, prior to the URAA the actual conduct of policies in agriculture was significantly less disciplined by the GATT than in most other sectors. Without this discipline, agriculture and agricultural

⁶ The CMEA was formally dissolved in June 1991.

⁷ First meeting – Feb. 27-28, 1995; second meeting – Dec. 11-12, 1995; third meeting – June 24-25, 1996; fourth meeting – May 6-7, 1997; fifth meeting – Nov. 24-25, 1997; sixth meeting – June 10, 1998; seventh meeting – July 12, 2000. See WTO documents WT/ACC/UKR/1, 3, 4, 5, 6, 7, 25, 41 and 50, as well as WT/ACC/UKR/22/Add.2, WT/ACC/UKR/23/Add.1, WT/ACC/UKR/24/Add.1. See also <http://www.ueplac.kiev.ua/eng/wto/history.shtml>.

⁸ WTO document WT/ACC/UKR/50. See also Law No 468/97, of July 17, 1997 "On the State Regulation of Import of Agricultural Products".

⁹ See WT/ACC/UKR/4, 5, 6 and 7.

trade in the GATT members was characterised by highly distortive and protectionist policies (MCCALLA & JOSLING, 1985). Non-tariff measures (quantitative restrictions, restrictive state trading, variable levies, minimum import prices, etc.) were especially prevalent in agriculture. Many of these measures were not in conformity with the spirit of the GATT, but in most cases the letter of the General Agreement did not provide the means to sanction them (TANGERMANN, 1994). The text of the GATT contained some special provisions for agriculture such as the exemption of agriculture from the general prohibition of export subsidies in Article XVI:3. The result was a situation in which large shares of world exports of major temperate zone agricultural products occurred with the help of export subsidies (JOSLING, TANGERMANN & WARLEY, 1996).

3.2 *Agriculture in the Uruguay Round*

The Uruguay Round of trade negotiations was launched in September 1986 with the adoption of the Punta del Este Declaration. It ended seven and a half years later with the signing of the Final Act in Marrakech in April 1994.

A major achievement of the Uruguay Round was to bring more rules-based GATT discipline to agricultural trade and trade-related policies. The URAA requires all (other than quarantine) non-tariff barriers to agricultural imports to be converted into bound tariffs; for those bound tariffs to be scheduled for phased reductions; and for farm production and export subsidies to be reduced. Industrial countries must implement these reforms between 1995 and 2000, while developing countries have until 2004. Together, the URAA, the Agreement on Sanitary and Phytosanitary Measures (the ASP, which limits the use of quarantine import restrictions to cases that can be justified scientifically), the new policy notification and review requirements, and the Dispute Settlement Understanding, ensure that agricultural trade will be less chaotic in future (ANDERSON, 1998).

Important detail on the implementation of the URAA is contained in the commitments entered into by each individual country and codified in schedules that form part of the overall Agreement. The real power of the Agreement lies in the binding nature of these country-specific commitments (TANGERMANN, 1994). With few exceptions these bindings cover all border measures, on both the import and the export side. They also apply to most domestic subsidies, to the extent that these have a noticeable effect on international trade. Altogether, the URAA specifies three broad agricultural policy areas that are subject to new WTO disciplines: market access, export competition and domestic support. These three areas are discussed below and summarised in table 1.

Table 1: The Structure of the Agreement on Agriculture

Type of Rule	Market Access Base period: 1986 – 1988	Export Competition Base period: 1986 – 1990	Domestic Support Base period: 1986 – 1988
Value	<ul style="list-style-type: none"> • Tariffication of non-tariff barriers • Reduction of new tariffs by 36% on average (minimum of 15%) 	<ul style="list-style-type: none"> • Reduction of outlays on export subsidies by 36% (product specific) • New export subsidies forbidden 	<ul style="list-style-type: none"> • Reduction of Total Aggregate Measure of Support (AMS) by 20%, except for ‘green box’ and ‘blue box’ measures • <i>De minimis</i> provision
Quantity	<ul style="list-style-type: none"> • Minimum access commitments: 3% of domestic consumption, growing to 5% • Current access maintained 	<ul style="list-style-type: none"> • Reduction of subsidised export by 20% 	<ul style="list-style-type: none"> •
Other	<ul style="list-style-type: none"> • Safeguard provision 	<ul style="list-style-type: none"> • Peace Clause 	

Source: TANGERMANN (1994).

The most far-reaching element in the URAA is a change in the rules regarding **market access**. All non-tariff barriers must be converted into bounded import tariffs. The new tariffs are subject to the gradual reduction of 36% on average (minimum 15%). Moreover, countries must main-

tain their current access to domestic markets. If the current access is less than 3%, it has to be gradually raised to minimum 5% by 2000.

In the area of **export subsidies**, members fix the base levels of subsidised exports and of outlays on export subsidies in their Schedules, implicitly agreeing that the figures contained in the Schedules are an accurate representation of their past export subsidisation. More important, based on these past level of export subsidisation, members accept legally binding commitments regarding the maximum permissible use of export subsidies in the future (TANGERMANN, 1994). Specifically, members agree to reduce expenditures on export subsidies by 36%, and quantities of subsidised export by 21% over the six year implementation period. Members also agree not to extend export subsidies to commodities which were not subsidised in the base period.

Under the **domestic support** provisions of the UAAR member have agreed to reduce farm support and switch to instruments that are less production and trade distorting. Generally, farm support is divided into two categories: support which is exempted from reduction commitments and support which is subject to reduction. Policy instruments in the first category fall into either the 'green' or the 'blue' box, or they fall under a *de minimis* clause. The fundamental requirement for inclusion on this list is that the policy in question have no, or at most minimal trade-distorting effects or effects on production.¹⁰ The 'green box' includes the following measures: 1) general services such as research, pest and disease control, training, extension, inspection, marketing and promotion services, and infrastructure services; 2) direct payments to producers such as decoupled income support, income insurance and safety-net programmes, disaster relief, producer or resource retirement schemes, investment aids, environmental programmes and regional assistance programmes; 3) food security stocks; and 4) domestic food aid. 'Blue box' measures are comprised of direct payments under production-limiting programmes,¹¹ while the *de minimis* clause covers product and non-product specific measures, each of which amounts to a small percentage of the total value of transfers to producers (less than 5% of the value of farm gate production in developed countries and less than 10% in developing countries). In developing countries, certain investment subsidies, agricultural input subsidies for poor producers, and support to producers to encourage alternatives to narcotic crop production are also exempted from reduction.

The measures in the second category are subject to reduction commitments. The basis for these commitments is the Total Aggregate Measurement of Support (AMS), which is the sum of expenditures on non-exempted domestic support, aggregated across all commodities and policies. By the year 2000, each member must reduce its AMS by a total of 20% (13.3% by 2005 in developing countries).

Several specific provisions for the interaction between AMS commitments and both inflation and exchange rates can be made. AMS reduction commitments are determined in nominal terms, and reference prices for calculating market price support and non-exempt direct payments are 1986-1988 nominal, national currency prices. These provisions place considerable pressure on countries with high inflation, where the real value of support ceilings denominated in national currency prices can erode considerably over time. In retrospect, therefore, Poland was wise to negotiate its AMS reduction commitments in foreign currency (USD) terms. Other countries, such as Hungary, negotiated in national currency terms and have found that inflation has greatly reduced their ability to provide real support.

The Uruguay Round also lead to the signing of an Agreement on Sanitary and Phytosanitary Measures (SPS). The SPS is based on the principles of harmonisation and equivalence. While the policies dealt with under the SPS are not very amenable to multilateral negotiation on commitments

¹⁰ In particular, for a measure to be exempt, the support must be provided through a publicly funded government programme not involving transfers from consumers, and it must not have the effect of providing price support to producers.

¹¹ For example, the EU's set-aside payments and deficiency payments in the United States.

(TANGERMANN, 1994), the SPS has led to two main achievements. First, if a country wishes to implement higher standards of protection to human, animal and plant life or health, this country is required to show that these standards are based on sound scientific principles and supported by sufficient scientific evidence. Second, the SPS included a number of detailed provisions on appropriate risk assessment.

3.3 Shortcomings of the Agreement

3.3.1 Market access

It was expected that countries would interpret the market access provisions in ways which would benefit their domestic interests. If, during the implementation of the URAA, one country should feel that another country has made an error in calculating, for example, a given base period tariff equivalent and, hence, is applying an a tariff that is too high, there is no way in which the former country can challenge the latter. This has led to several shortcomings which are summarised by TANGERMANN (1994) as follows:

1. It appears in a number of cases that the tariffs which countries established are rather high, both relative to the gap between actual domestic and world market prices in the base period, and relative to the prices prevailing under current policies. Thus, even after 15% reduction, so little scope for the transmission of world price signals to domestic markets was left that it is difficult to argue that trade has been liberalised significantly. This has led to the use of the term 'dirty tariffication'.
2. There is a wide scope left to the Governments regarding tariff reductions for individual commodities. The Government still have the considerable scope to protect 'sensitive' products, further distorting trade flows. Indeed, most Governments have not significantly reduced tariffs for such products (TANGERMANN, 1994; JOSLING, TANGERMANN & WARLEY, 1996).
3. The minimum access rules are far from perfect. The URAA does not explicitly spell out what constitutes 'access'. Moreover, the management of the tariff rate quotas (allocation of licenses, for example) remains very sensitive and unregulated.

3.3.2 Export subsidies

As mentioned above, export subsidies were one of the most contentious issues in the agricultural negotiations of the Uruguay Round. Although the URAA does restrict the use of export subsidies, several questions remain.

First, Governments may use accounting procedures which make it difficult to measure actual budget expenditure on export subsidies. Second, production quotas combined with high domestic support prices (the EU's sugar market regime, for example), can result in an implicit subsidisation of exports that is not registered under the URAA. Rents that accrue on within-quota production can be used to cross-subsidise exports of above-quota production (TANGERMANN, 1994). Third, the export subsidy provisions in the URAA relate only to the aggregate volume of exports and aggregate outlays on export subsidies. There are no specific provisions which relate to export sales on individual markets. Hence, it is conceivable that a country might concentrate its permitted export subsidies for a given product (e.g. cereals) on a few specific products (e.g. malting barley) and/or markets (e.g. China). Finally, the URAA does not preclude or only partially limits the use of several forms of export assistance, such as market promotion, credit schemes, barter transactions, certain types of food aid, etc. In many cases these can act as indirect export subsidies.

3.3.3 Domestic support

The domestic support provisions of the URAA call for policy adjustments that can be expected to reduce distortions in agricultural trade. However, given domestic resistance, Governments

may not always find it easy to implement these policy adjustments and may seek ways to avoid them.

First, the reduction commitments apply to the aggregate AMS. This leaves much scope for the maintenance of support policies. As is the case with import protection (see above), domestic support can easily be reallocated to so-called ‘sensitive’ products. Second, given the interaction between border measures and domestic policies, the constraint on domestic policies in the narrow sense may not be very effective. A relatively large set of domestic subsidies is exempted from the reduction commitments, which again leaves Governments with considerable leeway in choosing policy instruments. Third, the ‘green box’ of domestic support measures that are not subject to reduction commitments has been defined rather generously. In general, green box policies have two characteristics: (1) they are much less distorting than traditional forms of agricultural support; (2) it is difficult to imagine that Governments would be prepared to give up these relatively innocent policies in trade negotiations. However, it is very difficult for the Agricultural Committee of the WTO to monitor the behaviour of all WTO members with respect to the green box. Fourth, the exemptions granted for the EU’s acreage and headage payments and US deficiency payments means that some of the most important domestic support policies in world agriculture are not subject to reduction requirements. This may provide a bad example for agricultural policy makers in other countries (TANGERMANN, 1994) and it marks a departure from the aim of moving in the direction of less distorted markets. Contrary to the definition of decoupled income support in Annex 2 of the URAA, these payments do not meet the condition that “...no production shall be required in order to receive...” them.

3.4 The Millennium Round: expectations

One of the potentially important aspects of the URAA is the resolution to continue the reform process in agriculture in the future (JOSLING & TANGERMANN, 1999).

In the area of market access, another round of tariff reduction is needed to correct cases of ‘dirty’ tariffication. High tariffs for ‘sensitive’ goods should be reduced more than low tariffs. Hence, dairy products and sugar are likely to be at the heart of the next Round. Another area for future negotiations is the tariff rate quota. While intended to open up previously closed markets, TRQs have become a major problem in agriculture. They have created a new wave of Government interference with agricultural trade through licensing procedures. Thus they provide a playground for rent-seeking traders who have a strong incentive to lobby for the maintenance of high above-quota tariffs. The question is how to prevent the TRQs from interfering more than necessary with the competitive development of trade. Therefore, the Millennium Round will probably focus on developing a more uniform system for the administration of TRQs, or at least eliminating some obvious absurdities in current procedures for allocating TRQ licenses (JOSLING & TANGERMANN, 1999).¹²

While much effort was made to define export subsidies as precisely as possible in the URAA, further improvement can be made. It is expected that some countries – such as the members of the Cairns-Group¹³ – will try to negotiate a complete elimination of export subsidies. Finally, discussions on the subject of export credits have been ongoing between members of the OECD, and it is possible that the treatment of agricultural export credits will eventually be brought into conformity with that prevailing in other areas of trade (JOSLING & TANGERMANN, 1999).

In the area of domestic support, there will likely be much focus on the definition of ‘green box’ policies. Many countries – such as the members of the Cairns-Group – insist that ‘blue box’

¹² See chapter 9 on *Who Gains and Loses – Import Tariffs and Import Rate Quotas for Sugar and Grain in Ukraine*.

¹³ The Cairns Group includes ‘small’ agricultural exporters such as Canada, New Zealand, Australia, Argentina, Brazil, etc. Ukraine shares many of the interests and characteristics common to the members of this Group and would make an ideal Cairns group member.

measures be subject to reduction commitments. Of particular interest will be negotiations on a stricter definition of decoupled payments (WEHRHEIM, 1999).

Finally, it is expected that the Millennium Round will direct special attention to the interests of developing countries. Better access to markets in industrialised countries, as well as a reduction of agricultural protection in these countries would help developing countries increase export volumes and, *via* higher world market prices, revenues.

4 Ukrainian agricultural policy and the WTO

In the following we analyse Ukraine's market access, export subsidy, domestic support, and sanitary and phytosanitary policies with regard to the requirements of the WTO. We also focus on special issues associated with WTO accession for transition economies.¹⁴

4.1 Market access

4.1.1 Import tariffs

Any country that wishes to become a WTO member must have relatively liberal trade and domestic policies. The confidence and trust of its major trading partners are also very important pre-conditions. The Law of Ukraine "On state regulation of import of agricultural products", dated July 17, 1997, does not encourage free trade or provide for a transparent regulation of import procedures. This Law regulates tariff and non-tariff barriers to imports of agricultural products and food.

Table 2: Import tariff rates for major agricultural products in Ukraine at the end of 1999

Product	Import tariff rate (%)	
	Privileged*	Standard
Wheat	30	30
Barley	30	30
Sunflowerseeds	50	50
Sugar	50	50
Vegetable oil	50	50
Wheat flour	30	30
Live animals	30	60
Beef	30	60
Pork	30	60
Poultry	30	60
Concentrated milk and cream	20	40
Butter	50	100
Cheese	30	60

Note: * Privileged (MFN) tariffs apply to countries with which Ukraine has signed trade agreements and, hence, apply to most trade partners.

Source: FAS-USDA (1999); Law of Ukraine No. 468, July 17, 1997; Law of Ukraine No. 32, January 16, 1998; CM Resolution No. 1935, December 9, 1998.

The average import tariff is approximately 30% (table 2). This is not high in comparison to the import tariffs applied by the US or the EU. Moreover, according to the Conception of Transformation of Import Tariff,¹⁵ the average import tariff for agricultural products will be reduced from 30% in 1996 to 19.4% in 2005.

¹⁴ Note that the appendix at the end of the book contains an overview of agricultural policy measures and changes since Independence.

¹⁵ See Presidential Decree No. 255/96 dated April 6, 1996.

Higher import tariffs are applied to imports of so-called ‘sensitive’ products which are produced in Ukraine. Furthermore, the above-mentioned law establishes import quotas for livestock products at the rate of 10% of domestic production. The URAA requires that import quotas be based on domestic consumption, not production.

In addition to *ad valorem* tariffs, specific import tariffs fixed in the EURO (€) are applied to imports in Ukraine. These tariffs isolate Ukrainian farms from world market price signals and have the same impact as variable import tariffs which are prohibited under the new WTO rules. Some old members, for instance the EU, also employ such tariffs, but the requirements for new members are stricter than for old members. In any case, the isolation of the domestic farms from world market trends delays and distorts adjustment in agriculture.

In May 1998, the Government introduced a system of seasonal tariffs for imports of key agricultural commodities at rates equal to double the existing tariffs. The seasonal duties were designed to be in effect during local harvest periods of the products, typically a three-month period.

The application of import tariffs in Ukraine is not particularly transparent. Many exceptions (for example in the form of import quotas at reduced tariff rates for products such as raw sugar) are granted to specific firms at specific times. There can be little doubt that the combination of Ukraine's system of import protection on the one hand, and the numerous exceptions to this system on the other, generates considerable rents that are coveted and sought by those with connections to policy circles in Kyiv.¹⁶

Ukraine could use the same strategy that many WTO members have in the past of ‘padding’ its import tariffs for several important products today, with a view to making it easier to make ‘concessions’ in future WTO negotiations. However, this would reduce the gains from trade that Ukraine would realise as a result of WTO membership. It would also make it difficult to convince trading partners that Ukraine is committed to a liberal trade regime. High import tariffs do make it easier for Ukraine to avoid significant increases in its current market access. Table 3 shows that with the exception of fish, the share of the imports in the consumption of agricultural products does not exceed 9%.

Table 3: Current Market Access in Ukraine, 1998

Product	Import (1,000 t)	Export (1,000 t)	Balance (1,000 t)	Consumption (1,000 t)	Share of im- ports in con- sumption (%)
Meat products	58	99	41	1,668	3
Milk products	9	47	39	10,697	0
Eggs, mill. pieces	54	5	-49	7,737	1
Fish	216	95	-120	296	73
Potatoes	4	1	-3	6,502	0
Vegetables	5	162	157	4,723	0
Fruits	88	16	-72	117	6
Bread products	6	12	6	6,331	0
Sunflower oil	20	198	178	412	5
Sugar	139	107	-31	1,583	9

Source: State Statistics Committee of Ukraine (1999).

4.1.2 Non-Tariff Trade Barriers

Many non-tariff barriers are applied in Ukraine, but most of them apply to imports of all products and not specifically agriculture. Import procedures are very prohibitive and non-transparent

¹⁶ For a discussion of these issues see chapter 9 on *Who Gains and Loses – Import Tariffs and Import Rate Quotas for Sugar and Grain in Ukraine*.

due to frequent and retroactive changes. The most prohibitive non-tariff barriers are minimum customs values as well as standardisation and certification procedures.

Although a Cabinet of Ministers Resolution dated July 29, 1999 represents an important step towards the cancellation of minimum customs values,¹⁷ many traders argued that this Resolution is either ignored or subject to heavy administrative abuse. Government Resolution No. 575 dated March 29, 2000, has abolished the minimum customs value for all products. This is a very positive decision that moves Ukraine closer to the more liberal trade and WTO membership.

Ukraine's regulatory environment remains chaotic and its standardisation procedures are one of the most serious obstacles to trade, investment and ongoing business. Ukraine's standardisation and certification procedures are characterised by: (1) a lack of stable clearly defined standards and regulations; (2) registration schemes that severely hamper trade; (3) a lack of procedural flexibility; (4) complex and expensive certification requirements; and (5) uneven enforcement of requirements (U.S. DEPARTMENT OF STATE, 1999).

4.2 Export subsidies

Ukraine employs no export subsidies for agricultural products and food today, and did not employ them in the applicable base period 1994-1996. (Ukraine has suggested to the WTO Working Party to use 1994-1996 as the base period for all WTO commitments. However, the Working Party is insisting on shifting the 'base period' to more reasonable term, for example, 1997-1999. The reason for this is that the Working Party does not consider that Ukraine was a market economy in 1994-1996, so support provided in these years cannot be used as a basis for the calculation of Ukraine's WTO commitments¹⁸). In some instances, 'Khlib Ukrainy' has sold grain at prices below its purchase prices on the Ukrainian market, but the contracts in question were commercial and did not involve the state (KOBUTA, 1999). Hence, these cases cannot be considered examples of export subsidisation.

Since a WTO member cannot increase the use of export subsidies over the level prevailing in the base period, Ukraine, with a base level of zero would not be free to use export subsidies at all. This has the potentially very far-reaching implication that Ukraine would presumably be barred from introducing price support policies for all products for which it is a net exporter. This is because policies that increased domestic prices above world market levels for export products would automatically create a need for export subsidies that Ukraine would not be permitted to use.

Even without the use of export subsidies, Ukraine's export regime for agricultural products is quite illiberal. Indeed, continuous government intervention in agricultural trade has played a major role in arresting agricultural development in Ukraine. STRIEWE & VON CRAMON-TAUBADEL (1999) estimate that the farmers in Ukraine receive only 40% of the FOB export price, while the German farmers receive 70%.

In Ukraine, minimum export (so-called indicative) prices for hides and animal skins, sugar and oilseeds continue to be applied (at least in practice, even if officials insist that this is not the case). The use of indicative prices is banned under Article VII of GATT. Moreover, Ukrainian customs officers often apply 'recommended prices' to limit certain exports; there are many reports of customs officials refusing to permit exports when the export contracts specify prices that are below the 'recommended' level.

¹⁷ The Resolution "On Amending Certain Resolutions of the Cabinet of Ministers of Ukraine on Setting the Minimum Customs Value for Light Industry and Agricultural Products" eliminates minimum customs values for grains, flour, meat, butter, cheese, margarine, vegetables, fruits, nuts, jams and juices.

¹⁸ Beside export subsidies, this may also have an impact on Ukraine's negotiation with the WTO on domestic support and market access.

Government officials often claim that there are no barriers to agricultural exports in Ukraine. Reality is often quite different, as attested by reports of restrictions on grain exports in 1999 and 2000. In both years, traders were – at least temporarily – unable to obtain necessary certificates due to uncertainty regarding the status of official grain inspection requirements. Decree No. 832 (released in June 2000) also raises the spectre of export certification. Although this certification was implemented in an unrestrictive manner in 2000, it – together with other measures such as the so-called pledge prices (also introduced in 2000) and mandatory crop insurance (introduced in early 2001) – could easily be manipulated to interfere with grain exports.¹⁹ Agricultural traders with international experience report that Ukraine's trade regime is much less liberal in practice than in theory. This could hamper Ukraine's WTO accession procedures, and once Ukraine became a member of the WTO, such reports could lead to Ukraine being subject to numerous, debilitating disputes.

WTO rules do not prohibit the use of export duties. However, the Millennium Round is expected to deal with export taxes on agricultural products. Should this result in restrictions on the use of export taxes, measures such as Ukraine's tax on oilseeds and live cattle and skins might no longer be possible.

4.3 Domestic support

Before analysing current domestic farm policy in Ukraine, it is worthwhile reviewing Soviet-era farm support policies. For 70 years prior to Independence in 1991, central planning determined the structure of Ukraine's agricultural sector. Today, it continues to influence the perspectives and opinions of many agricultural policy makers.

Following a precedent set by the Provisional Government in 1917, the Soviet regime procured agricultural products by force. In the 1920s, forced procurement was replaced by a so-called 'tax-in-kind'. Even during the relatively liberal New Economic Policy years of the late 1920s, however, the state controlled the major input producers, and manipulated the terms of trade between industry and agriculture to depress farm-gate prices (VAN ATTA *ET AL.*, 1998).

Throughout the Soviet period, managerial performance was judged above all by success in achieving planned gross output and sales to the state. Through its state order system, the state controlled both physical and capital input supply as well as output marketing. The 'first commandment' for the Soviet farm manager was fulfilment of the delivery plan. The resulting desire to fulfil targets at all costs engendered a disregard for production costs and efficiency that remains prevalent today. Delivery plans were set so high that most farms had no hope of fulfilling them and remained chronically in debt to the state. These debts were periodically forgiven by the state (most recently in 1982, 1985, and in 1991 in the USSR, and in 2000 in Ukraine), a practice which is the foundation of today's poor payment discipline and the lax attitude toward debt that is common in Ukrainian agriculture.

In the first years of Independence, agricultural and food prices in Ukraine were determined centrally and without reference to international price levels or ratios. The resulting conflicts between domestic price signals, international price signals and state production targets (state orders) led to rampant inefficiency and resource waste. Furthermore, since consumer prices did not necessarily cover producer prices plus processing and marketing costs, a complex and costly system of implicit and explicit subsidies was required (WORLD BANK, 1994).

Until recently, there was little indication that the Government's approach to farm support in Ukraine had changed significantly from Soviet times. Farm support instruments remained highly distortive. Specifically, the main policy instruments included zero-interest rate budget loans to

¹⁹ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets* for more detail on these measures.

farms, tax exemptions, debt write-offs and restructuring, agricultural machinery supply through a State Leasing Fund and *via* state sovereign guarantees, and budget subsidies.

If Ukraine was a WTO member, most of these farm support instruments would likely be included in the ‘amber’ box of measures in AMS calculations and subject to reduction commitments. In the following, we analyse farm domestic support policy in Ukraine in 1998 and 1999. Domestic support policy in 2000 is also analysed to test how recent policy changes are compatible with WTO requirements. We will not consider the AMS commitments that Ukraine has submitted to the WTO’s Working Party because reliable data on these commitments is not available and because it seems that the Working Party is not satisfied by the accompanying information that Ukraine has provided. Instead, we attempt to estimate Ukraine’s domestic support by studying its agricultural policies in 1998, 1999 and 2000 and their compatibility with WTO requirements. As most farm support instruments in Ukraine – with the exception of milk and meat subsidies – are not product specific, we deal with Ukraine’s total domestic support rather than product-specific estimates.

The estimation we attempt is only approximate because many Government programmes in Ukraine are not transparent, being based on barter transactions and/or regulated by a multitude of legislative acts that are often unpublished, sometimes unimplemented and rarely fulfilled. Moreover, official statistics are not reliable. Most of our data is taken from the mass media, reports of THE STATE STATISTICS COMMITTEE OF UKRAINE, the MINISTRY OF AGROINDUSTRIAL POLICY, and international organisations.

In calculating domestic support, we faced serious problems with treating zero-interest budget loans and other policy instruments such as non-collection of taxes (see below) that led to the accumulation of farm debt *vis a vis* the state. In March 2000, the Verkhovna Rada approved a law which wrote off 6.8 bUAH of farm debts to the state. Prior to this debt write-off there were two ways of treating the loans and tax arrears in question in AMS calculations. One option was to consider them in entirety as subsidies, on the assumption that they would never be repaid – and perhaps were never intended to be repaid – and would inevitably be written off at some future date. The other option was to roll them over as outstanding debt at the end of each year. In this case only the difference between market and loan interest rates would be included in AMS calculations. With hindsight (i.e. after the write-off) we have opted for the former option. However, this issue is proving to be a factor in current negotiations between Ukraine and the WTO. Ukraine is advocating the first option listed above, while the WTO prefers the second. If the WTO is successful in this regard, Ukraine base period AMS will be quite small, greatly reducing Ukraine’s agricultural policy flexibility in the future.

4.3.1 Zero-interest budget loans

Fuel and Fertilisers: The most important instrument of Ukrainian farm support policy prior to 2000 was zero-interest budget loans in the form of input supply advances to collective agricultural enterprises (CAEs).²⁰ Funds were transferred exclusively to suppliers who in turn supplied farms with inputs. Regional (oblast) governors were responsible for collecting repayment from farms in the form of agricultural commodities in the fall. In practice, this meant that if farms in an oblast failed to deliver commodities to repay state debts, the corresponding governor could be fired. Thus, regional governors often introduced bans on the shipment of grains and sunflower seeds from their oblasts until farms repaid their debts. Of course, in this way the Government discriminated against other market operators.

In 1998, the Government provided 1.8 bUAH worth of inputs to the farms. In 1998, farms supplied approximately 2 mill. t of grain to the state reserve. This was equivalent to roughly 1/3 of the value of the supplied inputs.²¹ The remaining farm debt to the Government thus amounted to 4 mill. t of class III wheat or 1.176 bUAH (based on an average state purchasing price of 294 UAH/t).

²⁰ CAEs and state farms benefited from these government programs while private farmers were effectively ineligible.

²¹ See UKRAINIAN NEWS AGENCY. BUSINESS WEEK’33. August 16-24, 1999.

In 1999, farms also received inputs worth 1.8 bUAH.²² By November 1999, however, farms had repaid only 41% of these loans, leaving estimated farm debts of 1.062 bUAH.

Feed Grain: In addition to fuel and fertilisers, the Government supplied feed grain to livestock and poultry farms. In 1998, the state provided farms with 521,000 t of feed grain valued at 70 mUAH.²³ In 1999, farms received grain valued at 21 mUAH. As of December 1, 1999, 84 mUAH of these amounts had not been repaid. Based on the shares of the subsidies provided in 1998 and 1999, respectively, 64.6 mUAH of this is attributed to 1998, and 19.4 mUAH to 1999.

Agricultural Chemicals: Farms only settled for 19% or 4 of the 21 mUAH worth of herbicides (505 t) received from the Government in 1999.²⁴ The resulting farm debt was 17 mUAH in 1999.

4.3.2 Direct subsidies to milk and meat producers

The Law of Ukraine "On Value Added Tax" (VAT) regulates the subsidy mechanism for milk and meat producers. Farms sell their milk and meat at a VAT rate of zero. 70% of the VAT received by processing plants from the sales of processed dairy and meat products are returned to the farms and the other 30% are submitted to a special account managed by the Ministry of Agroindustrial Complex of Ukraine for support of the livestock development. Farms received 168 mUAH²⁵ and 150 mUAH²⁶ in 1998 and 1999, respectively.

4.3.3 Debt write-offs and restructuring

In 1998, on the basis of the Cabinet of Ministers Resolution No. 1461 from September 18, 1998 "On Measures to Stabilise Agricultural Production", 70 mUAH of farm tax debts were cancelled and a further 698 mUAH were deferred.²⁷ According to the Law "On Writing Off and Restructuring the Debts of Farms and Procurement Organisations on State Budget Loans" dated September 24, 1999, 41 mUAH of loans were written off and 533.4 mUAH were restructured. Since the debts referred to in these various legislative acts are not clearly identified and reliable information is unavailable, we run the danger of double-counting restructured debt and, thus, artificially inflating the AMS. Hence in calculating Ukraine's AMS we consider only debt write-offs. In 1998 (1999), the state wrote off 70 (41) mUAH.

4.3.4 Tax privileges

Value-Added Tax: All farms are exempted from paying VAT tax in the years 1999 to 2004.²⁸ The VAT rate is 20% of revenue. According to the Farm Annual Accounting Report (1999), the VAT subsidy was 651 mUAH.

Fixed Agricultural Tax: Since 1999, farms can elect to pay a so-called fixed agricultural tax that replaces all previously collected taxes, except VAT and excise tax.²⁹ However, farms were exempted from paying 30% of this tax in 1999 and 2000. This is equivalent to a subsidy of approximately 208 mUAH³⁰ in 1999.

²² See UKRAINIAN NEWS. November 2, 1999.

²³ See AGROMONITOR No. 44-45, November 18, 1999.

²⁴ See UKRAINIAN NEWS. January 05, 2000.

²⁵ See MINISTRY OF AIC OF UKRAINE (1998).

²⁶ See MINISTRY AIC OF UKRAINE (1999).

²⁷ See UKRAINIAN NEWS AGENCY/BUSINESS WEEK'50. December 14-20, 1998.

²⁸ See Presidential Decree "On Support of Farms" dated December 12, 1998.

²⁹ See Law of Ukraine "On Fixed Agricultural Tax" No. 320, dated December, 1998.

³⁰ According to the Ministry of AIC, farms have to pay 486.1 mUAH of the fixed tax (70% of the total tax) in 1999 (AGROMONITOR No. 48, December 6, 1999). Therefore, farms receive a subsidy of 208 mUAH (30% of the tax).

Tax Arrears: In recent years, Ukrainian farms have not paid many taxes. These tax arrears should be included in AMS calculations. In 1998, the farm tax arrears were 915 mUAH.³¹ As of January 31, 1999, farms had paid only 52% of their tax commitments due. Therefore, estimated farm tax debts in 1999 were 599 mUAH.³²

4.3.5 Agricultural machinery supply

State Leasing Fund: The supply of agricultural machinery to farms through the State Leasing Fund also represents a subsidy.³³ Machinery and equipment is supplied to farms under 5 year leasing contracts at 5.8% annual interest. Since 1998, the Fund has provided agricultural machinery worth 390 mUAH (65 mUAH in 1998 and 325 mUAH in 1999³⁴). Farmers did not repay the debts for this machinery on time. For example, on December 1, 1999, repayments of 22.5 mUAH were due, of which only 15.1% (3.4 mUAH) were repaid.³⁵ Total farm debts to the Fund during 1998-1999 are estimated to be 19.1 mUAH. Based on the shares of the supplied machinery during observed period, farms debts are 4.1 and 15 mUAH in 1998 and 1999, respectively. Moreover, the difference between market and Fund interest rates is estimated to be 35 mUAH³⁶ in 1998 and 144 mUAH³⁷ in 1999.

Foreign Agricultural Machinery purchased under Government Guarantees: In addition to the supply of the agricultural machinery through the State Leasing Fund, agricultural machinery produced by John Deere, Case and other foreign manufacturers was supplied under Government sovereign guarantees. According to Ukragroprombirzha corporation, farms owed 86 mUS\$ to the state budget in 1999 for John Deere combines.³⁸ Of this, 49 mUS\$ (202 mUAH)³⁹ represent loan payments for the combines for 1999 and 37 mUS\$ (90 mUAH)⁴⁰ is debt from 1998. Farms made only some 15-20% of the payments for foreign machinery in 1998. So farm debts for machinery in 1998 amounted to 90 mUAH. We assume that farms repaid only 20% of the debts or 9.8 mUS\$ in 1999. Therefore, farm debt for 1999 is estimated to be 162 mUAH.

4.3.6 Other subsidies

In addition to those listed above, the Ukrainian Government provides other subsidies, most of which belong in the green box. In 1998 (1999), farms received 106 (70) mUAH in state capital investments, 2 (2) mUAH for research and development, 42 (35) mUAH for social security, 37 (41) mUAH from the Chernobyl Fund, 427 (192) mUAH for production and social development, and 190 (793) mUAH for other financing.⁴¹

4.3.7 Results

Total domestic support calculations in 1998 and 1999 in Ukraine are summarised in table 4. Note that as of May 1, 2000, all farms debts to the state (a total of 6.8 bUAH accumulated between 1994 and 1999) were written off. Therefore, all budget loans disbursed and tax arrears accumulated in 1998 and 1999 must, with hindsight, be considered direct subsidies.

³¹ See MINISTRY OF AIC OF UKRAINE (1998).

³² See MINISTRY OF AIC OF UKRAINE (1999).

³³ The State Leasing Fund was established on the basis of Cabinet of Minister Resolution No. 1031 dated September 19, 1997.

³⁴ See UKRAINIAN NEWS AGENCY/Business Week 41, October 11-17, 1999.

³⁵ See UKRAGROCONSULT. No. 212, December 3, 1999.

³⁶ 65 mUAH (60%-5.8%), where 60% is the NBU average refinance rate for 1998.

³⁷ 325 mUAH (50%-5.8%), where 50% is NBU average refinance rate for 1999.

³⁸ See UNIAN-AGRO, No. 16 (154), April 19-25, 1999.

³⁹ Based on an official exchange rate of 4.13 UAH/USD in 1999.

⁴⁰ Based on an official exchange rate of 2.44 UAH/USD in 1998.

⁴¹ See MINISTRY OF AIC OF UKRAINE (1998 AND 1999).

Table 4: Total domestic support in 1998-1999 (mUAH)

Type of domestic support	1998	1999
'Amber box' measures		
Budget loans in the form of fuel and fertilisers	1,176	1,062
Budget loans in the form of feed grain	65	19
Budget loans in the form of herbicides	-	17
Direct subsidies to meat and milk producers	168	150
Farm debt write-offs	70	41
Tax privileges: Fixed agricultural tax	-	208
VAT	-	651
Farm tax arrears	915	599
State Leasing Fund: Farm debt for machinery supplied	4	15
Interest rate subsidy	35	144
Farm debt for machinery supplied with state sovereign guarantees	90	162
Production and social development payments	427	192
Other subsidies	190	793
Current AMS	3,140	4,053
'Green box' measures		
State capital investments	106	70
Research and development financing*	177	76
Payments to increase social guarantees of the population	42	35
Payments from Chernobyl Fund	37	41
Land protection, management and reforms	14	69
Breeding and crop selection financing	0	44
Measures against pests and crop diseases	0	2
Total 'Green box' measures	376	336
Total domestic support	3,516	4,390

Note: * Including research in the Ukrainian Academy of Agricultural Science and Ministry of Agricultural Policy of Ukraine.

** We assume that the total domestic support equals to current AMS – 'green box' measures, but this assumption may be not always true.

Source: Own calculations (see text for discussion).

In the following, we assume that Ukraine's AMS is identified with its total domestic support minus only 'green box' measures. The ratio of a country's AMS to its agricultural GDP is commonly used as a basis for international comparisons of domestic support. However, agricultural GDP data are not available in Ukrainian statistics. According to the IMF (1999), the share of the agricultural GDP in total GDP was 12% or 12.464 bUAH in 1998. Assuming the same share in 1999, nominal agricultural GDP was 15.255 bUAH. On the basis of TACIS-UEPLAC statistical data, we make a rough calculation of agricultural gross output (GAO) and GDP on CAEs in Ukraine. Agricultural gross output in 1998 (1999) was 32.8 (37.2) bUAH (at current prices), of which 13.7 (14.9) bUAH or 42 (40)% are attributed to CAEs. In 1998 (1999) CAEs used variable inputs worth 11.7 (12.2) bUAH or 61 (60)% of total production costs.⁴² Therefore, the estimated agricultural GDP of the CAEs is 1.988 bUAH in 1998 (2.713 bUAH in 1999). Table 5 summarises the resulting domestic support ratios. We see that domestic support for farms was substantial in 1998 and 1999 and that the use of the different agricultural GDP ratios (total *versus* CAEs) significantly influences the estimates of total domestic support and AMS levels.

⁴² See MINISTRY OF AIC OF UKRAINE (1998 AND 1999): Structure of the Production Costs.

Table 5: Total AMS and Agricultural GDP in Ukraine (all numbers in %)

Ratio	GDP of Collective Agricultural Enterprises		Total Agricultural GDP	
	1998	1999	1998	1999
Total domestic support to agricultural GDP	177	164	33	32
Current AMS to agricultural GDP	158	151	30	30
Total domestic support to GAO	26	29	11	12
Green box to total domestic support	6	3	6	3
Green box policies to agricultural GDP	19	8	4	3

Source: Own calculations (see text for discussion).

The following conclusions could be drawn from this analysis of the situation up to the end of 1999. First, all of the non-green box policies discussed above would be subject to reduction commitments if Ukraine became a WTO member. Hence, Ukraine should adjust its domestic support to meet WTO requirements in the interest of becoming a WTO member. Second, since the performance of Ukrainian up to the end of 1999 was very poor, the massive subsidies outlined above were obviously ineffective. By providing large subsidies, the Government had hoped to support Ukrainian agriculture. However, the results of this policy were quite the opposite: production plummeted and in 1998, 93% (in 1999, 85%) of the CAEs (that is, the main beneficiaries of the spending summarised in tables 4 and 5) were technically bankrupt. So policy reform appeared necessary not only to make WTO membership possible, but also to simply reduce wasteful and ineffective state spending. Finally, tables 4 and 5 underline that in Ukraine very little was being invested in agricultural education and research, rural infrastructure development and other rural services – the most important sources of medium and long-term agricultural growth and competitiveness.

4.3.8 Domestic policy in 2000

In 2000, however, some important progress was made, especially in the area of domestic support. The Ukrainian Government stopped supplying inputs to the farms *via* zero-interest rate budget loans. Instead it encouraged private suppliers and banks to finance the sector by providing 50% interest rate subsidies on commercial loans. Although the government foresaw spending of 150 mUAH for this measure, only 33 mUAH was actually spent.⁴³

Farms continue to receive meat and milk subsidies in the form of VAT exemptions and the reimbursement of VAT from processing plants. In addition, farms remain exempted from 30% of the fixed agricultural tax. Although the Government has indicated that it aims to cancel these tax breaks, Parliament has not agreed to these steps. On the negative side, the value and the distribution of Ukraine's green box measures has not changed in comparison to previous years.

Altogether, state support for agriculture in 2000 is estimated to be around 2 bUAH or 11% of the total agricultural GDP.⁴⁴ Again, AMS measures (in other words, those that would be subject to reduction if Ukraine were a WTO member) account for the lion's share (88%) of total support. While the share of green box measures increased to 12% of total support, it decreased from 3.6% of total agricultural in 1998 GDP to only 1.3% in 2000. In summary, 2000 was characterised by impor-

⁴³ See UKRAINIAN NEWS, November 23, 2000. In 2001 this measure has been continued. In the 2001 budget, 150 mUAH are foreseen for interest rate subsidies at a rate of 70%- As of early April, all of this money had already been spent, indicating that this measure has 'caught on'.

⁴⁴ This assumes similar expenses for most measures as in 1999 (see table 4), excluding zero-interest rate budget loans, write-offs, farm debts for foreign machinery and the State Leasing Fund. Note that the law "On Stimulation of Agricultural Development in 2001-2004" (see appendix at the end of the book) calls for at least 5% of state budget expenditure to be dedicated to agriculture in the future. Based on a total budget of 61 bUAH (2000), this would imply expenditures of at least 3.05 bUAH, thus assuming that Ukraine's agricultural AMS will remain high. Moreover, note that this 5% refers only to explicit budget expenditure, not necessarily to indirect support in the form of tax expenditures.

tant agricultural policy changes that reduced domestic support in particular. This should make it easier for Ukraine to join the WTO, even though much work remains to be done to increase transparency, to reduce increase WTO conformity in the area of market access, and avoid backsliding in those areas where progress has been made.

4.4 Sanitary and phytosanitary measures

Sanitary and phytosanitary measures are regulated by the Uruguay Agreement on SPS. In Ukraine these measures are regulated by the Law of Ukraine “On State Regulation of Import of Agricultural Products” and the Law of Ukraine “On Quality and Security of Food and Agricultural Products” from January 23, 1997 No. 771/97. Importers have to provide quarantine⁴⁵ and veterinary⁴⁶ certificates and pass through ecological controls.⁴⁷ Traders and investors often state that Ukraine applies a range of measures which are not based on science or supported by risk assessment, and which differ substantially from international standards (U.S. DEPARTMENT OF STATE, 1999). The certification and approval process is lengthy, duplicative, and expensive. At the same time, related regulations that do conform to international standards are missing. Specifically, foreign firms allege that Ukrainian regulation and enforcement of measures to protect intellectual property is lax. In the plant protection industry, for example, it is amply documented that Ukrainian firms copy Western products in breach of patent restrictions.

Ukraine has not signed agreements with any of the three international organisations which are identified in the WTO Sanitary and Phytosanitary Agreement: the International Plant Protection Convention – FAO; the Codex Alimentarius – a joint FAO and WHO Commission; and the Office International des Epizooties – an independent organisation. Therefore, Ukraine has not yet taken the right steps to move to more transparent and scientifically based certification processes that are harmonised and conform to international standards. The tendency to use technical barriers to provide continued domestic support is obvious.

4.5 Special issues for transition economies which have to be addressed for accession to the WTO

In addition to the general WTO requirements, transition countries such as Ukraine are required to make fundamental economic and institutional reforms to join the WTO. WTO members want to ensure that Ukraine will be able to fulfil its commitments and liberalise its domestic and trade policy. Indeed, WTO members have been placing greater demands on acceding countries than are placed on existing members (MICHALOPOULOS, 1998):

First, there is a general concern on the part of WTO members that the laws and regulations of the acceding country are in conformity with WTO provisions. A second concern is the degree of privatisation of the economy. The Ukrainian Government states that almost all collective and state farms are privatised and have been transformed into private agricultural enterprises. This may convince public opinion in Ukraine, but it is not enough to convince trading partners – they require 'real' farm privatisation including, for example, guarantees that local authorities will not interfere in farms' production and marketing decisions.

A third, related, concern is the extent to which Government agencies involved in the regulation of economic activity do so on the basis of transparent rules and criteria as opposed to administrative discretion (MICHALOPOULOS, 1998). The Ukrainian Government continues to use agricultural policy instruments which can hardly be considered as transparent, predictable or non-administrative.

⁴⁵ See Law of Ukraine “On Crop Quarantine” No. 3348-XII from June 30, 1993.

⁴⁶ See Law of Ukraine “On Veterinary Medicine” No. 2498-XII from June 25, 1992.

⁴⁷ See Cabinet of Ministers of Ukraine’s Resolution "On Ecological Control in the Customs" No. 198 from March 20, 1995.

For example, although the Law of Ukraine “On State Regulation of Import of Agricultural Products” (Article 5) stipulates that “...*local governments are forbidden to ban the movement of goods among rayons and oblasts, to prescribe to farms concrete food processors and purchasers of agricultural products, as well as to set minimum farm gate and wholesale prices.*”, embargoes on free movement of goods among oblasts, food margin controls (especially for bread), export and import restrictions, and minimum price for staple food have been widely implemented.

Finally, WTO members are concerned about governance and the capacity of national agencies to actually implement policies necessary changes. Executive and legislative authority is widely distributed in Ukraine. Many authorities and agencies have the right to issue decrees, resolutions, rules, and instructions. Moreover, many agencies are at present free to make independent judgments on how to target production and social assistance programs. The current diffusion of authority weakens the system of governance in Ukraine by placing a heavy burden of co-ordination on a relatively weak civil service (SUNDAKOV, 1996). The commitments made by national authorities in the context of WTO accession negotiations will have to be implemented thoroughly, but it is not clear that all local authorities will be willing or able to co-operate accordingly.

4.6 Ukrainian preparations for Millennium Round negotiations

It is not easy to predict the decisions and new rules that will emerge from the Millennium Round of WTO negotiations, but it is clear that if Ukraine really wants to join the WTO, its agricultural and trade policy will have to change.

As can be seen from the analysis above, Ukraine does not meet most WTO requirements. Import regulations are prohibitive, non-transparent and non-predictable. The export regime discriminates against private market agents and subjects them to long administration procedures. Domestic support was reduced considerably in 2000 but remains dominated by ‘amber’ box policies that are subject to WTO reduction commitments. Sanitary and phytosanitary measure regulations are opaque, complex and not in harmony with international standards.

Finally, Ukrainian policy makers should be aware that there is a clear trend world-wide to liberalise and reform agricultural policies. In the WTO, many countries are pushing for less support and protection for agriculture, putting traditional protectionist countries such as the EU or Japan under considerable pressure. The strongest advocates of liberalisation are countries such as Australia, New Zealand, Argentina and Canada, countries that – like Ukraine – have considerable potential as agricultural exporters but – also like Ukraine – cannot afford to compete against the EU’s and American export subsidies. These countries, like Ukraine, need a fair chance on world markets, the oft-cited ‘level playing field’. Agricultural policy makers in Ukraine should set their sights on creating and taking advantage of such conditions in the future, rather than repeating the mistakes that other countries made in the second half of the last century.

5 Policy recommendations

To be fully integrated into the world trade system and gain from exploiting its comparative advantage, membership in the World Trade Organisation (WTO) is essential for Ukraine. The advantages of WTO membership would outweigh the disadvantages. WTO membership would strengthen domestic policies and institutions, improve market access for Ukrainian exports, and helps to resolve disputes with trading partners. Therefore, the Ukrainian Government’s agricultural policy decisions should take WTO rules and requirements into consideration.

1. In the area of **market access**, the following points are important:
 - The Law on State Regulation of Agricultural Imports does not meet WTO requirements. It does not encourage free trade and does not provide for transparent regulation of imports. Im-

port quotas for livestock products should be based on domestic consumption, not production. Seasonal duties should be eliminated or reduced.

- Non-tariff barriers are the most important impediments to free trade in Ukraine. Certification and standardisation procedures should be made more transparent.
 - Import protection reduces economic growth. Consumers have to pay more for food and consume less than in the case of free trade. Import protection causes real exchange rate appreciation, thus making all of Ukraine's exports less competitive on world markets. Ukraine will be pressed by WTO members to decrease its import protection, but it should take these steps of its own accord as soon as possible.
2. Ukraine meets WTO requirements in the area of **export subsidies**, in the sense that it simply does not use them. But Ukraine's export policy is nevertheless a matter of concern. Export taxes on oilseeds and livestock, as well as effective export bans for grain reduce agricultural growth. Moreover, they signal that Ukraine has not yet liberalised its foreign trade.
 3. In the area of **domestic support**, Ukraine has a number of the immediate tasks which must be fulfilled for successful WTO accession:
 - Ukraine has a very high level of farm support. Total domestic support in 1998 (1999) amounted to 167 (177)% of the agricultural GDP of the CAEs. This level is one of the highest in the world, but Ukrainian farms remain unprofitable and inefficient. It is a crucial task for the Ukrainian Government to reduce and redesign its domestic support.⁴⁸
 - Considerable progress was made in 2000 on this front, as total domestic support was reduced to roughly 57% of the agricultural GDP of the CAEs. Nevertheless, most domestic support measures remain 'amber box' and would have to be reduced in the event of WTO membership. And the danger of backsliding in the area of agricultural reform is always present (consider, for example, the potential mis-uses of the so-called 'pledge price' system).
 - The share of 'green box' measures is very small in Ukraine, amounting to only 5.6 (3.1)% of the total domestic support in 1998 (1999). While much has been spent to support input suppliers and bankrupt farms, almost nothing has been spent on the foundations of future competitiveness such as rural infrastructure and human capital. Technological progress is the main source of the agricultural growth (MUNDLAK, 1989; LELE & MELLOR, 1989). But new technologies cannot be adopted in the absence of far-reaching changes in infrastructure, human capital, and rural institutions.
 - Agricultural policy making (both the process and the results) in Ukraine should become more transparent. Public information about farm subsidies and other support measures, as well as regular calculations of protection measures such as protection rates and the AMS would speed Ukraine's WTO accession.
 4. In the area of **sanitary and phytosanitary measures**, Ukraine has not signed agreements with any of the three international organisations which are identified in the WTO Sanitary and Phytosanitary Agreement. To enter the WTO, Ukraine will have to adjust its sanitary and phytosanitary legislation to the international standards and join the above-mentioned organisations.
 5. As Ukraine is a country with relatively high rates of inflation, it would be well-advised to bind any WTO commitments in US dollars rather than Hryvnia. The Polish example provides a precedent that could be used to convince the WTO Working Party.

⁴⁸ Recall that the WTO, by treating budget loans to agriculture differently, calculates a much lower AMS (see section 4.3).

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12 The Impact of Agricultural Trade Policy on Farms' and Consumers' Welfare in Ukraine

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1 Introduction

Agriculture is a complex system of interactions of producers' and consumers' decisions based on the exogenous environment and their endogenous experience and skills. The governments of most countries intervene in this complex system, either to correct market failures or to subsidise agriculture or tax farmers for distributional purposes. The success of any policy measure depends on the quantity and especially quality of information available to policy makers. One of the sources of such information is modelling.

Models are intensively used by agricultural policy makers all over the world. The USDA, for example, has a comprehensive agricultural model with a large number of the commodities (SWOP-SIM). This model's information is explicitly used by the US Government in designing and implementing its agricultural policy. The Food and Agricultural Policy Research Institute (FAPRI) provides quantitative analysis of issues related to food, agriculture, and natural resources. For the last 15 years, FAPRI used its modelling system to develop projections of world agricultural commodity markets (WESTHOFF & YOUNG, 2001). This information is used by policy makers and businessmen world-wide. EU policy makers also use models intensively to analyse the effects of measures such as the Agenda 2000, CAP reform (HECKELEI, WITZKE & HENRICHSMEYER, 2001) or the impact of the EU's Eastern enlargement (WEBER, WAHL & MEINLSCHMIDT, 2000; MÜNCH, 2000).

The current paper presents an agricultural model made for Ukraine. Actually, this is the first model which makes it possible to study the effects of agricultural policy on farmers' and households' decisions, as well as their welfare. The model covers many agricultural commodities, trade partners and many other aspects of the sector. To illustrate the use of this model, we simulate the impact of several agricultural policy changes in Ukraine, including the complete liberalisation of agricultural trade and the imposition of uniform import tariffs at levels of 10% (moderate) and 50% (prohibitive). The model we present is still at an early stage of development and certainly needs refinement. Furthermore, under Ukrainian conditions (poor data, a rapidly changing economy, unstable policies), quantitative modelling is difficult and results must be interpreted with great caution. Nevertheless this model represents the first step on the path to a transparent cost-benefit analysis capacity for policy making in Ukrainian agriculture.

The paper is structured as follows. Section two discusses the theoretical foundations of the model. Section three presents the data set used in the model. The fourth section presents the policy scenarios that are analysed to illustrate the use of the model, specifically scenarios in which Ukrainian agricultural trade policy is modified and analyses the results. Section five concludes.

Before we continue, however, a word of caution may be in order. What we will be presenting is an analytical tool and not a planning tool. In market economies, quantitative models are not used to prescribe what individual actors (households and firms) should do, but rather to gather insights into how they will react to policy changes, and especially to analyse who will win and who will lose as a result of such changes. Models are tools that help policy makers make appropriate choices; they are not used to limit the freedom of households and firms to make their own choices.

2 Theoretical foundations of the model

EPACIS¹ is a static partial equilibrium model for the agricultural sector of the CIS. A similar model has been applied to estimate the effects of EU Eastern enlargement on EU households (WEBER, WAHL & MEINLSCHMIDT, 2000). This model includes the supply of agricultural products, the corresponding input and labour use, and the demand for food.

The model is used for comparative-static analysis. Producers are modelled as maximising profit and consumers as maximising utility, subject to technical and budget constraints, respectively. They are assumed to have perfect knowledge about market and technical conditions. Markets are assumed to be competitive, i.e. producers and consumers are price takers.

The international trade in agricultural commodities is shown as net trade, i.e. the difference between domestic supply and demand is shown as a trade with the trading partners – CIS members and the rest of the world (ROW). Consumers and producers differentiate between the country of origin or destination, respectively. In line with the so-called *Armington*-approach, domestically produced goods and imports from different trading partners are imperfect substitutes in consumer demand. Analogously, products sold to the domestic market and exported to different destinations are imperfect transforms in production (TACIS, 2000). Intra-industry trade is modelled by constant elasticity of substitution on the consumer side, and by constant elasticity of transformation on the producer side. The former describes the substitution possibilities between domestically produced goods and imports, and the latter shows the transformation possibilities between sales to domestic market and exports. Countries are modelled as being price takers (small country assumption).

The EPACIS model includes three main blocks which are shortly described as follows:²

1. In the **supply block**, the supply of and input demand for a commodity are determined. The general assumption of the model is that the producers maximise their profit, optimising production as prices change. The profit function³ is a mathematical representation of the solution to an enterprise's optimisation problem (CHAMBERS, 1988). A profit function meets the following regularity conditions: 1) continuity in output and input prices; 2) non-decreasing in output prices and non-increasing input prices; 3) homogeneity of degree 1 in prices; and 4) convexity in prices (VARIAN, 1992). Technical progress is modelled as an autonomous process.
2. The **demand block** defines the volumes that are consumed domestically. It is assumed that utility-maximising consumers adjust their demand based on changes in prices and incomes (WEBER, WAHL & MEINLSCHMIDT, 2000). A consumer expenditure function meets the following regularity conditions: 1) continuity in prices; 2) non-decreasing in prices; 3) homogeneity of degree 1 in prices; and 4) concavity in prices (VARIAN, 1992). Changes in the size of the population and income are exogenous in the model.
3. The **price transmission block** of the model links the prices at different levels (world market, farm-gate, consumer, etc.). Based on the small-country assumption, producers and consumers have no influence on world market prices. Thus, border prices are exogenous in the model. Governments can intervene in agricultural trade *via* import tariffs or subsidies, as well as export subsidies or tariffs, for each product and trading partner. These tariffs and subsidies are foreseen in the price transmission block where they link world market prices with farm-gate prices. Consumer prices are a weighted average of average import and domestic

¹ This model has been developed by Prof. K. Froberg, G. Weber and O. Wahl, IAMO, and implemented by the authors in the framework of the TACIS project on the modelling of agricultural trade among the CIS in Moscow in 2000.

² The economic theory underlying EPACIS can only be sketched very briefly here. Details are available from the author and the sources listed at the end of this chapter.

³ The profit function in the model is defined as: profit = revenue – input costs – labour costs.

market prices, plus a margin representing the costs of processing, wholesale and retail service.

EPACIS equilibrates the supply and demand systems, making it possible to study the effects of agricultural policy on agricultural production as well as the demand for the agricultural inputs and food. In addition to tariffs and subsidies, policy instruments include quotas. All of these instruments can be determined exogenously to create different scenarios for the model.

EPACIS also calculates the impact of policy alternatives on producer and consumer welfare, as well as on the budget:

1. Producer welfare is measured by net revenue, including market income and subsidies.
2. Consumer welfare calculations follow the concept of the money merit indirect utility function. This indirect utility function measures the minimum income that would be necessary in the base scenario to make consumers as well off as they would be in the scenario in question (VARIAN, 1992, cited in TACIS, 2000).
3. Government net budgetary expenditures are computed. These are composed of export and import tariffs or subsidies, direct payments, input subsidies and general services. Export and import tariffs represent a budgetary income, whereas export and import subsidies lead to government expenditures. All the subsidies to producers are added to government expenditures.

Adding up producer welfare, consumer welfare and net budgetary expenditures provides a measure of total national welfare which can be used to evaluate proposed policy scenarios. Changes in producer and consumer welfare, as well as changes in net budgetary expenditure, can be used to study the distributional implications of proposed policies.

3 Data

The EPACIS model is based on actual data for the 1999 calendar year. The major sources of these data are the STATE STATISTICS COMMITTEE OF UKRAINE (Agricultural Yearbook in 2000 and Reports on Sales of Agricultural Commodities through Different Marketing Channels), the STATE CUSTOMS COMMITTEE OF UKRAINE (Export – Import of Agricultural Products and Food in 1999), UKRAGROCONSULT (product balances), the MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (Annual Aggregated Accounting Reports of the Public Farms in 1999), the INSTITUTE FOR AGRICULTURAL ECONOMICS (Agroindustrial Complex of Ukraine: State, Tendencies, and Development Perspectives, 2000), and IAMO (the Institute for Agricultural Development in Central and Eastern Europe), Halle/Saale, Germany (conversion coefficients and elasticities).

Output and input quantities: The agricultural goods are represented in raw product terms with the exception of oilseeds and sugar beet. Sugar beet output is expressed in terms of refined sugar. The following outputs are included in the model: wheat (WHEAT), other cereals (OCER), oil equivalents (OILS), sugar equivalent (SUGAR), vegetables (VEPO), fruits and berries (FRUI), potatoes (POTAT), milk products (MILK), beef (RMEA), pork (PORK), poultry (POUL) and the rest of agriculture (RAO). Output is defined as gross production minus seed use and waste (net production). For those products for which feed use is not explicitly modelled (e.g. milk), quantities fed are also deducted from gross production.

The model uses the following inputs: feed wheat (FWHEAT), feed cereals (FOCER), feed vegetables (FVEPO), fertilisers (FERT), labour (LAB), and rest of variable inputs (RVI).

Demand quantities: Demand is the final domestic consumption of agricultural and food products. The list of the consumed products is identical with the output list, but includes the additional item 'rest of food expenditure' which is equal to total food expenditure minus expenditures on all of the food items explicitly included in the model.

Export and import: Export and import quantities and prices are taken from the actual data of the STATE CUSTOMS COMMITTEE OF UKRAINE on foreign trade of 1-24 groups of commodities for different countries in 1999.

Prices: Output prices are defined as 'at farm-gate'. These are the prices paid to agricultural producers when they sell their products. For sugar, the wholesale prices of sugar is adjusted using the conversion coefficient of sugar beet to sugar. The same procedure is applied for oils. Consumer prices reflect the retail level. For wheat, for example, retail flour prices are used to represent 'retail prices' for wheat. A similar procedure is adopted for other products such as sugar, oilseeds, milk, etc. World market prices are average weighted border prices (export price in a case of net exporter, and import price in a case of net importer). Export and import border prices are differentiated by country of destination and origin. These prices are taken from official foreign trade statistics.

Tariffs and subsidies: Tariffs and subsidies are set exogenously in the model. The actual *ad valorem* import tariffs applied at the end of 1999 are used to represent the import tariffs. As the model employs seven different trading partners, the import tariffs are differentiated among them. The trading partners are the following: Belarus, Russia, Moldova, Kazakhstan, Uzbekistan, the rest of the CIS, and the rest of the world (ROW). Ukraine has signed free trade area agreements with five countries at the top of the above list; thus, import tariffs equal zero for these countries. For the rest of the CIS and ROW actual MFN (most favoured nation) import tariffs are applied. Thus, the rest of the CIS is added to the ROW in further discussions.

Export tariffs include the 23% oilseed export tax for all trading partners. The 25% Russian import duty against Ukrainian sugar is also included. Ukraine did not use any export and import subsidies in 1999.

The model also includes direct payments, input subsidies and general services for farms. These subsidies are added to producer prices on a per t basis. The data on farm subsidies in Ukraine is taken from the Annual Aggregated Accounting Reports of the Public Farms. Direct payments include the subsidies paid by processors to milk and meat producers. Input subsidies include financial aids to the development of production, while general services include government research and development (R&D) funding, as well as social guarantees for the rural population and payments from the Chernobyl Fund.

Elasticities: Elasticities measure consumers' and producers' response to changes in price or income.⁴ The model employs three sets of elasticities: supply, demand, and Armington. Raw data on supply and demand elasticities were taken from MÜNCH (2000), discussed with IAMO⁵ and then, adjusted to Ukrainian conditions. The resulting elasticities, in accordance with the calibrated restrictions of microeconomic theory described in section 2, are used for policy simulations. The Armington elasticities are the constant elasticities for substitution between import and domestically produced goods and for transformation between export sales and sales on domestic markets. These elasticities are the same for all trading partners. This means that imports from Russia and from ROW, for example, are not differentiated. The Armington elasticities for the import of agricultural products and for processed products are roughly 1.5 and 3.5 respectively: the higher the level of the processing, the larger the preference differentiation. For export, similar elasticities are applied.

⁴ See chapter 8 on *Promoting Food Security in Ukraine* for a definition of elasticities.

⁵ The authors appreciate the assistance of Prof. Dr. K. Frohberg and Dr. G. Weber from IAMO in determining the elasticities for Ukraine. Elasticities were also discussed between the TACIS participants from Russia and Ukraine. Determining consistent sets of elasticities is always difficult, especially in the case of transition economies where data is often unavailable and consumer and producer behaviour is changing rapidly. Improving the elasticities that we use is an important task for future research.

4 Simulation results

4.1 The scenarios

To study the effects of different agricultural trade policy instruments on farms and consumers, the following simulations have been done:

Scenario 1: Free trade with all partners (export duties are zero).

Scenario 2: Imposition of the import tariffs that currently apply to ROW (including export duties for oils to all partners and sugar to Russia) to the CIS as well.

Scenario 3: Decrease of actual import tariffs by 36% for all countries (export duties are zero).

Scenario 4: Introduction of a uniform import tariff of 10% (export duties are zero).

Scenario 5: Introduction of a prohibitive uniform import tariff of 50% (export duties are zero).

The projections are made based on 1999 world prices, farm subsidies, population and income. These scenarios cover a wide range of the agricultural trade policy alternatives. Scenario 1 simulates free trade with all partners. Note that the base model already assumes free trade with Ukraine's main CIS trading partners. Scenario 2 simulates the introduction of the same trade regime for all trading partners using actual import and export duties for ROW. Scenario 3 simulates the effects of the reduction of all import tariffs by 36% as required by the WTO's Uruguay Round Agricultural Agreement. Scenarios 4 and 5 show the effects of the introduction of moderate (10%) and prohibitive (50%) uniform import tariffs. Import tariffs for the different scenarios are shown in table 1.

Table 1: Import tariffs for different scenarios (%)

Products	Base scenario		Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5	
	CIS	ROW	CIS	ROW	CIS	ROW	CIS	ROW	CIS	ROW	CIS	ROW
WHEAT	0	30	0	0	30	30	19.2	19.2	10	10	50	50
OCER	0	30	0	0	30	30	19.2	19.2	10	10	50	50
OILS	0	50	0	0	50	50	32.0	32.0	10	10	50	50
SUGAR	0	50	0	0	50	50	32.0	32.0	10	10	50	50
VEPO	0	35	0	0	35	35	22.4	22.4	10	10	50	50
FRUI	0	25	0	0	25	25	16.0	16.0	10	10	50	50
POTAT	0	50	0	0	50	50	32.0	32.0	10	10	50	50
MILK	0	35	0	0	35	35	22.4	22.4	10	10	50	50
RMEA	0	30	0	0	30	30	19.2	19.2	10	10	50	50
PORK	0	30	0	0	30	30	19.2	19.2	10	10	50	50
POUL	0	30	0	0	30	30	19.2	19.2	10	10	50	50

Source: Own calculations.

The results of the simulations are presented in the appendix. In the following, these results are briefly discussed.

4.2 Changes in prices and quantities

Scenario 1 assumes free trade with all trading partners. In the case of Ukraine, this means the abolishment of import tariffs *vis-à-vis* the rest of the world. Moreover, all export tariffs are abolished as well. As the import tariffs are abolished, import border prices fall. The magnitude of this fall for each product depends on the shares of the CIS and ROW in imports. Since wheat, for example, was imported mainly from the CIS in the base scenario, the overall import price decrease is not large. As a result of the decline in import prices, domestic farm-gate and consumer retail prices decrease as well. Again, the magnitude of this decrease depends on the share of imports on domestic markets and the substitution elasticities between imports and domestically produced goods.

The simulation shows that the reduction in farm-gate prices induces a slight reduction in output (in some cases even a slight increase due to transformation opportunities), while lower consumer prices encourage more consumption. Since production decisions depend on the own and cross supply elasticities, wheat production, for example, depends not only on wheat prices but also on prices for all other products. Moreover, the impact of variable inputs and labour should be taken into consideration as well. The same is true for domestic consumption.

The small changes in supply and demand are explained by the initially low share of imports on Ukrainian markets. Only for poultry was the import share 83% in 1999. For all other groups of products, the import share did not exceed 1-5%.

Finally, increased imports allow exports to grow. The changes in exports depend on the changes in domestic supply and demand, as well as the elasticities of transformation between exports and sales on domestic markets. In scenario 1, fruits and milk products witness the highest increase in exports.

Scenario 2 assumes that the ROW tariffs are applied to all partners, including those in the CIS. This leads to an increase of average import prices, which translates into increased farm-gate and consumer prices. The largest import price increase is for wheat (14.1%) and the lowest is for poultry meat (0.03%). This is because in the base scenario wheat is imported mainly from the CIS (Russia and Kazakhstan) and, thus, increasing the import tariffs for CIS significantly increases border prices for wheat. In contrast, poultry meat is mainly imported from the ROW, thus the import tariff increase for the CIS plays a minor role. Generally, as in the scenario 1, imports from the CIS decline, but imports from ROW increase.

Contrary to the first scenario, the output of most products increases as a result of higher farm-gate prices, while consumption decreases. Again, the percentage changes in the supply and demand are very small. As imports fall, exports of domestically produced goods decline as well. This means that increases in domestic production do not suffice to compensate for reductions in imports minus reductions in domestic consumption.

Scenario 3 simulates the one of the requirements of the WTO Agreement on Agriculture – a 36% reduction of all import tariffs. In this case, the reduced import duties are applied to all trading partners and then reduced by 36%, because the WTO may not recognise Ukraine's preferential trade agreements with the CIS countries and may insist on maintaining the most-favoured-nation (MFN) regime with all trading partners. Moreover, all export duties are abolished as the WTO would hardly permit a new member to apply them.

The tariff reduction explicitly reduces average import prices, and thus, domestic prices as well. This results in an increase in imports from the ROW and a decrease in imports from the CIS. The resulting net increase in imports makes it possible to increase export despite falling output and increasing demand. As WTO membership opens better export opportunities for Ukraine, the potential for export absorption is higher.

Scenarios 4 and 5 assume the imposition of moderate and prohibitive uniform import tariffs of 10% and 50%, respectively. The low uniform tariff would allow Ukraine 1) to import more and use domestic resources more efficiently, and to increase the food assortment on the domestic market; 2) to maintain domestic prices slightly above the world market level, providing producers with some support, but without creating major distortions; 3) to avoid differentiating among different products, i.e. choosing 'sensitive' and 'non-sensitive' products for protection purposes; and 4) to increase government revenues through import duty payments. In contrast, the prohibitive import tariff would 1) encourage import substitution; 2) foster an inefficient allocation of domestic resources; 3) provide artificially high support for producers, slowing their adjustments to world market conditions; and 4) make domestic consumers pay considerably more for food.

The outcomes of scenarios 4 and 5 are, as might be expected, quite different. The former simulation results in a reduction in import prices (with a price increase of 10% for imports from the CIS and a larger decrease for imports from the ROW) as the initial average import tariff was higher than 10%. This decrease leads to a reduction in domestic prices and domestic supply and an increase in domestic consumption. Moreover, increased imports make it possible to export more.

In the latter scenario (5), the simulated average import tariff is higher than the actual average. Thus, average import prices increase (by 50% for imports from CIS and by less for imports from the ROW). This induces an increase in domestic prices and, thus, an increase in domestic supply and a reduction in domestic demand. Lower imports result in lower exports.

4.3 Changes in welfare

Changes in welfare for producers, consumers and taxpayers (in the form of changes in net budget income) are presented in table 2 for the various scenarios.

Table 2: Changes in welfare indicators in the five scenarios (change *vis-à-vis* the base scenario in mill. UAH, % in brackets)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Producer welfare	-2.5	0.8	-6.3	-13.7	8.0
Consumer welfare	-0.1	-0.1	0.5	1.2	-0.6
Net budget income	-100.0	4.4	-25.4	-64.5	30.4

Source: Results of the model simulations.

Producer welfare is measured as the changes in net revenue (profit) due to the changes in farm-gate prices and supply *plus* subsidies received. The elimination of all import and export tariffs in scenario 1 results in a reduction in farm welfare of 2.5%, entirely due to changes in prices and supply, as government subsidies do not change. The largest reduction in producer welfare occurs in scenario 4, while the 50% uniform import tariff (scenario 5) benefits farmers the most.

Consumer welfare calculations follow the concept of the ‘money merit indirect utility function’. This indirect utility function measures the minimum income that would be necessary in the base scenario to make consumers as well off as they would be in the scenario in question. The imposition of the 10% uniform import tariff brings the largest welfare benefit for consumers (1.2%), while the 50% import tariff hurts consumers the most.

Net budget income is a difference between the income received from import duties and all subsidies paid to producers directly from the budget or revenues not received by the budget (tax privileges). In our simulations, only one of these elements changes – the income from import tariffs. The largest budget losses result from the introduction of the free trade regime, and the largest budget revenues result from the introduction of the 50% uniform import tariff.

Note that all of the welfare effects reported here are static: They measure changes that occur yearly *vis-à-vis* the base scenario. The dynamic effects of policy distortions are likely to be considerably larger. These include the costs of rent seeking by interest groups to secure or increase policy induced benefits. They also include the costs that accumulate as welfare losses lead to less investment, reducing future technical change and growth. Hence, the welfare changes discussed above likely represent underestimates, especially when a medium to long-term view is taken.

5 Conclusions

In the modern world the policy makers need information. The success of any policy measure depends on the quantity and especially quality of the information available to policy makers. Models can be an important instrument for the creation of policy information systems. Agricultural models

help policy makers and businessmen estimate the effects of both changes in agricultural policies and exogenous shocks.

This chapter presents an agricultural policy simulation model for Ukraine (EPACIS) – actually the first such model built for Ukraine. EPACIS covers the most important agricultural commodities and food products while taking international trade flows into consideration. The simulation results show the complexity of the interactions within agriculture, as well as consumers' decisions and trade opportunities. Changing import (export) tariffs by a certain amount does not mean that domestic prices and supply (demand) response by the same magnitude. Rather a long chain of own- and cross-price effects determines the changes in producers' and consumers' welfare.

The advantage of EPACIS is that it can be adjusted to different tasks and scenarios. For illustration purposes, several such scenarios are presented in this chapter. The lists of products and trading partners can easily be changed, while policy simulations can cover both domestic policy measures and exogenous shocks, such as changes in world market prices. The result is a useful policy instrument for policy makers, researchers and businessmen in Ukraine.

Of course, this instrument is still quite primitive (recall the *caveat* mentioned in the introduction of this paper). Much work remains to be done to increase the model's sophistication and adapt it to specific Ukrainian conditions. Ukrainian policy makers should be interested in supporting this work, because in the end, having a functioning and dependable set of modelling tools at their disposal will help them choose the right policies for Ukraine.

6 References

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7 Appendix: Detailed simulation results

Scenario 1: Free trade with all partners (CIS and ROW)

Products	Changes in production and consumption, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.0	0.0	-0.7	0.7	3.3	1.8
OCER	0.1	0.0	-0.6	1.1	0.8	0.8
OILS	-0.1	0.3	0.3	-2.5	1.1	0.9
SUGAR	-0.1	0.0	0.2	-0.6	0.6	0.6
VEPO	-0.0	0.0	0.5	-0.3	1.1	1.1
FRUI	0	0.3	2.0	-7.0	1.8	2.2
POTAT	-0.0	0	0.0	-0.4	2.2	1.5
MILK	-0.5	0.3	2.4	-0.7	1.7	1.6
RMEA	-0.9	0.1	1.4	-0.5	0.6	0.6
PORK	0.3	0.2	1.1	0.1	2.2	2.2
POUL	-0.3	0.7	-1.1	0.5	1.0	1.0

Products	Changes in prices, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.2	-0.0	0	0	-23.1	-23.1
OCER	0	-0.0	0	0	-23.1	-23.1
OILS	-0.1	-0.7	0	0	-33.3	-33.3
SUGAR	-0.1	-0.1	0	0	-33.3	-33.3
VEPO	-0.2	-0.1	0	0	-25.9	-25.9
FRUI	-0.8	-0.7	0	0	-20.0	-20.0
POTAT	-0.0	0	0	0	-33.3	-33.3
MILK	-0.8	-0.2	0	0	-25.9	-25.9
RMEA	-0.2	-0.0	0	0	-23.1	-23.1
PORK	-0.4	-0.1	0	0	-23.1	-23.1
POUL	-0.4	-0.3	0	0	-23.1	-23.1

Scenario 2: ROW import tariffs apply to CIS as well

Products	Changes in production and consumption, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	0.0	-0.0	-0.8	-43.3	6.5	-22.4
OCER	0.0	0	-0.6	-45.9	1.6	-2.9
OILS	0.0	-0.3	-0.4	-61.1	2.9	-0.9
SUGAR	0.1	-0.1	-0.8	-61.7	1.4	-1.2
VEPO	0.0	-0.0	-0.4	-51.1	0.4	-0.4
FRUI	0.1	-0.1	-0.7	-31.2	2.7	-0.8
POTAT	0.0	-0.0	-0.3	-50.3	3.2	-13.7
MILK	-0.0	-0.1	-0.2	-41.5	0.3	-2.5
RMEA	0	-0.1	-0.2	-36.6	1.6	-4.8
PORK	0.0	-0.1	-0.2	-37.7	-0.1	-0.6
POUL	-0.0	-0.1	-0.1	-37.7	-0.1	-0.1

Products	Changes in prices, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	0.3	0.1	0	30.0	0	14.1
OCER	0.2	0.0	0	30.0	0	1.9
OILS	0.1	0.8	0	50.0	0	1.6
SUGAR	0.3	0.3	0	50.0	0	1.1
VEPO	0.1	0.1	0	35.0	0	0.4
FRUI	0.3	0.3	0	25.0	0	2.0
POTAT	0.1	0.1	0	50.0	0	10.4
MILK	-0.1	0.0	0	35.0	0	1.6
RMEA	0.1	0.0	0	30.0	0	3.6
PORK	0.1	0.0	0	30.0	0	0.3
POUL	-0.0	0	0	30.0	0	0.0

Scenario 3: Reduction of MFN import tariffs by 36%

Products	Changes in production and consumption, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.2	0.1	0.6	-33.4	25.0	8.9
OCER	0.1	0	2.3	-37.9	16.6	11.4
OILS	0.2	2.2	3.0	-58.1	10.8	6.7
SUGAR	-1.0	0.9	7.8	-55.7	17.1	14.1
VEPO	-0.6	0.6	8.6	-44.7	13.6	12.6
FRUI	0.1	0.3	2.3	-29.1	6.0	2.3
POTAT	-0.0	-0.0	1.3	-40.3	23.8	3.5
MILK	-0.1	0.5	1.2	-31.5	17.6	14.2
RMEA	0.1	0.3	0.4	-28.7	14.3	7.2
PORK	0	0.4	0.4	-29.1	13.7	13.1
POUL	-0.7	5.8	3.3	-31.1	10.4	10.4

Products	Changes in prices, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.1	-0.0	0	19.2	-8.3	-4.6
OCER	-0.7	-0.2	0	19.2	-8.3	-6.6
OILS	-0.9	-5.3	0	32.0	-12.0	-10.6
SUGAR	-2.8	-3.0	0	32.0	-12.0	-11.0
VEPO	-2.9	-1.4	0	22.4	-9.3	-9.0
FRUI	-0.9	-0.8	0	16.0	-7.2	-5.4
POTAT	-0.5	-0.4	0	32.0	-12.0	-2.8
MILK	-0.5	0	0	22.4	-9.3	-7.9
RMEA	-0.1	-0.1	0	19.2	-8.3	-5.0
PORK	-0.2	-0.1	0	19.2	-8.3	-8.0
POUL	-1.6	-2.3	0	19.2	-8.3	-8.3

Scenario 4: Uniform 10 % import tariff

Products	Changes in production and consumption, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.5	0.2	2.1	-22.8	44.9	5.6
OCER	0.2	-0.0	5.4	-29.6	32.2	26.3
OILS	0.3	5.4	7.2	-53.9	21.9	17.4
SUGAR	-2.4	2.2	20.8	-46.0	43.0	39.2
VEPO	-1.2	1.2	19.5	-36.9	29.6	28.5
FRUI	0.3	0.6	4.6	-27.6	8.2	4.4
POTAT	-0.0	0.0	3.1	-22.4	60.9	34.6
MILK	0.3	1.2	-2.9	-18.4	40.1	36.1
RMEA	0.2	0.8	0.8	-20.2	27.9	19.9
PORK	-0.1	0.8	-0.1	-19.6	28.9	28.2
POUL	-1.4	11.4	6.7	-24.7	20.8	20.7

Products	Changes in prices, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	-0.5	-0.1	0	10.0	-15.4	-3.5
OCER	-1.7	-0.3	0	10.0	-15.4	-13.8
OILS	-2.2	-13.0	0	10.0	-26.7	-25.5
SUGAR	-6.9	-7.6	0	10.0	-26.7	-25.9
VEPO	-6.1	-2.9	0	10.0	-18.5	-18.2
FRUI	-1.7	-1.5	0	10.0	-12.0	-10.3
POTAT	-1.2	-1.1	0	10.0	-26.7	-19.0
MILK	1.3	0.2	0	10.0	-18.5	-17.2
RMEA	-0.2	-0.2	0	10.0	-15.4	-12.3
PORK	-0.1	-0.1	0	10.0	-15.4	-15.1
POUL	-3.1	-4.4	0	10.0	-15.4	-15.4

Scenario 5: Prohibitive 50% uniform import tariff

Products	Changes in production and consumption, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	0.1	-0.1	-2.3	-56.6	-18.6	-40.7
OCER	0.4	-0.1	-4.0	-57.3	-19.8	-23.4
OILS	0.4	-0.3	-0.9	-61.1	2.9	-0.9
SUGAR	0.1	-0.1	-1.4	-61.6	1.7	-1.0
VEPO	0.6	-0.6	-9.1	-57.2	-12.1	-12.9
FRUI	0.9	-1.3	-7.2	-36.5	-5.1	-8.4
POTAT	0.0	0	-1.6	-49.9	4.0	-13.0
MILK	0	-0.5	0.1	-50.1	-14.4	-16.9
RMEA	0.3	-0.1	-1.6	-47.2	-15.4	-20.7
PORK	0.2	-0.3	-2.4	-48.7	-17.7	-18.2
POUL	0.9	-9.2	-5.0	-47.4	-15.6	-15.6

Products	Changes in prices, %					
	Supply	Demand	Export	Import		Total
				CIS	ROW	
WHEAT	0.8	0.2	0	50.0	15.4	31.7
OCER	1.5	0.3	0	50.0	15.4	17.6
OILS	0.2	0.8	0	50.0	0	1.6
SUGAR	0.4	0.4	0	50.0	0	1.1
VEPO	3.5	1.6	0	50.0	11.1	11.5
FRUI	3.4	3.1	0	50.0	20.0	22.4
POTAT	0.6	0.5	0	50.0	0	10.4
MILK	0	0.0	0	50.0	11.1	12.9
RMEA	0.5	0.3	0	50.0	15.4	19.6
PORK	1.1	0.3	0	50.0	15.4	15.7
POUL	2.4	4.0	0	50.0	15.4	15.4

Part III:

Farm Structures and Farm Management in Ukraine

13 *Evolution of Farm Structures in Ukraine*

MYKOLA PUHACHOV & KATERYNA PUHACHOVA

1 **Legal background: the initial stage of reform (1990 – 1999)**

At the beginning of 1990s, the urgent need for changes in the structures of the former kolkhozes and sovkhozes became apparent in Ukraine. Thus, on December 18, 1990, the Supreme Council of the Ukrainian Soviet Socialist Republic adopted Resolution No. 563-XII "On Land Reform". This Resolution declared that all lands in the Republic are subject to reform and initiated private farming in Ukraine.¹ The corresponding Law No. 2009-XII "On Private (Household) Farms" was adopted on December 20, 1990.² At the same time, the legal underpinning of the reform of kolkhozes and sovkhozes was being established.³

In March 1992, the Verkhovna Rada (Parliament) of the already independent Ukraine adopted a (at that time) progressive Land Code and resolution No. 2200-XII "On Acceleration of the Land Reform and Land Privatisation".⁴ These laws initiated land denationalisation, sharing and privatisation in agrobusinesses. The Decree of the Cabinet of Ministers of Ukraine No. 15/92 "On Privatisation of Land Plots" dated December 26, 1992, provided for free privatisation of subsidiary household plots.⁵

It is no wonder that the first stage of the agrarian reform in Ukraine involved the creation of the collective agricultural enterprises (CAEs) based on the former kolkhozes and sovkhozes, and the denationalisation of land. Farm land was passed on to the collective ownership of CAE members so that it could be shared and, at the request of these members, divided into plots with private land status.

The main impetus for this process was provided by the Decree of the President of Ukraine No. 666/94 "On Immediate Measures to Accelerate the Land Reform in Agricultural Production" dated November 10, 1994. Collective land ownership by agrarian enterprises became an intermediate stage of the land reform in Ukraine. This ensured the gradual and peaceful transition from state to private ownership of agricultural land.⁶

The Decree "On the Procedure of Sharing Lands Passed to Collective Ownership of Agricultural Enterprises and Organisations" was the logical continuation of this process.⁷ It provided for the sharing of land (as a rule, without its actual division into plots) that had been passed to the collective ownership of non-state farms (mainly CAEs, see below), and the issuing of certificates to the members of these farms, which guaranteed them the right to shares of this collectively owned land. In other words, owners of these certificates could withdraw from their CAEs and receive a corresponding land plot. It should be noted that this Decree was based on the regional experience, since by then

¹ The Bulletin of the Verkhovna Rada of Ukrainian Soviet Socialist Republic, No. 10, article 100, February 5, 1991.

² The Bulletin of the Verkhovna Rada of Ukraine, No. 14, article 186, April 7, 1991.

³ These are the following laws: No. 698-XII "On Entrepreneurship" dated February 7, 1991 (The VR Bulletin, No. 14, art. 168, April 2, 1991); No. 697-XII "On Ownership" dated February 7, 1991 (The VR Bulletin, No. 20, art. 249, May 14, 1991); No. 887-XII "On Enterprises in Ukraine" dated March 27, 1991 (The VR Bulletin, No. 24, art. 272, June 11, 1991); No. 1576-XII "On Business Entities" dated September 19, 1991 (The VR Bulletin, No. 49, art. 682, December 3, 1991); and No. 2114-XII "On Collective Agricultural Enterprise" dated February 14, 1992 (The VR Bulletin, No. 20, art. 272, May 19, 1992).

⁴ The Bulletin of the Verkhovna Rada of Ukraine, No. 25, article 355, June 23, 1992.

⁵ The Bulletin of the Verkhovna Rada of Ukraine, No. 10, article 79, February 9, 1993.

⁶ According to regional agrarian programs for property and land privatisation, however, land in Ivano-Frankivsk and Lviv oblast was not passed to collective ownership of CAEs.

⁷ Decree of the President of Ukraine No. 720/95 of August 8, 1995. The Voice of Ukraine, No. 152, August 12, 1995.

Sumy oblast, Ivano-Frankivsk and Lviv oblasts had introduced their own, regional sample documents on private land title for an average land plot (share). In some regions, such as Hlobyne rayon of Poltava oblast, land share rights were also granted to the employees of the so-called rural social spheres (e.g. day-care workers on CAEs).

Up to December 1, 1999, over 6 mill. rural inhabitants had received certificates on the right to obtain private land shares (plots). The property of 10,800 former kolkhozes was shared, mostly in the form of CAEs. The property of 2,300 former sovkhoses (98%) and other state-owned agrarian enterprises was also shared.

Hence, by the end of 1999, the initial stage of Ukrainian land reform was mainly finished. The following figures demonstrate the progress that was made: 100% of Ukraine's agricultural lands were state-owned on January 1, 1992. By January 1, 1993, 13,800 ha (0.02% of the country's area) of land were private and 141,800 ha (0.24%) belonged to non-state farms. On January 1, 1996, 22.12 mill. ha (36.6%) of land were owned by non-state farms and 1.92 mill. ha (3.2%) of land were privately owned (INSTITUTE FOR AGRICULTURAL ECONOMICS, 1997, p. 107). On January 1, 2000, non-state agricultural enterprises had 30.89 mill. ha of agricultural land, and individuals owned an additional 7.4 mill. ha of land (primarily household plots) privately (see table 1).

Table 1: The distribution of agricultural land in Ukraine by ownership and use on January 1, 2000 (mill. ha)

	Total land area	Total agricultural land*	Including:		
			arable land	hay lands	pastures
Total land	60.4	41.8	32.7	2.3	5.5
of which:					
State	2.4	2.0	1.6	0.006	0.22
Non-state	36.0	30.9	25.1	1.6	3.5
Private	7.9	7.4	5.4	0.48	1.0

Note: * Arable lands, gardens, vineyards, hay lands and pastures.

Source: STATISTICAL BULLETIN OF THE STATE STATISTIC COMMITTEE OF UKRAINE, 2000.

This initial period of agrarian reform was rather time-consuming, since it involved changes in psychology, mentality and rural traditions. Land reform led to the transformation from state to collective ownership of land, and created the basis for the transfer from collective to *de facto* private ownership. The aim was the formation of a more efficient social and economic system with high motivation of labour and strict responsibility for its results. However, the supply of certificates granting the right to land title alone could not contribute to the formation of a land market and to improving the efficiency of agricultural production in Ukraine.

2 Features and structures of farms

Ukrainian agricultural producers can be classified into enterprises and persons. Enterprises are independent economic entities which have the rights and responsibilities of legal entities and operate in order to make profits. These legal entities are subjects to property relations. Ukrainian laws envisage the following types of enterprises:

- private, based on the property of a single person;
- collective, based on the property of the enterprise employees;
- company (limited liability company, joint-stock company); and
- municipal and state-owned enterprises.⁸

⁸ The Bulletin of the Verkhovna Rada of Ukrainian Soviet Socialist Republic, No. 24, article 272, June 11, 1991.

Subsidiary holdings of non-agricultural enterprises, institutions, and organisations can be classified as a special type of enterprise in Ukraine (official statistics refer to these as the rural holdings of enterprises, organisations, and institutions). They differ from agricultural enterprises, since they are not independent legal entities, but affiliates of enterprises. For example, some factories, coalpits, and processing enterprises have such agricultural holdings. However, these occupied only 1.4% of the total agricultural land in Ukraine as of January 1, 2000. Some of these holdings have survived since the time of central planning and food deficiency, when they served as an additional food source for the employees of non-agrarian organisations and enterprises. Their aims have mainly remained the same up to now.

The specific feature of household subsidiary plots is that they are privately owned by persons. These can take the form of commercial entities (for instance, private farms) or non-commercial holdings (subsistence farming) such as private household plots.

2.1 Agricultural enterprises

The structure of Ukrainian agricultural enterprises has been changing since Independence. There were 4,525 **state-owned agrarian enterprises** (sovkhozes) farming 9.93 mill. ha of land in 1990. By the end of 1999 their number decreased to 3,309 enterprises farming 2 mill. ha of land (table 2).

Table 2: The distribution of agricultural land in Ukraine by type of enterprise on January 1

Type of enterprise	1990	1991	1995	1996	1997	1998	1999
State-owned							
Number	4,525	4,659	5,253	4,440	3,965	3,474	3,309
Total area (mill. ha)	9.93	9.31	7.12	4.38	2.70	2.15	2.00
Non-state							
Number	8,820	9,351	10,356	11,299	12,019	14,000	14,464
Total area (mill. ha)	28.77	26.92	24.25	29.73	31.13	31.25	30.89

Source: ANNUAL REPORTS OF THE STATE STATISTICS COMMITTEE OF UKRAINE (different years).

According to the State Statistics Committee of Ukraine 1,942 of these 3,309 state-owned agricultural enterprises in Ukraine operated as independent economic entities in late 1999. These included 473 sovkhozes of different types occupying 1,057,100 ha of land, 663 agrarian research institutions and schools occupying 505,300 ha and 806 'other state-owned agricultural enterprises'. The remaining 1,367 of 3,309 units represented the rural subsidiary holdings of state-owned enterprises, institutions, and organisations (316,800 ha of agricultural land).

Over 75% of the agricultural enterprises in Ukraine are **non-state**. These enterprises were formed by the denationalisation of sovkhozes and reformation of kolkhozes. The most popular type of reformed enterprises was the CAE. On January 1, 2000, CAEs had the largest area of agricultural lands both as a group and per farm (table 3).

The CAE is a specific transitional legal and organisational form in Ukraine. Current laws define the CAE as a voluntary association of persons, who decide to establish an independent enterprise for the joint production of agricultural products and goods, and which functions based on entrepreneurship and self-governance. Persons older than 16 years can become members of a CAE if they accept and comply with its statutes.

Table 3: The number and size of non-state agricultural enterprises in Ukraine on January 1, 2000

Organisational and legal form of enterprise	Number of enterprises	Area of agricultural land, mill. ha	Average area per enterprise	
			Agricultural land (ha)	Arable land (ha)
CAEs	10,465	26.3	2,511	2,025
Agricultural companies	1,995	3.7	1,869	1,566
Agricultural co-operatives	362	0.3	864	765
Other non-state enterprises	1,642	0.6	336	229
Total	14,464	30.9	5,580	4,585

Source: STATE STATISTIC COMMITTEE OF UKRAINE (2000).

A specific feature of CAEs is that land, other fixed and current assets, cash and property contributions of the members, products produced, as well as incomes and property generated are subject to the collective ownership of the enterprise. Law of Ukraine No. 2114-XII "On Collective Agricultural Enterprise" dated February 14, 1992 stipulates that land can be collectively owned in a CAE even though there is no provision for this in the Constitution of Ukraine. The law also envisages that the general assembly of members is the highest management body of a CAE. However, many important aspects of CAE operations are not regulated by the current laws. These include the norms of CAE management, the redistribution of property and procedures of withdrawal. As practice has demonstrated, collective ownership fails to provide CAE members with incentives to assume responsibility for the profitability of their business. The CAE has proved to be inefficient in the following respects:

1. CAEs are, as a rule, too large to be managed efficiently. Their sizes vary from 2,000 to 5,000 ha of agricultural land. The number of member employees can range from several hundred to several thousand.
2. Related to the question of size, CAE corporate management has proved inefficient in performing major strategic and operational functions. Farm managers bear no responsibility for the financial results of CAE operations. Managers are usually elected from within the ranks of and by CAE members, and can often increase their chances of being (re-)elected by avoiding or postponing difficult but necessary decisions.
3. CAEs are based on collective ownership of assets. Due to this collective ownership, it is hard to receive clearly defined separate land plots and property shares upon withdrawal from the enterprise. As a result, the freedom of an individual member to withdraw from his or her CAE is often limited in practice. Inheritance also proves complicated.
4. CAE members are at the same time owners and employees of the enterprise. Thus, conflicts of interest weaken the motivation of CAE managers and employees to focus on long-term profitability and investments as opposed to consumption.

Enterprises in the form of **agricultural companies** function according to the Law of Ukraine "On Business Entities" dated September 19, 1991 (with the relevant changes and amendments).⁹ They include limited liability and joint-stock companies (both closed and open). The share of the former in the total number of agricultural companies of Ukraine is 55%, while the share of closed joint-stock companies is 23%. Limited liability companies and closed joint-stock companies, as a rule, have resulted from the restructuring of CAEs. Open joint-stock companies (the remaining 22% of companies) were formed when sovkhoses were denationalised. The original shareholders of such

⁹ The Bulletin of the Verkhovna Rada of Ukraine, No. 49, article 682, December 3, 1991.

joint-stock companies were legal entities and persons who received the shares in return for privatisation property vouchers without investing anything into the joint-stock company.

The principles, conditions and procedures of the functioning and management of these companies in Ukrainian agriculture correspond to those of similar forms of businesses in other countries of the world – partnerships and corporations. But Ukrainian law treats partnerships and joint-stock companies together as companies.

Ukrainian agricultural joint-stock companies join many people — from several hundred to several thousand. In closed joint-stock agricultural companies, shareholders are simultaneously employees. The number of members of limited liability companies, as a rule, ranges from 3 to 20 (usually the managers and specialists of the companies in question), although in some cases there can be hundreds of members.

As a rule, land is not included in statutory fund of agrarian companies in Ukraine. For agricultural operations, these companies must conclude land lease contracts with landowners. However, a situation is also possible in which the landowners do not wish to lease land to a company. In this case, even if it has the necessary fixed and current assets, a company without land cannot engage in agricultural production. The issue of land lease is therefore important for agrarian limited liability companies with few members, since land plots and property must be rented by this enterprise from many people – generally former CAE members.

Joint-stock companies in Ukrainian agriculture have not succeeded in attracting investment by issuing shares. Having a large number of member employees who have not bought shares for cash, agrarian joint-stock companies often face the same managerial and organisational problems as CAEs. Moreover, the members of joint-stock companies cannot receive shares of the assets of these enterprises if they choose to withdraw (for example to form a private farm). As shareholders, they can sell the shares they own, but the price is often very low, given the lack of demand.

Agricultural co-operatives in Ukraine are not considered as corporations, but represent a specific organisational and legal form. Law of Ukraine No. 469/97-VR "On Agricultural Co-operation" dated July 17, 1997, stipulates that an agricultural production co-operative is an enterprise formed for the joint production of agrarian commodities, with obligatory labour participation.¹⁰ When agricultural co-operatives were formed, generally as a result of CAE restructuring, retired people (pensioners) often became associated members. This had the positive effect that the number of people influencing managerial decisions was reduced, thus improving accountability and easing decision-making. Agricultural co-operatives' activities are based on the principles of limiting dividends on shares and the distribution of incomes according to performance as well as the democratic 'one member-one vote' management approach. Outsiders (non-members) can be hired as managers of co-operatives.

Private enterprises (one person enterprises) are a promising form of business in Ukrainian agriculture. CAE managers, for example, can become the owners of such private farms based on the rental of property and land shares from CAE members. For this reason such enterprises are often referred to as 'private with rent relations' or 'private rent enterprises'. The specific features of private agricultural enterprises in Ukraine are: large numbers of employed workers, the possibility of employing external managers and a large share of leased land and property. In some cases, all land and almost all property are rented by the enterprise. According to current Ukrainian laws, private enterprises are independent of local governments in choosing their areas of business. In practice, private enterprises are heavily dependent on the lessors of property and land. In addition to complying with lease contracts, these enterprises have to provide jobs to rural dwellers in order to avoid social conflicts.

¹⁰ The Bulletin of the Ukrainian Parliament, No. 39, article 261, 1997.

At the end of 1999, almost one-fifth of all non-state agrarian enterprises operated under organisational forms which were not directly envisaged by current Ukrainian laws (farmer unions, agrofirms, joint-stock-share enterprises, etc.), but nevertheless based on collective ownership. In other words, these enterprises operated in the absence of laws which regulate the legal aspects of their activity. Thus, the members of such enterprises often could not fully realise their rights of control over enterprise management, their rights of withdrawal and their right to income shares based on their shares of enterprise assets, etc.

The absence of legal underpinnings which would enable farm employees (owners) to control the economic activities of their enterprises leads to the estrangement of enterprise members from collective interests. This, in turn influences the performance and efficiency of these enterprises. Since enterprise performance practically does not influence member incomes, members prefer to develop their private household plots, often at the expense of their enterprise profitability.

2.2 Private farms

Ukrainian legislation also envisages **private farms** as a form of business in agriculture.¹¹ A private farm is a legal entity which has a name, seal, and stamp. Lawyers believe that the difference between private enterprises and private farms lie in both their sizes (private farms are smaller) and the fact that the owner of a private farm (or his/her family, if the property is not personified) is a person subject to property relations, unlike the legal entity in enterprises. Ukrainian legislation limits the size of private farms to 100 ha of privately owned land, but does not limit the amount of land that can be leased.

In early 1999, 37.5% of all private farms had between 4 and 20 ha of agricultural lands, and 32.9% had between 21 and 50 ha. Only 9.5% private farms exceeded 50 ha. The number of private farms stayed more or less constant at 35,000 up to early 2000 (table 4).

Table 4: The number and size of private farms in Ukraine on January 1

Indicators	1991	1992	1996	1997	1998	1999	2000	2001
Number of farms	82	2,098	34,778	35,353	35,927	35,485	35,884	38,400
Agricultural land (thousand ha)	1.99	39.7	786.3	835.0	932.2	1029.2	1162.3	2200.0
Average farm size (ha)	24.3	18.9	22.6	23.6	25.9	29.0	32.4	56

Source: STATE STATISTICS COMMITTEE OF UKRAINE (2001).

Subsidiary household plots are the most common form of private agricultural production in Ukraine. Current legislation stipulates that the size of a household plot cannot exceed 2 ha. To date, the average size of these plots has increased to a little over 0.5 ha. The production of agricultural outputs by private households is usually not commercially-oriented, but rather for own consumption, which represents a source of in-kind income for rural dwellers. However, some private households are market-oriented and produce commodities for sale.

One of the important ways to provide families, especially those in urban areas, with vitamins and other nutrients is the production of agricultural output on fruit and vegetable garden plots (sometimes called collective fruit and vegetable gardens). In 1999 the number of families that had such small land plots (0.06 – 0.07 ha) increased to 2.7 mill. for fruit garden plots and 2.6 mill. for vegetable garden plots. There is no reliable data on the output produced by collective fruit and vegetable gardens.

¹¹ The Bulletin of the Ukrainian Parliament, No. 14, article 186, April 7, 1992.

3 The Decree of the President of Ukraine No. 1529/99

The Decree of the President of Ukraine No. 1529/99 “On the Urgent Measures for Accelerating the Restructuring the Agricultural Sector of the Economy” dated December 3, 1999 was a logical consequence of the inefficiency of the dominant type of farm in Ukraine, the CAE. This Decree initiated a new stage in the reform of agricultural enterprises in Ukraine. It stipulates that CAEs, as a form of agricultural entrepreneurship which does not correspond to the requirements of the market economy, must be restructured into enterprises based on private ownership such as private farm enterprises, private enterprises, agricultural companies, and agricultural co-operatives.¹²

All members of CAEs have been granted the right to leave these CAEs freely and withdraw their land and property shares. The Decree stipulated that neither the resolution of a general meeting of the members of a CAE nor any other decision can revoke this right. Members can obtain land plots from the CAE's land according to defined procedure. If they chose to do so, they can expand their private household plots using these land shares, or they can lease their land to enterprises that use land for agricultural purposes. The rent payment for the use of a land plot cannot be lower than 1% of its value (monetary assessment).¹³

In early 2000, in the course of the implementation of Decree No. 1529/99, the structure of non-state agricultural enterprises changed significantly. As of December 1, 1999, CAEs were the most common form of agricultural enterprises – 64% of all enterprises according to data of the Ministry of Agricultural Policy. However, by the beginning of the second quarter of 2000 CAEs had mostly disappeared. As then Vice Prime Minister of Ukraine Myhailo Hladiy stated, after this phase of restructuring only three CAE remained in Ukraine – two in Poltava oblast and one in Kirovohrad oblast.¹⁴

Within one year the share of agricultural companies in all non-state agricultural enterprises increased from 14.2 to 50.0%, agricultural co-operatives – from 2.2 to 24.7%, private (founded by one person) enterprises – from 3.7 to 21.5% (see table 5). According to data from the Ministry of Agricultural Policy, as of 1 December 2000 10,800 non-state agricultural enterprises had been transformed into new 14,700 entities based on private ownership of land and property. Of these entities, 1,200 were private farms (SCHMIDT *ET AL.*, 2000).

Table 5: The number and share of non-state agricultural enterprises in Ukraine in late 1999 and late 2000

Organisational and legal form of enterprises	On December 1, 1999		On December 1, 2000	
	Number	%	Number	%
CAEs	8,102	63.8	-	-
Agricultural companies	1,803	14.2	6,761	50.0
Agricultural co-operatives	284	2.2	3,325	24.7
Private enterprises	470	3.7	2,901	21.5
Others	2,041	16.1	500	3.8

Note: Compare with table 3, which provides comparable data for January 1, 2000.

Source: Preliminary data of the MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (2000).

For economic, historical, and other reasons, the structure of the reformed enterprises differs significantly by region in Ukraine (see figure 1). There is reason to believe that local authorities have influenced these structures and the restructuring paths chosen. For example, local authorities often prepared and distributed recommendations, and their representatives organised meetings with CAE members to encourage them to take certain decisions, etc.

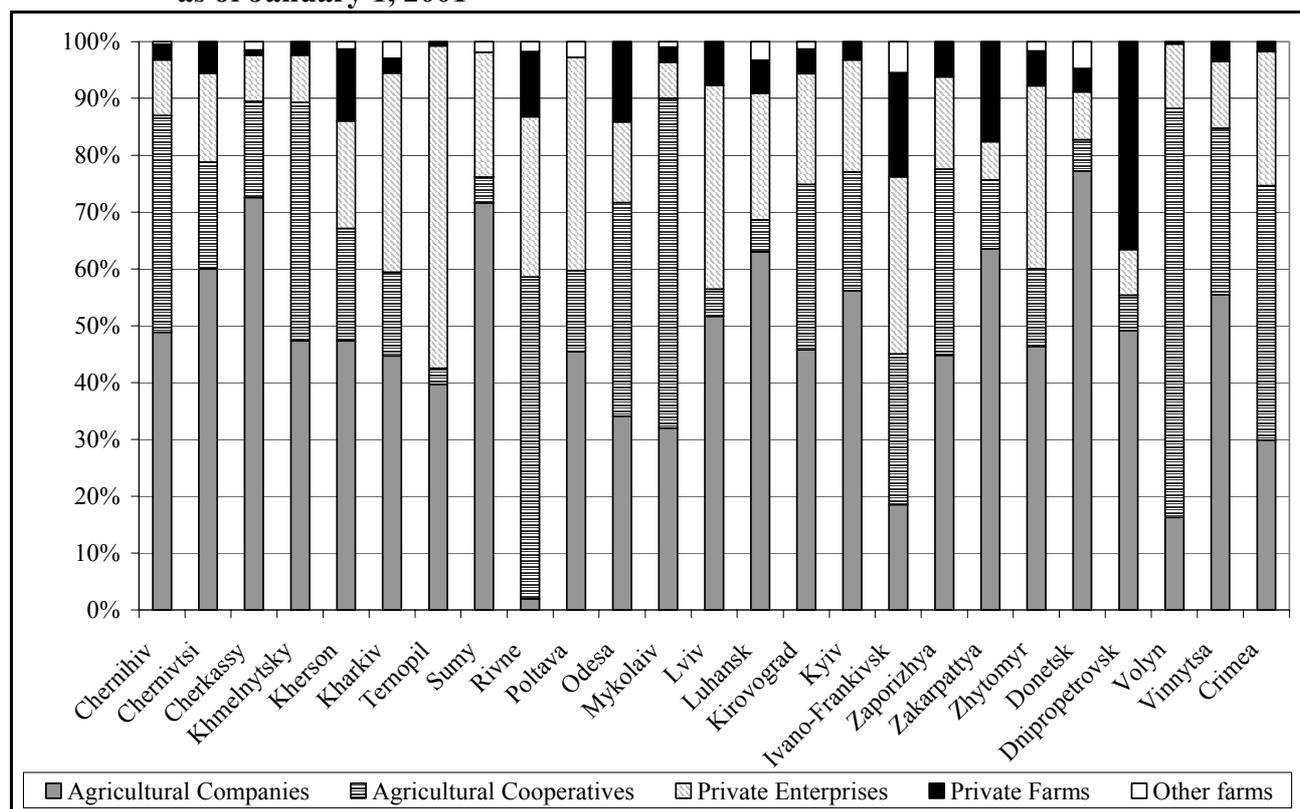
¹² The Voice of Ukraine, No. 227, July 12, 1999.

¹³ The Voice of Ukraine, No. 227, July 12, 1999.

¹⁴ The Ukrainian National Information Agency News, Region, No. 039, 2000.

According to data from the State Statistics Committee of Ukraine, the restructuring of CAEs lead to an increase in the number of private farms by 2,500. At the beginning of 2001, there were 38,400 such farms (table 4). More significantly, private farms have been enlarged and private farmers now operate 2.2 mill. ha of agricultural land, including 2.0 mill. ha of arable land. On average, one private farm has 56 ha of agricultural and 52 ha of arable land, compared with 32 and 30 ha, respectively, at the beginning of 2000 (table 4). At the same time, the average size of private farms varies from 8-12 in Transcarpathian oblast and Chernivtsi oblasts to 109-111 ha in Rivne oblast and Luhansk oblasts. The share of rented land in the total land used by private farmers is 46%.

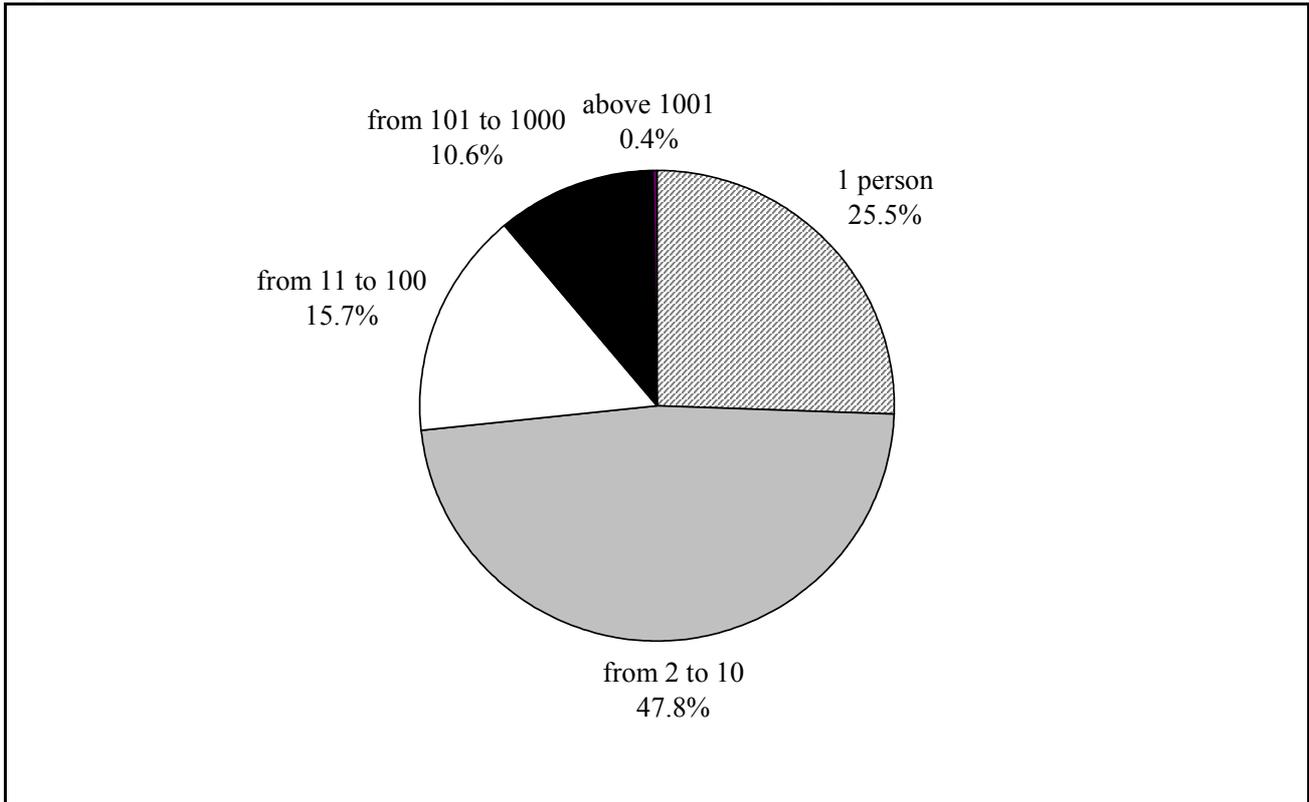
Figure 1: The structure of reformed agricultural enterprises in selected oblasts of Ukraine as of January 1, 2001



Source: MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (2001).

Newly created agrarian enterprises and entities farm 24.9 mill. ha of agricultural land. The founders of these enterprises own 2.4 mill. ha and rent an additional 21.4 mill. ha. As illustrated in figure 2, almost half of the new agrarian enterprises (47.9%) was established by 2-10 persons and 26% were established by one person. As a rule, the founders of enterprises are people of working age, and only 2.7% are over the age of 60. There are 227 (7.8%) women among the founders of new agrarian enterprises and these enterprises employ 2.16 mill. workers; 9% which are specialists (agronomist, engineers, technicians, economists, and veterinarians). Since agrarian enterprises generally depend on renting land, they are directly interested in the development of rent relations.

In almost all enterprises agricultural land has been distributed which means that potential owners and renters have been defined. Potential, however, since land deeds on the private ownership of land have not yet been issued everywhere. According to the Ministry of Agricultural Policy, as of January 1, 2001 out of 6,463,000 persons who have the right to a land share, 6,453,300 (99.8%) had obtained land certificates. In Ivano-Frankivsk and Chernivtsi oblasts all potential owners have already obtained land certificates.

Figure 2: The number of founding members in the new agrarian enterprises in Ukraine

Source: Preliminary data of the MINISTRY OF AGRICULTURAL POLICY OF UKRAINE (2000).

In 2000, 5,615,000 land lease contracts covering 22 mill. ha of land were concluded. 46.5% of these contracts have a duration of one to three years, 41.1% of four to five years, and 11.0% of six to ten years. Only 1.4% of the land plots were rented for a period of more than ten years (see SCHMIDT *ET AL.*, 2000). There are differences between regions regarding the duration of land lease contracts. In Dnipropetrovsk oblast there are almost no contracts concluded for a period of more than five years, while in Poltava oblast there are almost no contracts for either the one-two year period or for more than ten years. Vinnytsya oblast and Zhytomyr oblasts have the highest shares (69.6 and 86%, respectively) of contracts with a duration of three to five years, and Kyiv oblast and Khmelnytsky oblast have the highest shares of contracts concluded for five to ten years (71 and 70%, respectively). Meanwhile, in Kharkiv oblast over 25% of the contracts have been concluded for a period of more than ten years.¹⁵ There is reason to believe that the recommendations of local authorities have influenced the duration of rental contracts.

Decree No. 1529/99 speeded up the process of formalising the right to own land plots in Ukraine. However, by the beginning of 2001, only 400,000 persons had obtained deeds that define a specific, demarcated physical land holding. More than 300,000 of these 400,000 have combined the land they obtained with their private household plots without establishing a legal agrarian entity. These households have 4.3 mill. ha, which amounts to 10.3% of all the agricultural land in Ukraine, including 3.5 mill. ha of arable land. In the future, this land will likely provide a source of growth/expansion for private farms.

In summary, therefore, the restructuring of agrarian enterprises in Ukraine following Decree No. 1529/99 has led to the emergence of three main types of farm:

- small private household and private farms;

¹⁵ For a discussion of the implications of the duration of land rent contracts, see chapter 14 on *A Market for Agricultural Land in Ukraine*.

- middle-sized enterprises (mainly private agricultural limited stock companies) and enlarged private farms renting agricultural land; and
- large agricultural enterprises mainly of the corporate type, which extensively rent agricultural land and property.

4 Prospects for future reforms

The realisation that the ownership of land confers real, tangible benefits to rural citizens is an important result of the reforms conducted in 2000. Land owners received 1.5 bUAH in rent payments in 2000, including 0.5 bUAH in cash payments, 2.2 mill. t of grain, 92,300 t of sunflower seeds, 30,300 t of sugar, 6,200 t of sunflower oil, 15,500 head of cattle, 62,800 pigs, and 0.18 bUAH in the form of services (MINISTRY OF AGRICULTURAL POLICY, 2001). More than a half of these rent payments went to the least socially protected category of rural dwellers – pensioners. This money represents substantial assistance and brings with it the important realisation that ownership is a source of bring revenue.

However, in the course of the restructuring the CAEs, not enough attention was paid to the regulation of property relations. For instance, if a CAE had to be liquidated, legislation stipulated that each member as co-owner should obtain a share of the collective property (in the form of cash payments, securities, agricultural machinery, production facilities, agricultural inputs or any other property). This entailed assessing the amount of assets to be shared among CAE members, defining the property which would be given to each member, and eventually distributing this property.

Unfortunately, in many cases this did not take place. In some cases when a CAE was restructured into a private enterprise, the latter became the only owner of all the assets of the former CAE, while other CAE members went empty handed. Note that only 2.9 mill. contracts on the rental of agricultural property have been concluded, compared with 5.6 mill. land lease contracts. Rent payments for this property totalled 35 mUAH in 2000, compared with 1.5 bUAH for land rent (MINISTRY OF AGRICULTURAL POLICY, 2001). Assuming, as is reasonable, that the number of owners of land plots approximately equals the number of owners of property, it can be concluded that only half of the new agricultural enterprises have settled their property relations.

To resolve the conflicts caused by restructuring collective property, the President of Ukraine signed Decree No. 62 “On Measures to Assure Farmers’ Property Rights in the Course of Reforming of the Agricultural Sector of the Economy” dated January 29, 2001.¹⁶ According to this Decree, each former member of a restructured former CAE will be provided with an opportunity to obtain his share of the property of the former collective enterprise. The owners of collective property can decide themselves how they will use this property; they can sell, exchange, rent or use the property in their own business. This Decree also specifies that newly created enterprises may not use such property for free but, rather, must make payments of no less than 1% of the property’s value.

In this way, newly created enterprises have to clearly define the property of founders, the property of former members of CAE who did not become founders, the property singled out to settle the debts of the former CAE, and the property which cannot be shared (roads, sewage systems of villages, etc.). Each of the former CAE members has to obtain a document (certificate) which documents his property rights. If the owner of such a certificate wishes to rent the property in question to an enterprise, he has to conclude a formal rent contract.

To implement Decree No. 62/01, the Cabinet of Ministers adopted a methodology which details the composition and value of CAE members’ property, develops a scheme for defining the size of CAE members’ property shares, and sets an order to administrate this process. As stipulated, all disputes that arise in the course of sharing collective property will be handled by special commis-

¹⁶ The Voice of Ukraine, No. 20, February 2, 2001.

sions created in each enterprise. The task of these commissions is to provide assistance to former CAE members to ensure that collective property is shared and distributed in a fair way in order to avoid conflicts.

Not only real landowners, but also real property owners must emerge in Ukrainian agriculture. The process of establishing this class of private owners and developing transparent relations is ongoing. Agricultural enterprises created on the basis of the private property of their founders now bear all the responsibility for the outcomes of their decisions and activities. They have to compete for the right to rent agricultural land and other production facilities. The winner in this situation is the enterprise which offers the most favourable rent conditions.

To achieve further improvements, the process of restructuring agricultural enterprises must be accompanied by changes in their decision-making structures, in management, and in the attitude of farmers to their work. Interference by local administrations into the work of agricultural enterprises must be eliminated. Finally, the legal framework for business relations in agriculture must be further developed. The Ministry of Agrarian Policy has prepared a number of new draft laws and other enactments: "On Mortgage"; "On Collateral Mechanisms"; "On Land Protection"; "On the State Registration of Real Estate Rights"; etc. The adoption of these laws will facilitate the process of property and land share distribution (combined with the issuance of deeds), will promote the development of property rights registration, and will expedite the process of agricultural reform as a whole.

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14 A Market for Agricultural Land in Ukraine

STEPHAN VON CRAMON-TAUBADEL & LUDWIG STRIEWE

1 Introduction

Ukraine has impressive land resources. Indeed, agricultural land is one of the first things that springs to mind, along with the country's well-educated working force, when one thinks about Ukraine's key competitive assets. Of a total of 60.3 mill. ha of land, 41.8 mill. ha (70%) are agricultural and a further 10.4 (17%) are forested. Few countries have as much agricultural land of such quality, especially when measured on a per capita basis to provide at least a rough indication of export potential.

26.4 mill. ha of this land were handed over to the collective ownership of farm enterprises in the 1990s. For practical purposes, most of this land remained in collective ownership until Presidential Decree No. 1529 of December 3, 1999 "On immediate measures to accelerate agricultural reform" accelerated the individualisation of land ownership. As of mid-2001, 6.4 mill. Ukrainian citizens (Ukrainian sources typically refer to 'peasants') have received land share certificates from the former collective agricultural enterprises (CAEs), and 1.5 mill. have received deeds to individual, demarcated parcel of land. Furthermore, the land lease market has blossomed in Ukraine in the last 2 years: 22.4 mill. ha were leased in 2000, generating 1.5 bUAH of income for their owners.

However, 49.7% of Ukraine's total land including much farm land remains under state ownership. And the individualisation of land ownership – i.e. the fact that an increasing number of Ukrainians now own titled plots of land – is raising many controversial questions. What is farm land worth in Ukraine? What rights do owners of farm land enjoy, and what responsibilities must they fulfil? Can farm land be sold and, if yes, to whom and subject to what controls and procedures? Policy makers are facing these questions as they continue the process of land reform and attempt to establish land markets in Ukraine.

A functioning land market is of vital importance to agriculture. It permits land to 'move' from less to more efficient owners/operators, it ensures that land can fulfil its role as a source of collateral for farms, and it also permits land to serve as a source of revenue for pensioners and others in rural areas who may not have many alternative sources of income.

In order to evaluate agricultural land policy and provide at least some answers to the questions listed above, it is necessary to understand how prices of farm land (both for sale and for lease) are determined. Land price determination has important implications for the management of individual farm operations at the microeconomic level, and for the development of agriculture and the design of appropriate agricultural policies at the macroeconomic level. The fundamentals of farm land price determination are an essential part of the education that students of agricultural economics receive in Western countries. In Ukraine, these fundamentals are not widely understood and appreciated. This comes as no surprise, because Ukraine did not have a land market for many decades prior to Independence, so land price determination has not been a part of standard curricula.

In the following we outline how land markets function and how farm land values are determined in market economies. The following section begins with an explanation of farm land price determination. In section 3 we discuss the links between agricultural policy and land prices. On the basis of these sections, we discuss government policy with respect to farm land in Ukraine in section 4, and derive a series of recommendations in section 5.

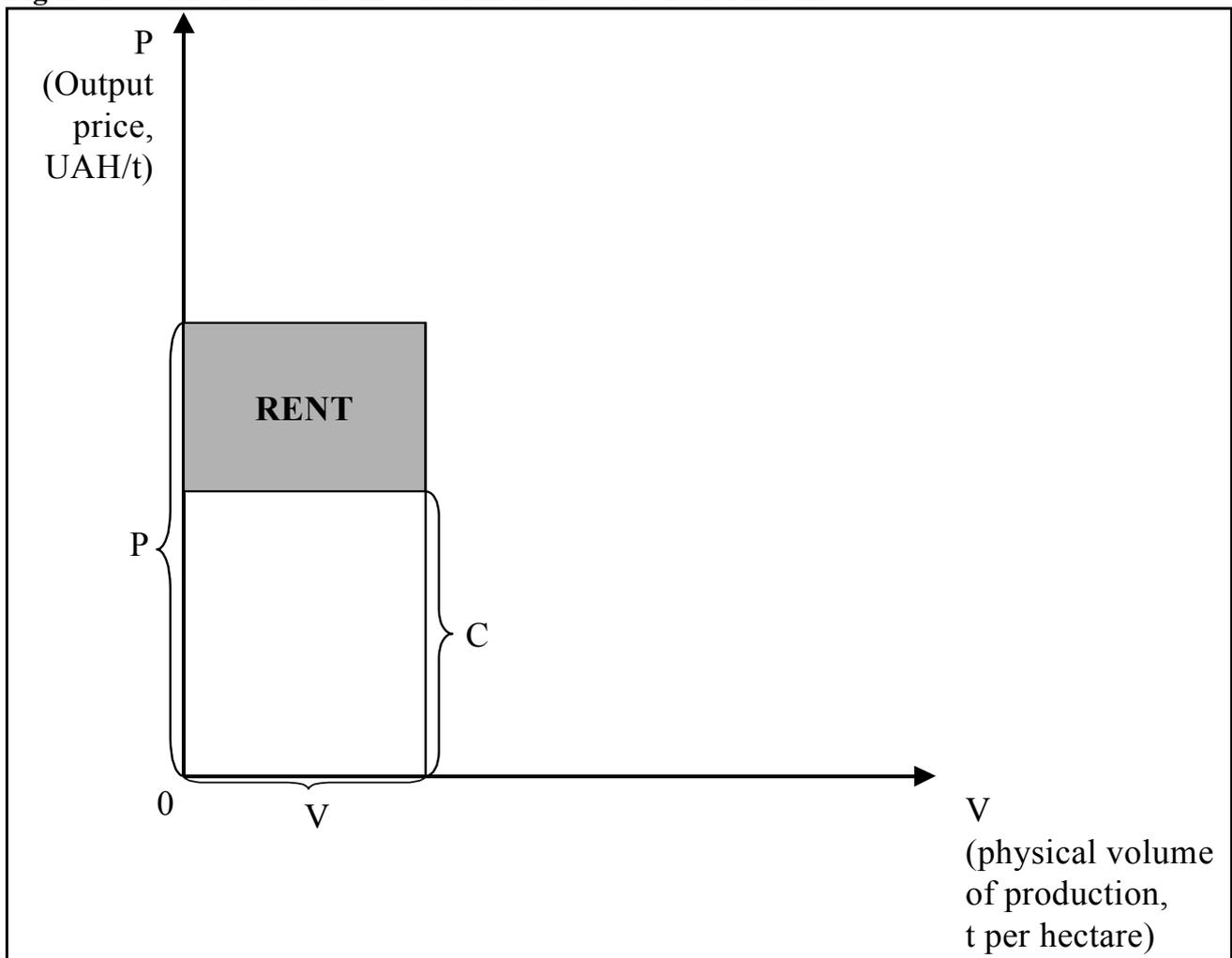
2 The determination of prices for farm land

It is important to realise that in a market economy farm land does not have a fixed absolute value but rather a price that varies according to a number of factors. These factors include not only the physical production potential of the land in question but also its location in relation to agricultural markets, the nature of agricultural policy and the managerial ability of the individuals farming the land.

Economists refer to the income that accrues to farm land as a residual income. Residual, because in a functioning market economy, the income that accrues to farm land (in other words, the amount of rent that a farmer will be willing to pay for the use of an additional hectare of land) is the margin that is left over when all relevant costs of farming this additional hectare have been subtracted from the additional revenue that is generated from the sale of the crops produced on it.

In figure 1, the revenue that can be generated on an additional hectare of land is represented as the product of the physical amount of agricultural produce that can be produced on this land (V for volume, for example in t) and the price per unit of this physical output (P for price, for example in UAH/t). To determine the amount of rent that a farmer is willing to pay for the use of an additional hectare of land, he or she will deduct all the costs (for example seed, fertiliser, fuel, labour, management and machinery costs) that are required to produce a crop on this additional hectare. In figure 1, these costs are equal to the product of V and C (C = costs, for example in UAH/t of output).

Figure 1: The rental income of farm land as a residual income



The remaining (shaded) area in figure 1 is the residual income that represents the maximum amount that a farmer will be willing to pay for the use of an additional hectare of land. If she pays

more than this amount of rent, then total expenditures for land rental and other costs will exceed her total revenues, resulting in a loss. If she pays less rent than this amount, she will realise a profit.

This simple mechanism of land rent determination can be used to illustrate a number of important relationships in agriculture. These include:

1. The derivation of the purchase price of land (see section 2.1);
2. How the market mechanism ensures that agricultural land will tend to 'move' from less to more efficient farm managers thus increasing the overall efficiency of farming and its contribution to national income (see section 2.2); and
3. How the market mechanism will ensure that land owners will receive a 'fair' rental payment or purchase price for their land, provided that there is sufficient competition on the land market (see section 2.3).

Finally, this mechanism can also be used to illustrate the impact of agricultural policy – for example in the form of production quotas systems or price support for farm products – on land prices (see section 3). In the following, each of these issues will be discussed in turn.

2.1 The purchase price of farm land

The mechanism described above explains how much a farmer will be willing to pay for the right to produce one crop on an additional hectare of land, i.e. for one year's use of that land. Clearly, there will be a relationship between this rental price of land and the purchase price that a farmer will be willing to pay for the right to use this hectare of land in perpetuity. Specifically, a rational farmer will be willing to pay no more than the sum of all the expected residual incomes that can be derived from a hectare of land in this and all future years. Of course, expected income in future years must be discounted to derive its present value, because of one Hryvnia of income in the future is worth less than one Hryvnia today.¹ In mathematical terms, therefore, the following expression can be used to derive the purchase price of a hectare of land (P_p) from the rental price of land (P_r):

$$P_p = \sum_{t=1}^{\infty} \left[\frac{P_r}{(1+q)^t} \right] \quad (1)$$

where q is the discount rate that is used to discount future streams of income to derive their present value.

While equation (1) provides for an infinite planning horizon ($t = 1, 2, \dots, \infty$), it is obvious that most individuals have a finite planning horizon that extends over several decades at most. At any reasonable discount rate (in a western market economy one might calculate with a value somewhere between 5 and 10%), the present value of income streams in the distant future is effectively 0, so that makes little difference whether the summation in equation (1) runs from 1 to infinity or from 1 to, for example, 30.

Equation (1) can be used to derive two important policy conclusions. First, inspection of equation (1) reveals that high discount rates have the same effect as a tax on the owners of farm land. The discount rate is composed of two major components. The first of these is the interest rate on capital. High interest rates (such as those prevailing in Ukraine) 'tax' land owners because they increase the costs of agricultural production (C in figure 1), thus reducing the residual income that

¹ This is because one must set aside only $\frac{1}{(1+i)}$ Hryvnia today, where i is the annual rate of interest, to receive exactly one Hryvnia of income in return in one year.

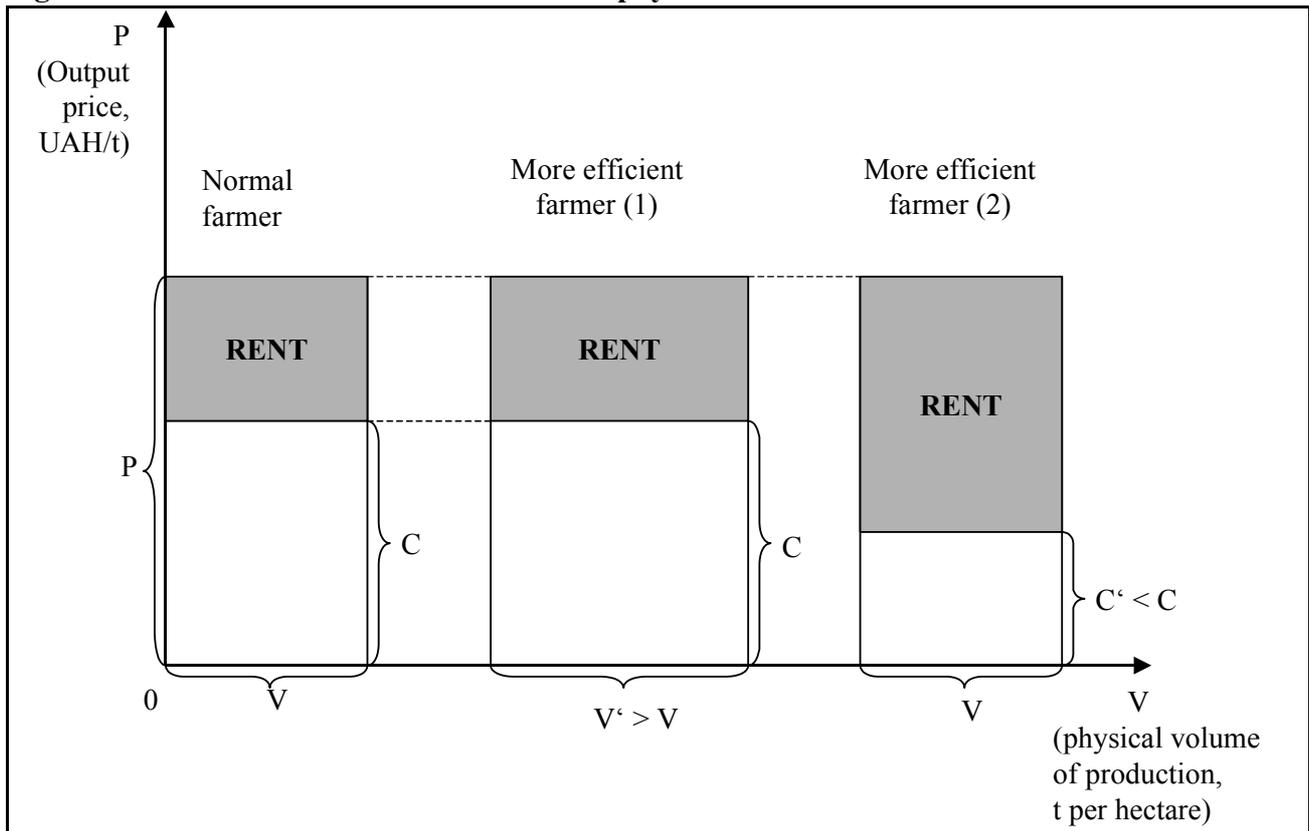
accrues to land. Furthermore, the higher the interest rate, the more the future income is discounted when calculating the present value of the right to farm a hectare of land at some future date.² Hence, high interest rates reduce both the rental price of land and the purchase price that corresponds to any given rental price. For this reason, high interest rates in Ukraine reduce the value of agricultural land. Since land owners in Ukraine (in other words, employees and members of the former collective agricultural enterprises) tend to be among the poorest members of the Ukrainian population, this has a regressive impact on the distribution of wealth and income in Ukraine, i.e. it takes money away from people who should, according to broadly accepted ethical standards, be recipients. Conversely, steps to reduce interest rates in Ukraine (i.e. fiscal responsibility that reduces ‘crowding out’ and the perceived risk of default) benefit land owners.

The second policy conclusion that can be derived from equation (1) has to do with the impact of uncertainty and the second component of the discount rate. The more uncertain a farmer is about the income that she will derive from a given hectare of land in the future, the more she will discount this future income when calculating its present value. In other words, the discount rate i in equation (1) not only reflects the objectively measurable market interest rate on capital, it also contains a component that reflects an individual's subjective expectations regarding the stability and profitability of farming in the future. When policy makers fail to broadcast credible signals about the future profitability of agriculture and, even worse, when they sporadically intervene on agricultural markets (for example in the form of regional export bans, etc.), they effectively increase this uncertainty component of the discount rate q . As a result, farmers' willingness to pay today for the right to generate income on a given plot of land in the future will fall. High interest rates and unstable agricultural policies increase the discount rate and, thus, reduce the purchase price of land. The result has the same impact as a tax on land owners.

2.2 Land markets and the efficiency of agriculture

Using figure 1, it is possible to explain how a free land market ‘guides’ the movement of land from less to more efficient farmers, thus increasing the overall efficiency of agriculture. Compared with her less efficient competitor, a more efficient farmer will be able to produce the same amount of output at lower cost or, for a given level of costs she will be able to produce more output. These possibilities are depicted in figure 2. The first column of figure 2 is identical to figure 1. The second and third columns depict situations in which a farmer is able to produce more output for a given level of costs, and a farmer is able to produce a given level of output at lower cost, respectively. In both of the latter two cases, it is easy to see that the amount of rent that a more efficient farmer will be able to pay for the use of a given hectare of land is higher than the corresponding amount for a less efficient farmer. Combining this results with equation (1), this implies that more efficient farmers will also be able to pay higher purchase prices for land. Hence, more efficient farmers will be able to bid more for a given plot of land that becomes available on the market, whether for rent or for sale. As a result, more efficient farmers will farm progressively more and more of the available land as times goes by, provided, of course, the land market is free and competitive.

² Mathematically, in equation (1), $\frac{\partial P_p}{\partial q} = -\sum_{t=1}^{\infty} \left[\frac{P_r}{(1+q)^{t+1}} \right] < 0$.

Figure 2: How more efficient farmers can pay more for land

2.3 The importance of competition

Competition, just mentioned, is very important in this regard. The mechanism described above will only function if many farmers competitively bid for the right to use or purchase a plot of land. If competition is lacking, then a less efficient user will not have to fear that more efficient users might bid more for the land that she is currently using. Hence, she will continue to farm this land. For the economy as a whole, this means that a given amount of output will be produced at higher costs than necessary, or that for a given level of costs less output will be produced than would otherwise be possible. We see, therefore, that a lack of competition on land markets has negative effects not only on the owner of the land, who receives less rent, but also on the economy as a whole, as the productive potential of agriculture is not realised.

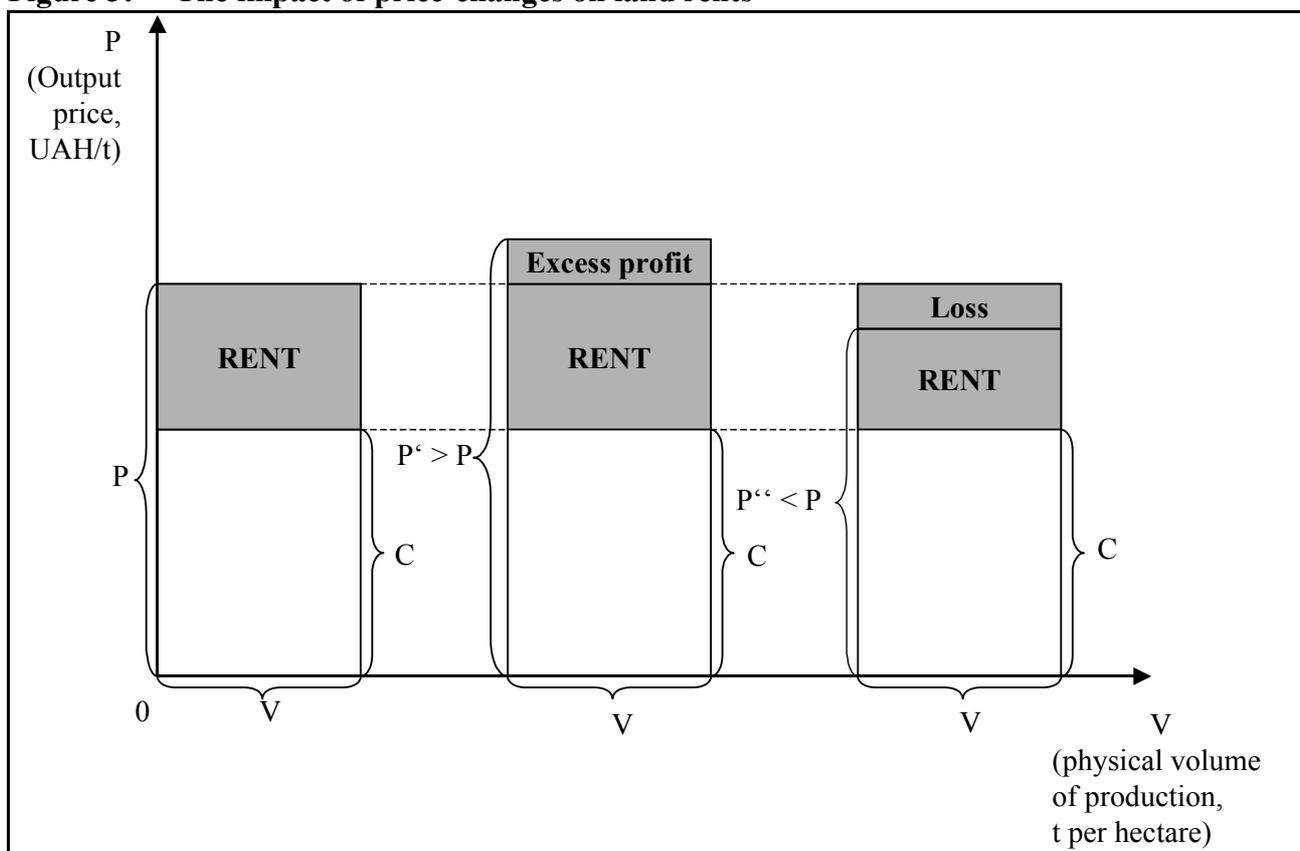
Lack of competition on land markets can also lead to some farmers paying less for the use of a hectare of land than the difference between total revenue and total costs. In this case, the farmer in question receives a profit, as was referred to above. The danger that this might occur is especially large if land markets are regionally fragmented so that only a few or perhaps only one person or enterprise bids for the use of land. There is reason to fear that this could be the case in some region of Ukraine, where owners of land parcels who wish to lease their land have no choice but to lease to one specific individual or enterprise. This individual or enterprise will be able to exercise monopsony power on the local market for land and therefore pay less rent than would be the case under competitive conditions. There are many reports of local 'land barons' using political connections, bribery, the threat of exclusion from the social sphere,³ and even the threat of physical violence to eliminate potential competitors and/or to discourage owners of land from renting to such potential competitors. Competition is the most important means of ensuring that land owners' rights, including the right to earn a fair return on their land holdings, are respected.

³ Indeed, this is allegedly one of the reasons why some farm managers are reluctant to transfer the social sphere away from their farms to local authorities; although it burdens the farm financially, the social sphere can provide managers with a convenient means of maintaining power.

3 Land prices and agricultural policy

Agricultural policy can have many different impacts on the price determination mechanism for farm land. In most developed economies, agricultural policy is aimed at increasing agricultural incomes *via* price support for agricultural products. This is also the main thrust of many agricultural policy measures pursued by the Ukrainian government. Figure 3 illustrates the impact of price support, for example by means of a pledge price system, on the price of farm land. All other things being equal, an increase in agricultural prices will increase the revenue that can be produced on a given hectare of land. The first column of figure 3 duplicates figure 1, and the second column depicts a situation in which the volume of agricultural production (V) has not changed, but government policy has led to an increase in the price per unit of this production ($P' > P$). As a result, it is clear that total revenue per hectare increases, and if costs remain the same then the amount of rent that a farmer will be willing to pay for the use of a hectare of land will increase.⁴

Figure 3: The impact of price-changes on land rents



3.1 Who benefits from price support for farm products?

One important implication of the mechanism just described is that the benefits of agricultural price support do not necessarily accrue to farmers but rather to land owners. If agricultural prices increase due to policy measures, farmers who rent land under competitive conditions will find that they must pay more to rent a hectare of land. Farming itself, therefore, does not become more profitable. It is the ownership of land that becomes more profitable as a result of agricultural price support.

⁴ Increased agricultural prices can be expected to increase the intensity of production (for example fertiliser and pesticide use per hectare), thus increasing both costs (C) and physical output (V). It can nevertheless be demonstrated that under normal conditions an increase in the price of agricultural output will necessarily lead to an increase in the price of agricultural land.

Of course, lease agreements are often signed for periods of several years. If an owner of land and a farmer have signed a lease with a duration of several years, and agricultural price support increases during this period, then the farmer will benefit from the price support (in the form of excess profits, see figure 3) at least until the lease expires and she is forced to renegotiate with the land owner. In the interim, the land owner will presumably have noticed that farming has become more profitable. She will therefore demand higher rent payments when she renegotiates the rental agreement with the farmer. Of course, the opposite is also possible. A farmer who has agreed to pay a certain rent per year for the use of agricultural land over a number of years could be confronted by reductions in agricultural price support during the duration of the rental agreement. As depicted in the third column in figure 3 ($P'' < P$), the total sum of production cost plus land rent payments will now exceed total revenue, so that the farmer in question will realise a loss.

Box 1: Experience in the Eastern Germany

Experience in the new 'Länder' in Eastern Germany is instructive in this respect. In the years immediately following reunification, many owners of farm land (former employees of CAEs in East Germany as well as citizens of both East and West Germany who received land restitution) rented their land to farmers and farm enterprises for very low rental payments. In part, they agreed to these low payments because they were under pressure or felt obliged to support the farms they were renting to (for example, because they or their family members were employed by these farms). As can be seen in figure 3, if farms have to pay less than the residual income associated with farming a plot of land, they realise an excess profit at the expense of the land owner. Hence by voluntarily agreeing to a low rent, a land owner can 'subsidise' the farm of her choice.

However, low rental payments were also the rule due to the great uncertainty that confronted farmers in the period immediately following reunification. Farmers in the Eastern Länder were only willing to agree to low rents because they were very uncertain about the future profitability of farming. This uncertainty was partly caused by the completely new market environment within which these farmers had to operate (farms had to restructure and adapt within months, not years, in the Eastern Länder!), but also by political uncertainty. In 1990-91, the EU was debating the most far-reaching agricultural policy reform in its history, and it was far from certain what course this reform would take. Farmers were understandably wary of locking themselves into expensive rent contracts when the future of price support in the EU was uncertain.

In the end, the so-called MacSharry reform package agreed to in 1992 lowered grain support prices by 30% over three years and compensated farmers *via* direct payments per hectare that average roughly 600 DM/ha in Germany.⁵ So many farms in the Eastern Länder found themselves in an advantageous position in the mid- to late-1990s. They were paying perhaps 200 or 300 DM/ha of rented land based on long-term (often ten year) rental agreements that had been signed in the early 1990s, and receiving perhaps 600 DM/ha of land in direct payments for producing grain on this land. As long as the grain production itself was at least a break-even proposition, a pure profit of 300-400 DM/ha of land was guaranteed. And for most competent farm managers, grain production in the EU is much more than a break-even proposition. Of course, today, ten years later, as the rent agreements signed in the early 1990s are expiring and being renegotiated, land owners are insisting on a much larger share of these profits, and some less efficient farm enterprises that have survived the last ten years at the expense of land owners will come under considerable pressure.

To deal with the risk of price fluctuations, land lease contracts in some countries tie the rental payment per hectare of land by some formula to the price of an important crop (such as wheat) or some basket of crops (for example, a grain price index). Generally speaking, under unstable conditions land owners are well advised to avoid long-term lease contracts. Table 1, based on the results of a survey of leasing carried out in 1998/1999 in Ukraine, illustrates that the average duration of land rent agreements on the surveyed restructured farms is 5.2 years and often exceeds 6 years. Under the very turbulent conditions prevailing in Ukrainian agriculture today, it is very difficult to pre-

⁵ This payment varies from region to region and member state to member state within the EU based on historical yields and other factors.

dict profitability of farming next year or the year after, let alone in five or six years. There is grounds for concern that in many cases land owners are renting out their land under value and locking themselves into long-term contracts that will not permit them to participate in any improvements in the profitability of agriculture that may occur in the interim (for example in the last year 2000). If a land owner does this voluntarily and based on full information – for example because she wishes to ‘subsidise’ her local farm – there is nothing objectionable about such an agreement. Often, however, this is probably not the case.

Table 1: Results of survey of leasing on ALSP restructured farms in 1998/99

Oblast	Number of lessees	Average size of leased land per lessee (ha)	Average number of lessors per lessee	Average size of land parcel per lessor (ha)	Average rent per hectare (UAH)	Average rent per lessor (UAH)	Average duration of lease (years)
Vinnycya oblast	4	1211	504	2.43	17.0	41	6.0
Kirovohrad oblast	17	1969	317	5.96	34.5	225	5.6
Luhansk oblast	18	3949	449	9.30	36.0	304	6.7
Lviv oblast	69	1617	685	2.56	18.3	40	5.0
Mykolayiv oblast	20	2469	293	8.70	35.1	288	5.7
Odesa oblast	4	686	120	5.72	43.0	345	1.0
Poltava oblast	10	1291	396	3.50	55.4	186	4.5
Rivne oblast	9	1736	667	3.26	41.3	111	15.9
Sumy oblast	49	2172	560	3.88	16.0	62	2.2
Ternopil oblast	48	1310	550	2.59	46.6	119	5.0
Kharkiv oblast	8	2538	285	8.11	30.8	259	6.3
Kherson oblast	37	4261	583	7.43	20.1	142	7.5
Khmelnysky oblast	25	1323	485	2.94	27.2	75	5.1
Cherkassy oblast	13	1945	637	3.20	29.1	93	6.9
Average per farm		2120	530	4.46	28.0	124	5.2

Source: STARIKOV (2000, p. 1).

3.2 Attempts to determine ‘objective’ land prices

The above discussion has demonstrated that land prices depend on many factors beside the simple physical quality of land itself. For this reason, attempts to prescribe an ‘objective’ price of land based on soil quality and similar considerations make little sense. Unfortunately, such attempts are common in Ukraine. For example, one often hears comparisons made between farm land in the black soil belt of Ukraine and parts of the United States, for example in Iowa. Based on these comparisons some so-called experts conclude that if land in Iowa is worth 4,000 US\$/ha, then similar land in Ukraine must also be worth so much. The value of land is not a constant function of its agronomic quality alone, however, but rather a highly complex function of agronomic, economic and farm managerial factors. Farm land in Ukraine will, regardless of its agronomic quality, only be worth as much as farm land in Iowa when it is possible to generate the same rent on this land as it is in Iowa. As long as farming and the marketing of farm products remain much less efficient in Ukraine than in Iowa, this will not be the case.

Box 2: Why are farm land prices so high in Germany?

Ukrainian farmers and policy makers who visit Germany are often astonished by the land prices that prevail there. Land prices upwards of 15,000 and 20,000 DM/ha and land rents of 800 DM/ha/year and more are not uncommon in Germany. Why is farm land so expensive in Germany and what are the advantages and disadvantages of these land prices for German agriculture? One of the main reason that farm land prices are so high in Germany has already been outlined above. Agricultural policy, by supporting farm prices, inflates profits per hectare and, thus, increases farmers' willingness to rent or purchase land. In recent years, EU agricultural policy has added a number of new measures that increase

farm land prices. First, as discussed in box 1, EU support prices for grain were reduced in the mid-1990s and farmers were provided with fixed payments per hectare of land in return. Any land owner who is considering renting land to a farmer knows that this farmer will receive a payment of (on average in Germany) 600 DM/ha above and beyond any revenue he generates from producing crops on this land. Obviously, under competitive conditions, farmers will factor this fixed payment per hectare into their calculations when determining how much they are willing to pay to rent a hectare of land. As a result, under competitive conditions these fixed payments have the same effects as price support; it is not farmers who benefit but rather land owners.

Second, in some regions of Germany (and other EU member states) highly concentrated animal production (especially pig production) has led to a situation in which large amounts of manure must be disposed of. Strict environmental regulations limit the amount of manure that can be spread per hectare of land and the times of the year during which it is permissible to do so. Farmers with large numbers of animals must prove that they have sufficient area (either owned or rented) on which to dispose of the manure produced on their farms in accordance with environmental regulations. As a result, in regions such as the Weser-Ems-region of North-Western Germany, pig producers are willing to pay exorbitant amounts of money (sometimes well over 1,000 DM/ha) to rent relatively poor farm land, simply so that they can dispose of manure on it. As environmental regulations are progressively tightened, the amount of manure that can be spread on a given area of land is reduced and farmers are continuously on the look-out for more land if they wish to maintain or expand their animal herds.

A further reason why farm land prices are so high in Germany is population density. The demand for land for building houses and for infrastructure such as roads and airports etc. is high in Germany. Even if a given piece of land is zoned for agricultural use only, it is often possible to predict with the reasonable certainty that within a certain amount of time the demand for this land for non-agricultural purposes will become very strong, and that this land will be re-zoned for such purposes. Hence, farm land prices in Germany and other densely populated EU member states often include a large speculative component, especially in areas close to major growing urban centres such as Frankfurt, Munich, Stuttgart or Hamburg. For many small and less efficient farmers, periodically selling small parcels of land for construction purposes represents a survival strategy that makes it possible to remain in agriculture with a reasonable total income despite low or even negative profits from farming itself.

In summary, therefore, farm land prices in Germany are high for a number of man-made reasons. These include agricultural policy (price support, direct payments and environmental regulations) and Germany's high population density and the resulting demand for land for non-agricultural purposes. For these reasons, a hectare of German land that is of relatively low agronomic value can have a much higher price than a hectare of land in Ukraine with considerably more agronomic value. As Ukraine is much less densely populated than Germany, and since Ukraine cannot afford the sort of exorbitant agricultural policy spending that the EU and the German government provide to farmers, it is not reasonable to expect that farm land prices in Ukraine will reach levels that are comparable to farm land prices in Germany in the foreseeable future.

4 Land market reform in Ukraine

As in most post-Soviet economies, the topic of land reform is especially controversial in Ukraine. It is controversial for ideological reasons because many, especially older, more conservative citizens are convinced that land is not a normal factor of production that can be subjected to market forces, but rather a national inheritance that must be owned and managed by the state for the benefit of all. While the principle that land should not be state or collectively but rather individually owned seems to be becoming increasingly accepted in Ukraine in recent years, the question of what rights individual owners of land should have (the rights to rent, to sell and mortgage land) remains highly controversial. A land-code that will define and delineate such rights has been in preparation for several years. In the following section we first address some fundamental issues surrounding the rights to rent and to sell land in the specific Ukrainian context. We then make a number of additional comments about the proposed land code in particular.

4.1 *Land owners' rights in the Ukrainian context*

Many politicians in Ukraine who are fundamentally convinced that Ukraine needs a land market, in which not only rental but also sale is permitted, nevertheless advocate that such a land market be established cautiously, step by step. For example, leading politicians have suggested that while the right to sell and purchase land should exist in Ukraine, a temporary moratorium (periods of for example three years have been suggested) should be used to suspend this right until land markets have had a chance to develop. Furthermore, there is very broad support for the idea that foreigners should not be allowed to purchase Ukrainian farm land.

Based on the fundamentals of land price determination that have been discussed in the previous sections, what can be said about these issues from an economic perspective? To begin with, we should note that we are fully aware that the issue of land ownership and sale is very controversial and emotional. As foreigners, we can make suggestions and point out the strengths and weaknesses of various actions. At the end of the day, however, Ukrainian society and the Ukrainian political system will have to find solutions that are acceptable to a majority of the population. In the search for such solutions, economic analysis must be tempered by political and social considerations. Nevertheless, it is important to be aware of the economic costs of pursuing certain political and social goals. As we will argue below, for example, forbidding the foreign purchase and ownership of Ukrainian farm land would impose direct and very substantial costs on Ukrainian land owners and the Ukrainian economy. This is not to say that it is wrong to forbid the foreign purchase and ownership of Ukrainian farm land. But it is wrong to pretend that this measure is only good for all Ukrainians.

If farm land in Ukraine could be bought and sold today, it would probably sell at very low prices, and this for two reasons. First, because farming is not very profitable in Ukraine. While it is true that profitability increased significantly in 2000, there is still a great deal of uncertainty regarding the long run profitability of farming in Ukraine, and this uncertainty will be reflected in low land prices (see section 2). Second, because even if land purchase and sale were legal in Ukraine, the Ukrainian land market is not competitive:

- If foreign subjects are not permitted to own farm land in Ukraine, the demand side of the land market will be limited to a relatively small number of wealthy Ukrainians. These individuals are generally well connected and have access to a variety of benefits and privileges that these connections confer.
- On the supply side, most land owners in Ukraine are poor. They are also poorly informed about their rights and responsibilities as land owners. Often, these owners depend entirely on farm managers as a source of information about these rights and responsibilities. Farm managers are not only able to 'filter' the information that reaches land owners, they are often able to subject land owners, as members of a former collective farm, to considerable explicit coercion.⁶

Hence, a land market in Ukraine would, at this time, be characterised by grave asymmetry. On the one hand, a relatively small group of wealthy, well connected and well informed buyers; on the other a large group of peasants, poorly informed and often in a position of dependence. Under these conditions there is a real danger that a free land market lead to a rapid concentration of vast tracts of land, purchased by a small group at low prices. This is not to say that a certain concentration of farm land ownership in Ukraine is not inevitable or even undesirable. The average land share in Ukraine amounts to 4.1 hectares and it is clear that efficient grain farms in Ukraine will be con-

⁶ For example, the pensioner who refuses to sell her land at a low price to the local 'oligarch' may be confronted with the threat that her son, who works in the local flour mill, will lose his job. Or she may be threatened with exclusion from the social sphere, as discussed above. This sort of coercion was not uncommon in Germany's new Länder as farms restructured there, so there is no reason to expect that it would be uncommon in Ukraine.

siderably larger than this. This is, however, not a convincing argument in favour of land concentration. The fact that land is owned predominantly in small parcels in Ukraine would not hinder the emergence of efficiently sized farm units as long as the land rental market functions efficiently (in Germany's new Länder, for example, over 90% of all farm land is rented and not farmed by its owner).

A more convincing argument in favour of increasing concentration of land ownership in Ukraine is the fact that a significant number of land owners in Ukraine, perhaps the majority, are not interested in farming themselves and would rather sell their land and use the proceeds for other purposes (for example, renovating the house they will soon retire to) rather than continue to own it. Hence, there is reason to expect that land ownership in Ukraine will become increasingly concentrated with time, when the sale and purchase of land is permitted. However, the degree to and conditions under which this concentration takes place would, under the asymmetric conditions currently prevailing in Ukraine, lead to an outcome which is very unbalanced and, threatens to undermine the credibility of market-oriented reforms.

In Russia, where basic conditions (the structure of farming, the status of reforms) are similar, there is already evidence of such dangerous tendencies. There are reports of large energy firms such as Lukoil and Gazprom and others with wealth and connections purchasing as much as 50,000 and 100,000 ha of land in certain regions.⁷ According to some evidence, land is being purchased for as little as 50 US\$/ha! Land owners who refuse to 'co-operate' are subjected to threats and blackmail. The spectre of neo-feudal conditions is emerging. This poses a danger for the social acceptance of reforms. Citizens throughout the CIS are already heavily disillusioned about the first wave of privatisation that led to a highly skewed distribution of assets in many industrial sectors. Even if it can be argued that this was an unforeseeable result of privatisation in the 'uncharted waters' of early transition, today, ten years later, it is no longer possible to claim ignorance.

4.2 Why invest in Ukrainian farm land today?

If farming is currently not profitable in Ukraine, why would wealthy individuals be interested in buying farm land in the first place? There are many possible motives (of course, in most cases some combination of these motives will be relevant):

- First, some investors may simply be convinced that they will be more successful farmers than most of those who have gone before them, i.e. that they will be able to make profits where others have failed to.
- Second, opportunities to avoid taxes in agriculture may make farming appear more profitable than it really is to entrepreneurs who are making profits elsewhere.
- Third, some entrepreneurs with interests in the food processing industry may see vertical integration into farming as a way of ensuring dependable supplies of raw products.
- Fourth, the year 2000 was profitable for many farms. Perhaps this is leading some potential investors to conclude that farm land represents a good investment. If this is so, their expectations may be disappointed in the coming years as there is reason to believe that 2000 was a unique year in many respects.⁸

Finally, some investors may be guided by purely speculative motives. From an economic point of view, speculation is not an intrinsically 'bad' activity. On the contrary, speculation is a vital

⁷ In Russia this is taking place in certain oblasts that have forged ahead with their own land codes in the absence of corresponding federal legislation. The situation in Ukraine is different. However, a German farmer known to us was recently contacted by a farm manager from the Odessa region who was looking to rent some combines, and who claimed to be farming over 20,000 hectares. Similar cases are not rare in Ukraine. How much rent are the owners of this land receiving, and do they have any real alternative to renting their land to the farm enterprise in question?

⁸ See chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets*.

element of many markets because it allows risk to be transferred from individuals who are very risk averse to others who are less so. However, speculation is problematic if it does not occur under competitive conditions. If speculators can exercise market power, then what appears to be speculation is actually a 'sure bet'. For example, if one is able to buy land today at depressed prices (due to an information advantage *vis-à-vis* peasant owners of land on the supply side and a lack of competition on the demand side), then one's chances of selling later at a profit will be artificially high.

Some may even be speculating that farm land that can be bought cheaply today will increase in price as a result of agricultural protection in the future. The impact that agricultural protection has on farm land prices was outlined in section 3. From a political economic perspective, Ukrainian farm land may be a very attractive investment. It is well known that a small group of wealthy and well connected businessmen and investors exercise considerable influence on Ukrainian economic policy in general and agricultural policy in particular (as evidenced, for example, by the export tax on oilseeds). For such individuals it could be a highly profitable strategy to invest in farm land today and then use political influence to increase agricultural protection (for example in the form of pledge prices and import quotas) and, with it, the future value of this investment in farm land. Since it is reasonable to expect there will be strong grass-roots political support for agricultural protection in Ukraine in the coming decades (due among other things to the high share of Ukraine's population that works in or depends on agriculture) this strategy would appear to have a good chance of success.

In this connection it is interesting to draw a parallel to agricultural policy developments in many industrialised countries. In the EU and other western countries, agricultural protection is justified as a means of supporting the incomes of many small farmers. In reality, a fairly small group of larger farmers and, in particular, land owners reaps most of the benefits. In the EU, for example, it is a stylised fact that roughly 80% of the benefits of agricultural protection accrue to only 20% of those engaged in farming. Ukraine is going to have a very difficult time in the coming years avoiding the exceedingly costly pit-falls of agricultural protection. This would likely prove even more difficult if protection were being lobbied for and advocated behind the scenes by a small influential group of new 'feudal' lords who own vast tracts of farm land.

5 Conclusions

- There are good arguments for imposing a moratorium on the purchase and sale of farm land. However, this moratorium should be for as short a period as possible, and it is imperative that its duration be limited from the outset by a sunset clause. In other words, the moratorium should expire automatically after a predetermined number of years (perhaps 2 or 3), and not run on indefinitely until it is repealed.
- The moratorium must be applied strictly and without exception.
- For the duration of the moratorium, a fully independent study group (not a ministry or a state committee) should be charged with making regular public reports on the status of the market for farm land in Ukraine. This group must have complete access to all information on land transactions (which is why it must be independent); its publications must, however, ensure that individual transactions remain anonymous.
- An aggressive information campaign, amply funded and targeted directly at land owners, must be implemented. The sooner land owners are put on an equal footing with potential buyers, the sooner land purchase and sale can be legalised and the full benefits of a complete land market realised.
- Coupled with the moratorium, legislation should make it illegal to include clauses in land lease contracts that give those who rent land any form of binding purchase option. Otherwise, it is likely that some will attempt to circumvent the moratorium on land purchase and sale by means of lease contracts that bind the lessor to sell to the lessee once the moratorium has

been lifted (for example, by giving the lessee first right of refusal). By no means should it be permitted to fix a later purchase price for land in a lease contract.

- When the land market is opened, it should be opened to foreigners as well to increase competition in the interest of land owners. This will help create competitive conditions. Why should one prefer a Ukrainian buyer with monopolistic power to a foreign competitor who pays a fair price? In what sense is one protecting Ukrainian interests by allowing wealthy, well-connected Ukrainians with off-shore bank accounts to buy land from their fellow citizens at depressed prices?
- Over an initial period it could be advisable to legislate minimum land prices and limits on the amount of land that an individual is permitted to own. Without entering into a futile debate on optimal farm sizes,⁹ it appears to be the case that most economies of scale in crop production are exhausted by perhaps 2,000-3,000. Hence, a limit of 5,000 ha on land ownership by individuals would curb excessive concentration without having any significant impact on the efficiency of farming in Ukraine.
- In economic dealings, individuals are often tempted to ‘bend’ the rules or breach contracts. Furthermore, it is essentially impossible to draw up contracts that contain clauses for every foreseeable eventuality in an economic environment that is changing as rapidly as is the case in Ukraine. Hence, it is very important that lessors and lessees as well as sellers and buyers of farm land have access to low-cost impartial legal recourse. To ensure that land reform generates economic benefits and is perceived as being fair, it must be possible for the most humble land owner to receive objective advice and contest any contract, regardless of who is on the other end.

⁹ Experience in market economies has demonstrated very clearly that while it is possible to calculate optimal farm sizes based on technical or engineering considerations, i) these considerations are in a constant state of flux due to technical change, and ii) the human factor (management ability, know-how and motivational skills) is the most important single factor determining farm success. Managers should be permitted to choose the farm sizes that suit them best individually, and the market should be permitted to determine what combinations of manager and farm size are fit to survive. Decades of central planning in agriculture based on ‘objective’ optimal farm design failed to produce internationally competitive agriculture.

15 *The Present and Future Profitability of Sugar Production in Ukraine*¹

CHRISTOPH BENECKE & STEPHAN VON CRAMON-TAUBADEL

1 Introduction

Ukraine's sugar industry is in a crisis. Production has fallen by almost two-thirds since the beginning of transition, from 44.3 mill. t of sugar beets in 1990 to 13.2 mill. t in 2000. What does the future hold for Ukrainian sugar production: further decline into oblivion, or recovery? Any answer to this question must consist of two parts. First, is Ukrainian sugar production internationally competitive? If the answer to this question is 'yes', then we can reasonably expect that the Ukrainian sugar industry will recover in the future. If the answer to this question is 'no', then the second question must be posed; is the Ukrainian government willing and able to subsidise its domestic sugar industry in order to make it artificially competitive?

The German Advisory Group has argued in the past that the Ukrainian government probably is not able to provide significant subsidies to the Ukrainian sugar industry or any other branch of agriculture, and that it certainly should not be willing to do so. The subsidisation of sugar and other industries elsewhere in the world makes the countries that do so poorer, not richer, and this is a luxury that Ukraine cannot afford. Be that as it may, the focus in this paper is on the first question posed above. After all, perhaps Ukrainian sugar production is internationally competitive, in which case questions of whether or not it should be subsidised would not need to be addressed.²

If Ukrainian sugar production is internationally competitive, then Ukrainian sugar refiners, who either export sugar or sell it on domestic markets (in both cases without the benefit of any form of subsidisation) will be able to pay Ukrainian farmers so much for sugarbeets that these farmers will voluntarily produce this crop. Note that it is not enough that sugar factories simply pay a price for sugarbeet that guarantees farmers a profit. Farmers will compare the profit that they can make producing sugarbeets with the profits that they can make producing other crops on the same land. They will not choose to produce any crop that produces a profit; instead they will choose those crops that *maximise* their profit.

This is the approach taken in the following paper. We compare the costs of producing sugarbeet with the costs of producing other crops under Ukrainian conditions and attempt to determine what price would be required to make sugarbeet production competitive within Ukrainian farms, i.e. to permit sugarbeet to 'squeeze out' other potential crops for a share of the available farm land in Ukraine. We then attempt to determine whether it is likely that sugar refineries in Ukraine will be able to pay this sugarbeet price, given world market prices for sugar and the costs of refining sugar.

To present this analysis, we structure our paper in the following manner. Following this introduction, we outline the detailed farm level calculations used to determine the relative competitiveness of sugarbeet production *vis-à-vis* other crops in Ukraine in section 2. In section 3, informa-

¹ This chapter draws heavily on Christoph Benecke's Master's thesis (BENECKE, 2000). We are very grateful to the Südzucker AG for financial support and useful discussions in the preparation of this thesis, and to DAUP (Deutsch-Ukrainisches Agrarprojekt) for supervision and support with data collection in Ukraine.

² Of course, some take a middle road, arguing that Ukrainian sugar production could be internationally competitive in the medium to long run, but that it requires subsidies now if it is to attain this state of competitiveness. This is the standard 'infant industry' argument that we have addressed in the past in relation to Ukrainian agriculture (see STRIEWE, 1999) and that has been largely discredited as a justification for subsidies on both theoretical and empirical grounds.

tion on world market prices for sugar and sugar refining costs in Ukraine are used to calculate the maximum prices that farmers in Ukraine could expect to receive for sugarbeet. In the final section 4, the results of the previous two sections are combined to draw conclusions about the international competitiveness of the Ukrainian sugar industry along with a set of corresponding policy recommendations. The main question that we wish to cast some light on is: Under what conditions might sugar refineries be able to pay sugarbeet producers enough to ensure that sugarbeet production remains part of the crop rotation on Ukrainian farms?

2 The competitiveness of sugarbeet production on Ukrainian farms

2.1 *Caveat emptor*

In the following section we outline the assumptions and methods used to compare the profitability of sugarbeet production in Ukraine with the profitability of other crops. At the outset, we must stress that the calculations we present are certainly not beyond criticism. Natural conditions vary considerably within Ukraine, so the assumptions we make about costs and yields will never fit perfectly. Furthermore, sugarbeet production is especially dependent on the farm manager's skills. Hence, results can vary significantly even between farms operating under the same basic natural conditions. Finally, costs, yields and profitability will vary differently from crop to crop with annual weather conditions.

Nevertheless, we would suggest the following to anyone who is tempted to reject our calculations out of hand because he might find that a value here or an assumption there is not representative. First, what is important for our results is the relative comparison between different crops. Even if it is true that a particularly skilled manager might be able to generate higher sugarbeet yields than we assume on average, it is probably true that the same manager will also generate above average yields of competing crops, such as wheat or barley. In a similar vein, sugarbeet production specialists acquainted with production trials and experimental plots may feel that we underestimate potential sugarbeet yields in Ukraine. However, wheat or sunflower experts may feel the same about their 'favourite' crops. The validity of our results depends less on the exactness of all of our individual assumption than on whether or not we have succeeded in avoiding any systematic bias in favour of or against sugarbeet production.

Second, the main purpose of this exercise is to explain the logic of competitiveness under market conditions in agriculture. In the final analysis, competitiveness is determined on farms, in factories and *vis-à-vis* competitors on world markets. We provide a transparent framework that can be used to forecast whether Ukrainian farms and sugar refineries can expect to be competitive on the world market for their product. Using this framework, anyone is welcome to test, modify and improve on our results.

2.2 *The competitiveness of sugarbeet production on Ukrainian farms*

2.2.1 The gross margin concept

The relative competitiveness of different crops is usually calculated using the so-called 'gross margin'. The gross margin per hectare is defined as the revenue per hectare (yield times price) plus any revenues from the sale of joint products (for example, straw from grain production) plus any relevant subsidies per hectare, minus the sum of all variable costs (see table 1). More information on these variable costs is provided below. For the moment, note that the variable costs listed in table 1 include an item 'impact on subsequent crops'. This item accounts for the fact that some crops have a yield-increasing or yield-decreasing impact on subsequent crops produced on the same land. For example, sunflowers tend to have a negative impact on both the structure and nutrient content of the soils they are produced on, thus depressing the yields of subsequent crops. Rapeseed, on the other hand, tends to have a positive impact on soil structure and can increase the yields of subse-

quent grain crops. If, for example, rapeseed production leads to increased wheat yields of 2 dt/ha in the following year, and if wheat prices are 600 UAH/t, then rape will have a positive impact of 120 UAH/ha on subsequent grain crops. This would be accounted for as a negative cost in the gross margin calculation for rapeseed.

Table 1: Schematic presentation of gross margin calculations³

+	Sales revenue (yield x price)
+	Revenue from the sale of joint products (e.g. straw)
+	Per hectare subsidies
=	Total revenue
-	Seed costs
-	Fertiliser costs
-	Pesticide and herbicide costs
-	Machinery costs (seeding and production)
-	Machinery costs (harvest)
-	Transport costs
-	Interest payments on short-term credit
-	Impact on the yield of subsequent crops
=	Gross margin
-	Labour costs
-	Fixed costs (machinery)
=	Land rent

Source: Own presentation.

In the long run, the relative competitiveness of different crops must be based on calculations that account not only for variable but also for fixed costs such as the costs of purchasing machinery. Since different crops make different demands on the available machinery, and some crops require special machinery (for seeding and/or harvesting) that is crop-specific, relative profitabilities in the long run can differ substantially from relative profitabilities in the short run. As can be seen in table 1, we calculate land rents per hectare as an indicator of the long run profitability of a crop by subtracting labour costs and fixed costs from the gross margin. These calculations are first carried out for seven different crops (sugarbeet, winter wheat, winter barley, summer barley, sunflowerseed, corn, and rapeseed) using data from a base situation that is designed to reflect current conditions. We then repeat the calculations for two hypothetical scenarios (medium run and long run) to cast some light on possible future developments.

2.2.2 Assumptions for the base scenario

All calculations have been carried out on a Hryvnia basis. As some of the data we use were only available in DM-terms, an exchange rate of 2.65 UAH/DM was used. All calculations were carried out without value-added tax. Wherever possible, original Ukrainian data collected in March 2000 on a former sovkhov in Vinnytsya oblast, have been used.

Yields and prices: The assumed yields and prices (table 2) are taken from information collected on the former sovkhov and refer to the 1999 harvest. In interpreting the results of our calculations it is important to remember that 1999 was a very dry year.

Seed costs: Seed costs (per kg seed and seeding densities) were also collected on the former sovkhov. Seed densities in Ukraine are much higher than in Western countries, in some cases as much as twice as high. This is due to low germination rates on the one hand (poor seed quality and poor preparation of the seed bed) but also to poor management (unnecessary density).

Fertilisation: In the base situation fertiliser costs are based on the actual costs incurred on the former sovkhov in 1999. The costs of spreading manure are not accounted for in these calcula-

³ See chapter 14 on *A Market for Agricultural Land in Ukraine* for more discussion of the determinants of land rents.

tions, as manure was only used to a very limited extent. This means, however, that the gross margins of those crops that benefited from fertilisation with manure are overstated. Table 3 presents information on fertiliser use in the base situation. No fertilisation was recorded for winter barley, summer barley and sunflower. Note that low levels of fertilisation not only result in lower yields on current crops, they also lead to reductions in soil nutrient reserves and, thus, the soils' long-term yield capacity. Fertiliser prices were taken from data collected by DUAP.⁴

Table 2: Gross margin and land rent calculations in the base situation

Item	Unit	Sugarbeet	Winter wheat	Winter barley	Summer barley	Sunflower	Corn	Rapeseed
Yield	dt/ha	209	20	18	15	9	19	11
Price	UAH/dt	8.2	50	29	29	65	29	80
Revenue	UAH/ha	1,711	1,000	522	435	585	551	880
Seed	UAH/ha	80.0	140.0	75.4	69.0	120.0	27.0	225.0
Fertiliser	UAH/ha	142.4	29.4	0.0	0.0	0.0	58.7	30.3
Plant protection	UAH/ha	471.7	105.6	54.7	0.0	54.7	305.9	60.4
Sum yield increasing inputs	UAH/ha	694.1	274.9	130.1	69.0	174.7	391.7	315.6
Sum proportional machinery cost	UAH/ha	373.7	277.3	173.2	173.2	230.3	238.9	155.7
Sum proportional machinery cost for harvest	UAH/ha	388.0	55.9	55.9	55.9	62.3	167.7	55.9
Transport	UAH/ha	244.1	108.5	108.5	108.5	81.4	81.4	81.4
Sum machinery cost	UAH/ha	1,005.8	441.8	337.7	337.7	373.9	487.9	293.1
Calculated interest rate on capital used (25%)	UAH/ha	212.5	89.6	58.5	50.8	68.6	109.9	76.1
Impact on subsequent crops	UAH/ha	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross margin	UAH/ha	-200.7	193.7	-4.3	-22.5	-32.3	-438.6	195.2
Calculated wages	UAH/ha	162.4	5.4	4.3	4.3	5.1	4.9	3.7
Fixed costs	UAH/ha	1,815.7	1,029.2	839.0	839.0	883.6	911.0	764.1
Land rent	UAH/ha	-2,082.8	-840.9	-847.6	-865.9	-920.9	-1,354.5	-572.5

Source: DUAP (2000); Own calculations.

Table 3: Fertiliser costs in the base situation

Crop	Sugarbeet	Winter wheat	Winter barley	Summer barley	Sunflower	Corn	Rapeseed
Fertiliser	Ammonium water (20% N)	Ammonium Celitra (33% N)	none	none	none	Ammonium water (22% N)	Ammonium Celitra (33% N)
Number of applications	2	1				1	1
Amount (kg/ha)	800	100				300	102
Active ingredient (kg/ha)	160	33				66	34
Costs (UAH/kg active ingredient)	0.89	0.89				0.89	0.89
Fertiliser costs (UAH/ha)	142.4	29.37	0	0	0	58.74	30.26

Source: DUAP (2000); Own calculations.

Pesticides and herbicides: Plant protection costs are based on data from the sovkhos and prices for plant protection products taken from price lists provided by the Raiffeisen Hauptgenossenschaft Nord (RHG-Nord) in Hanover for 1999. As there appeared to be no substantial differences between prices for plant protection products in Ukraine and Germany in 1999, the use of this

⁴ DUAP is the Deutsch-Ukrainisches Agrarprojekt, an agricultural advisory service funded by the German government as part of its TRANSFORM programme for countries of Central and Eastern Europe.

this detailed price list appears to be justified. Table 4 presents data on the products used by crop. Although weed pressure is very high in Ukraine (MEYER, 2000), no herbicides were used on summer barley and rape. In sugarbeet, only one post-emergence application was used and further weed control was carried out by hand and/or mechanically. Based on labour costs of 1 UAH/h and a requirement of roughly 50 h/ha for weeding sugarbeet by hand, hand-weeding is considerably less expensive than a single 2.5 l/ha application of *betanal OF*, which would cost 378 UAH/ha. As long as wages are less than or equal to roughly 6 UAH/h, hand-weeding is less costly than herbicide application.

Table 4: Plant protection costs in the base situation

Crop	Application	Product	Type Fungicide (F) Herbicide (H) Insecticide (I)	Amount appl. l/ha kg/ha	Price UAH/l UAH/kg	Costs UAH/ha
Sugarbeet	1	Round up	H	4,5	37.23	93.08
	2	Betanal OF	H	2,5	151.45	378.63
					Sum	471.70
Winter wheat	1	Ranstar (Sulfonylurea)	H	25 g/ha	1.50	37.51
	2	Derosal	F	0,5	136.08	68.04
					Sum	105.55
Winter barley	1	2,4 D	H	1	54.72	54.72
					Sum	54.72
Summer barley	none				Sum	0
Sunflower	1	2,4 D	H	1	54.72	54.72
					Sum	54.72
Corn	1	Lontrel	H	0,7	284.21	198.95
	2	Basagran	H	0,7	152.90	107.03
					Sum	305.98
Rapeseed	1	Sum	I	0,3	201.27	60.38
					Sum	60.38

Source: RHG-Nord price list; Own calculations.

Machinery costs: Machinery costs are calculated based on the information in table 5. The hours of work required are taken from the Kuratorium für Technik und Bauwesen in der Landwirtschaft (KTBL) and are based on 20 ha field units. It is clear that field units on Ukrainian farms are much larger. For this and other reasons, KTBL data, which is based on conditions in Germany, is not entirely appropriate. Nevertheless, KTBL data is detailed, regularly updated, and appears to be much more realistic than corresponding data that was available from some Ukrainian sources. Furthermore, any deviations between KTBL data and Ukrainian conditions (for example the fact that equipment in Ukraine tends to break down more often and is pulled by smaller tractors than is generally the case in Germany, leading to slower rates of fieldwork completion) will presumably apply to all crops more or less equally. Hence, while absolute rates of profitability per crop may be distorted by our use of KTBL data, relative profitabilities should be largely unaffected. Labour costs associated with field-work are based on the wage rate of 1 UAH/h and the information on labour requirements in table 6 at the end of this chapter.

Interest costs: The costs of short-term capital requirements are based on an interest rate of 25%.

Fixed costs: In order to calculate land rents per hectare of crop, it is necessary to subtract the fixed costs of purchasing machinery from the gross margin (see table 1). These costs are calculated using information on machinery prices, expected years of service and hours of operation taken from KTBL (see table 6). First, the purchase price of a machine is divided by the expected years of service to calculate annual depreciation. The costs of the capital tied up in a machine are calculated as the product of one-half of the purchase price of the machine multiplied by the assumed interest rate

(25%). This simplified calculation is based on the assumption that the entire capital value of the machine is only tied up for one-half of the expected years of service. Totals costs (depreciation plus capital costs) are then transformed into costs per hour of machine operation, which enables them to be distributed among the different crops based on the crop-specific machine use requirements discussed above under variable costs (see table 5). These calculations assume that machines are used at their full operating capacity. This is not always the case on small farms in Germany that are often 'over-mechanised', but this assumption appears reasonable for the large farms prevalent in Ukraine.

Table 5: Machine use by crop in the base situation

Machine	Type	Hours/ ha	Tractor (horse- power)	Number of applications						
				Sugar- beet	Winter wheat	Winter barley	Summer barley	Sun- flower	Corn	Rape- seed
Soil preparation										
Disk	7m BDT 7	0.25	150	1	3	3	3			3
Plough	5-furrow MF	1.1	170	1	1			1	1	
Weeding har- row	21m BSSS 1,9	0.15	150	1						
Harrow	7.5 m B 163	0.29	75	1	1	1	1	1	1	1
Cultivator	5,4 OSMK	0.33	75	2				2	2	
Roller	4.2m	0.44	75	2						
Seeding										
Seed drill	3.6m	0.75	75		1	1	1			1
Sugarbeet drill	5.4m 12 row	0.52	75	1						
Corn drill	8 row SKPN	0.35	75					1	1	
Plant protection										
Fertiliser broad- caster	18m 1000l	0.11	75	2	1	1	1	1	1	1
Sprayer	18m OP 2000	0.21	75	2	2	2	2	1	2	1
Hoe	5.4m 12 row	0.5	75	2						
Hand hoe		50		3						
Harvest										
Combine	5.4m SK6	0.4			1	1	1	1	1	1
Forage har- vester	6 row	1.1	75	1						
Sugarbeet har- vester	6 row	1.1	75	1						
Sugarbeet pickup	6 row	1.1		1						
Truck	5-15t	0.4	150-200	4	4	4	4	3	3	3

Source: KTBL; Own calculations.

All of the cost assumptions outlined above are summarised in table 7. Note that in the base situation, no provision is made for the impact of a crop on the yields of subsequent crops. Moreover, beside the fixed costs of machinery, fixed costs for buildings should also be accounted for. However, calculating the fixed costs of buildings in Ukrainian agriculture is very difficult. Furthermore, it can be safely assumed that building costs burden all crops more or less equally so that accounting

or them would have little impact on relative profitabilities. In the following, therefore, no provision is made for fixed building costs.⁵

Table 7: Summary of cost assumptions in the base situation

Item	Assumption
Seed costs	Based on information from the sovkhos
Fertiliser costs	Based on information from the sovkhos
Pesticides and herbicides	Amounts applied based on information from the sovkhos. Prices taken from price lists provided by the RHG Nord AG, Hannover
Machine costs	Types of field-work carried out and machinery used based on information from the sovkhos. KTBL data used to calculate the times required to complete field-work
Interest costs	25%
Impact on yield of subsequent crops	Not considered in the base situation
Labour costs	1 UAH/hour

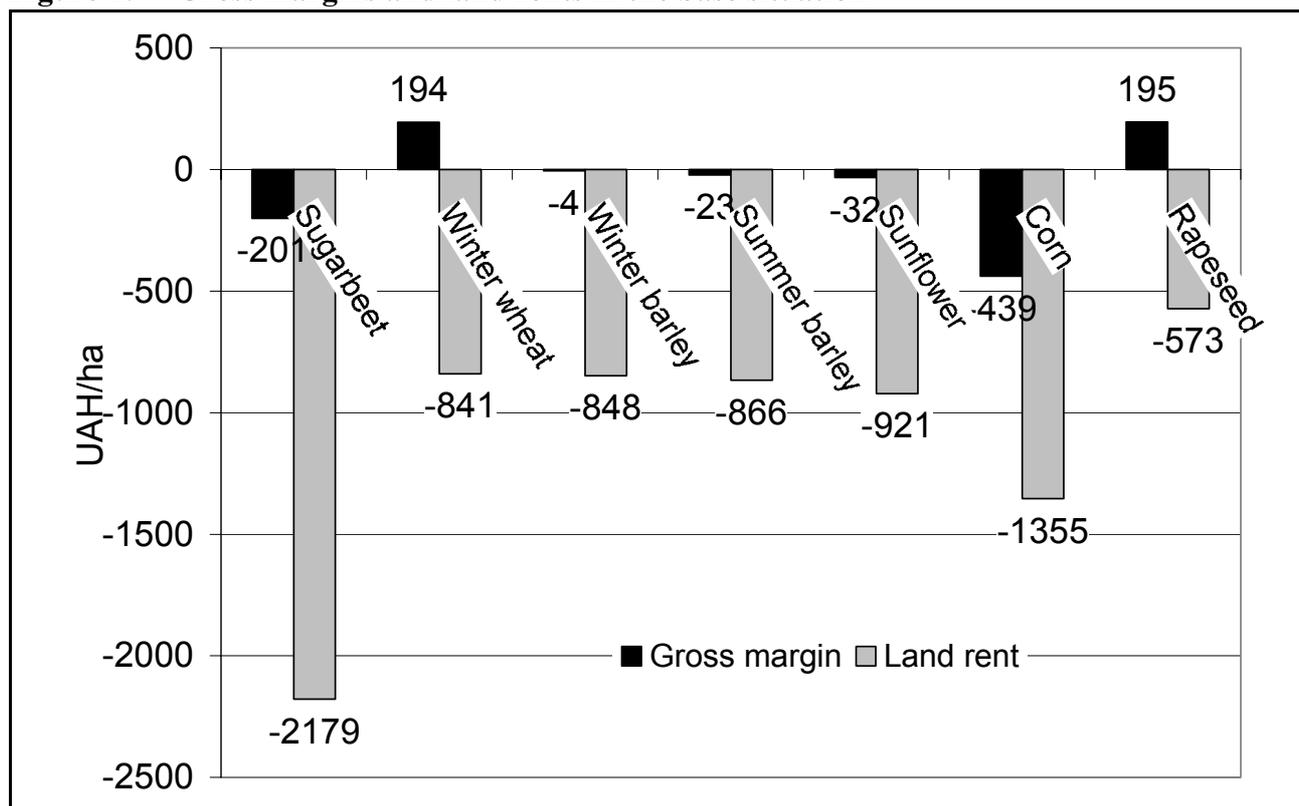
2.2.3 Gross margins and land rents in the base situation

Figure 1 summarises the results of gross margin and land rent calculations for the seven crops considered in the base situation. We see that in this situation, only winter wheat and rapeseed generated positive gross margins. This means that all other crops did not generate enough revenue to cover variable costs; it would have been more profitable for farms to leave the hectares dedicated to these crops fallow than it was to produce these crops. Of course, it would have been even more profitable to dedicate these hectares to the production of winter wheat and rapeseed.

Figure 1 also shows that land rents are negative for all crops. The relative competitiveness of sugarbeet and corn suffers the most when fixed costs are deducted from gross margins. While the fact that 1999 was a dry year certainly contributes to the poor performance of sugarbeet relative to other crops, this poor performance is also due to the disproportionately high fixed machinery costs associated with sugarbeet production. These costs amount to 1,816 UAH/ha sugarbeet which is considerably higher than the average of 878 UAH/ha for all other crops. The difference is due to the costs of special machines that are required to seed and harvest sugarbeets, as well as the higher costs of seedbed preparation.

The fact that land rents are negative for all crops means that money was lost in the production of all these crops in the base situation. As a result, no rent payments to land owners would be possible. This situation is not sustainable; either in the short run (if the gross margin is negative) or in the medium run (if the gross margin is positive but the land rent is negative) crop production will lead to progressively increasing illiquidity and eventual bankruptcy. Since it is hardly possible to further reduce input use in Ukrainian agriculture, profitability can only improve if market prices and/or yields increase. Sugarbeet yields would have to increase by a factor of 2.3 to 475 dt/ha to cover fixed and variable costs in the base situation. Grain yields would have to roughly double, to between 37 and 45 dt/ha, according to variety. Sunflower seed and corn yields would have to increase by factors of 2.5 and 3, respectively. Rapeseed would require the lowest yield increases of only 7 dt/ha. Of course, these required increases are all calculated on the assumption that they could be attained without increasing input use, which is not realistic. Attaining higher yields would require increased input use so that break-even points could only be attained at even higher yields than those just presented.

⁵ KRUSE (2000) reports that the value of buildings on Ukrainian farms is higher than the value of farm machinery. Based on this, he calculates fixed building costs of 800 UAH/ha which, if accounted for, would reduce the land rents discussed in the following considerably.

Figure 1: Gross margins and land rents in the base situation

In closing the section, we reiterate that our calculations are based on data and assumptions that are meant to reflect typical conditions in Ukrainian agriculture and not exact conditions on all farms. The results presented in figure 1 suggest that almost all crops were loss-making in 1999. This is a plausible result since according to official statistics, almost 90% of all farms in Ukraine generated net losses in that year.⁶ However, even in 1999 some farms in Ukraine were profitable. And in 2000, due to considerably higher output prices for many crops and less political interference, a much higher proportion of the farms in Ukraine was profitable. The results presented above should therefore not be interpreted as suggesting that it is not possible to farm profitably in Ukraine, but rather that most farm managers were not able to do so under typical conditions prevailing in 1999. These results also suggest that under these conditions, sugarbeet production was one of the least profitable activities a farm could undertake.

2.3 The relative profitability of sugarbeet production under different scenarios

In the following section, the profitability of crop production in Ukraine is analysed on the basis of educated guesses of conditions that might prevail in the medium and long run. As is explained in detail below, these scenarios are based on a number of assumptions concerning costs, yields and prices. Essentially, the movement from the base situation to the medium and then the long run scenario is meant to reflect a progressive convergence between crop production methods and results in Ukraine and 'state of the art' methods and conditions in Western Europe. In both the medium and long run scenarios, gross margins and land rents are calculated for all seven crops to provide a basis for conclusions regarding relative profitability.

2.3.1 The medium run scenario

In the medium run scenario, it is assumed that all machines are replaced by modern machines of Western origin or quality. This results in increased fixed costs but at the same time makes it possible to farm more efficiently, i.e. to increase the productivity and profitability of input use.

⁶ See figure 5 in chapter 3 on *Agriculture and Current Account Sustainability in Ukraine*.

Table 8: Yields in the medium run scenario

Crop	Yield
Sugarbeet	350 dt/ha
Winter wheat	35 dt/ha
Winter barley	35 dt/ha
Summer barley	35 dt/ha
Sunflower	16 dt/ha
Corn	35 dt/ha
Rapeseed	25 dt/ha

Source: Experimental results from AGREVO Ukraine (2000); DUAP (2000).

In the medium run scenario, **yields** are assumed to have increased significantly compared to the base situation. Assumed yields, based on field trials in Ukraine, are summarised in table 8. The assumed **prices** for the medium run scenario are presented in table 9. Predicting the prices of agricultural commodities is notoriously difficult. The basis of the price predictions in table 9 are futures market notations. It is assumed that Ukraine is a net exporter of all seven crops considered, with the exception of sugar. Hence, farm gate prices for wheat, barley etc. are derived from the world market price by subtracting the appropriate transport and marketing costs. However, it is assumed that the efficiency of the marketing system in Ukraine has improved considerably, so that farm gate prices are equivalent to roughly 70% of the corresponding FOB export prices. In other words, it is assumed that the marketing efficiency in Ukraine is comparable to that, for example, in Germany.⁷ In the case of sugarbeet, it is assumed that Ukraine remains a net importer of sugar so that domestic prices remain higher than world market prices. Furthermore, it is assumed that sugar prices do not change compared with the base situation.

Table 9: Price assumptions in the medium run scenario

Crop	Exchange	Contract	Notation	Exchange rate	Price in UAH/t	Domestic price (70% of the FOB-price)
Wheat	Chicago Board of Trade	July 2002	342,00 ct/bu	5.438 UAH/US\$	683	478
Barley	Winnipeg Commodity Exchange	March 2001	122,34 CAN\$/t	3,67 UAH/CAN\$	449	314
Oilseed	Winnipeg Commodity Exchange	January 2001	277,66 CAN\$/t	3,67 UAH/CAN\$	1,019	713
Corn	Chicago Board of Trade	July 2002	247,20 ct/bu	5,438 UAH/US\$	480	336

Note: Wheat and corn notations are in cents per bushel. One bushel of wheat is equivalent to 27.216 kg, and one bushel of corn is equivalent to 28 kg.

Source: <http://www.cbot.com>, <http://wce.com>, <http://www.oanda.com>, all as of July 13, 2000. Own calculations.

Not only revenues but also costs are assumed to change in the medium run scenario. As outlined in table 10, seed density is reduced due to improved machinery, seedbed preparation and management. The price of **seed** increases in line with product prices as outlined above. Table 11 at the end of this chapter presents the calculation of **fertiliser** costs in the medium run scenario. Fertiliser prices are assumed to remain constant compared with the base situation, but fertiliser use increases considerably.

⁷ For a discussion of the impact of marketing costs on prices see chapter 7 on *Price Determination and Government Policy on Ukrainian Grain Markets* and chapter 10 on *Regional Agricultural Trade in Ukraine*.

Table 10: Seed costs in the medium run scenario

	Unit	Sugarbeet	Winter wheat	Winter barley	Summer barley	Sunflower	Corn	Rapeseed
Seed density	dt/ha or units/ha	1.1	2	2	2.5	0.06	0.6	0.04
Price	UAH/dt or UAH/unit	120	47.8	31.4	31.4	2,500	35	2,650
Seed costs	UAH/ha	132	95.6	62.8	78.5	150	21	106

Source: DUAP (2000); Own calculations.

Similar considerations apply to the use of **plant protection** in the medium run scenario which is outlined in table 12. At least one herbicide application is carried out for all crops, and insecticides and fungicides are applied to some. Prices remain unchanged compared with the base scenario. Since new, modern machines are used, variable **machine** costs are reduced compared with the base situation as outlined in tables 13 and 14, both at the end of this chapter. **Interest rates** are assumed to have fallen to 15% and, as outlined in table 15, the impact that a crop has on the yields of subsequent crops is also accounted for. Table 16 summarises the cost assumptions made to calculate the medium run scenario.

Table 12: Plant protection costs in the medium run scenario

Application	Product	Herbicide (H) Fungicide (F) Insecticide (I)	Amount l/ha kg/ha	Price UAH/l UAH/kg	Costs UAH/ha
Sugarbeet					
1	Betanal Progress	H	1.5	151.45	227.18
	Decis forte	I	0.1	166.69	16.67
2	Betanal Progress	H	1.3	151.45	196.89
	Lontrel	H	0.5	284.21	142.11
	Goltix	H	0.6	149.99	89.99
3	Desoral		0.5	136.08	68.04
Total costs					740.87
Winter wheat					
1	2,4 D	H	1.5	54.72	82.08
2	Decis	I	0.3	166.69	50.01
3	Alto	F	0.6	181.92	109.15
Total costs					241.24
Winter barley					
1	2,4 D	H	1.5	54.72	82.08
2	Decis	I	0.2	166.69	33.34
Total costs					115.42
Summer barley					
1	2,4 D	H	1.5	54.72	82.08
	Derosal	H	0.5	136.08	68.04
2	Decis	I	0.2	166.69	33.34
	Sportak alpha	F	1	111.7	111.70
Total costs					295.16
Sunflower					
1	2,4D	H	1.5	54.72	82.08
2	Decis	I	0.2	166.69	33.34
3	Alto	F	0.2	181.92	36.38
Total costs					151.80
Corn					
1	2,4 D	H	1.5	54.72	82.08
2	Decis	I	0.2	166.69	33.34
Total costs					115.42
Rapeseed					
1	Butisan	H	1.5	202.86	304.29
2	Decis	I	0.5	166.69	83.35
3	Folicur	F	0.5	173.84	86.92
	Konker	F	0.3	117.3	35.19
Total costs					509.75

Source: DUAP (2000); RHG-Nord price list; Own calculations.

Table 15: The impact of a crop on yields of subsequent crops in the medium run scenario

Crop	Change in subsequent wheat yield			Reduction in machine costs	UAH/ha	Impact UAH/ha
	in %	in dt/ha	in UAH/ha			
Sugarbeet	5	1.75	61.25	no ploughing necessary	89,48	150,73
Winter wheat	0	0	0	-		0
Winter barley	0	0	0	-		0
Summer barley	0	0	0	-		0
Sunflower	-10	-3.50	-122.5	no ploughing necessary	89,48	-33,03
Corn	5	1.75	61.25	no ploughing necessary	89,48	150,73
Rapeseed	12	4.20	147.00	no ploughing necessary	89,48	236,48

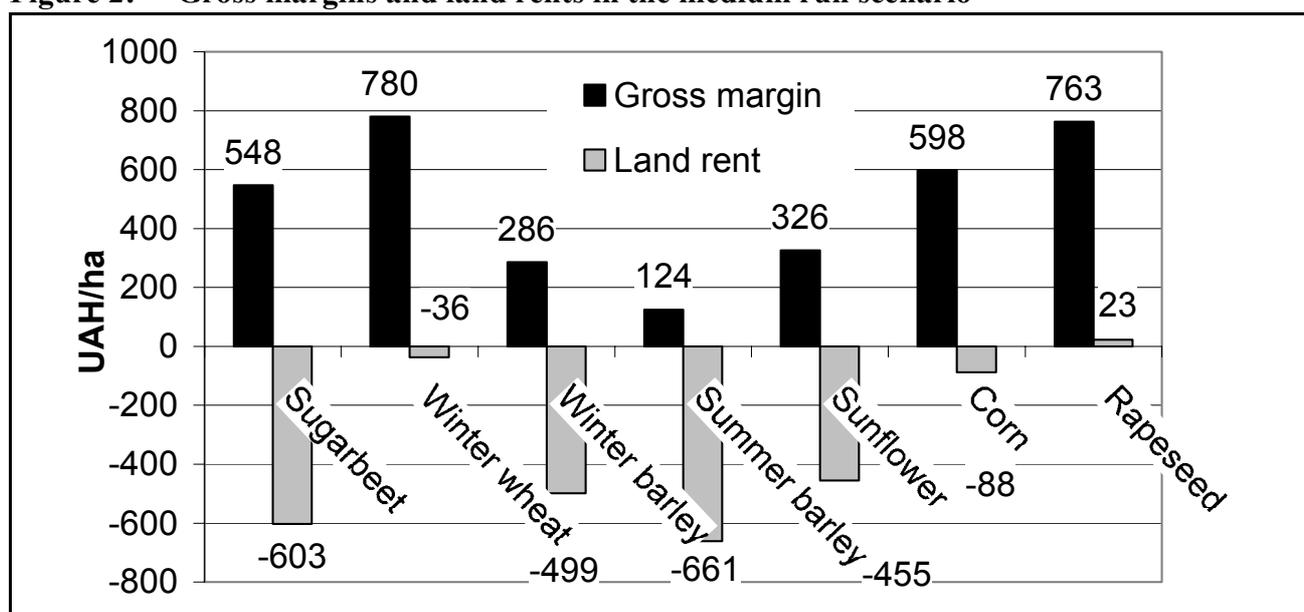
Source: Own calculations.

Table 16: Summary of cost assumptions in the medium run scenario compared with the base situation

Item	Assumption
Seed costs	Seed density reduced due to improved machinery and management. Seed prices adjust in line with crop prices
Fertiliser costs	Prices constant, but use increases significantly
Pesticides and herbicides	Prices constant, but use increases significantly
Machine costs	Variable costs fall as modern machinery reduces the times required for seeding, harvesting and other operations
Interest costs	Falls from 25 to 15%
Impact on yield of subsequent crops	Accounted for (table 15)
Labour costs	Unchanged at UAH/hour

2.3.2 Results of the medium run scenario

Figure 2 presents the results of the medium run scenario. We see that all gross margins increase significantly and that the relative profitability of sugarbeet production increases considerably compared with the base situation (from the sixth to the fourth position among the seven crops considered). However, when the fixed costs of new machinery are deducted from these gross margins, we see that all crops with the exception of rapeseed produce negative land rents. This means that with the exception of rapeseed, revenues from crop production are not sufficient to cover both variable and fixed production costs.

Figure 2: Gross margins and land rents in the medium run scenario

As in the base situation, it is possible to calculate the yield improvements that would be necessary to ensure break-even production. In the cases of winter wheat and corn, the required yield increases are relatively small. Compared with the assumed values in table 8, winter wheat yields

would have to increase by only 2% and corn yields by only 7% (i.e., by 1 and 2.6 dt/ha, respectively). Clearly, above average farms would be able to realise such yield increases. Sugarbeet yields would have to increase by at least 25% compared with the values in table 8 if sugarbeet were to generate positive land rents. Sunflower, winter barley and summer barley yields would have to increase by 40, 45 and 60%, respectively. Such yield increases would be very difficult to attain without significant associated increases in input use and, therefore, costs. Furthermore, even if such yield increases could be attained by above average farm managers without significant increases in production costs, the same farm managers would probably be able to attain analogous results with winter wheat and rapeseed.

Hence, it appears unlikely that crops other than winter wheat and rapeseed would play an important role in the crop rotation under the assumptions made in this medium run scenario. At the same time, the results of this scenario suggest that in the medium run, well-managed Ukrainian farms will be in a position to reinvest in machinery and profitably produce a number of crops.

2.3.3 The relative profitability of different crops in the long run scenario

In the long run scenario, it is assumed that yields have continued to increase (see table 17) as good management practices restore the yield potential of Ukraine's soils. Compared with the medium run scenario, prices also increase in the long run as farmers are now assumed to receive a farm gate price equivalent to 80% of the FOB export price for all products except sugar. Sugar is assumed to remain in a net import situation and its price remains constant compared with the medium run scenario.⁸

Table 17: Yields and prices in the long run scenario

Crop	Yield	Domestic prices (80% of the FOB-price)
Sugarbeet	380 dt/ha	81,9 UAH/t*
Winter wheat	55 dt/ha	546,0 UAH/t
Winter barley	50 dt/ha	359,0 UAH/t
Summer barley	45 dt/ha	359,0 UAH/t
Sunflower	30 dt/ha	815,0 UAH/t
Corn	65 dt/ha	384,0 UAH/t
Rapeseed	30 dt/ha	815,0 UAH/t

Source: Experimental results from NPZ-LEMBKE, DUAP and BASF Ukraine. Own calculations based on the underlying data in table 9.

Table 18: Seed costs in the long run scenario

	Unit	Sugar-beet	Winter wheat	Winter barley	Summer barley	Sun-flower	Corn	Rapeseed
Seed density	dt/ha or units/ha	1,1	2	2	2,5	0,06	0,6	0,04
Price	UAH/dt or UAH/U	120	77,6	58,9	58,9	2,500	35	2,650
Seed costs	UAH/ha	132	155,2	117,8	147,25	150	21	106
Seed protection	23 UAH/dt							

Source: DUAP (2000); BASF, NPZ LEMBKE; Own calculations.

⁸ Note that this assumption tends to favour sugar because prices in the import situation are considerably higher than they would be in the export situation, and because it is not assumed that reductions in marketing costs apply that increase prices in the net export situation but would decrease them in the net import situation.

Table 19: Costs of fertiliser in the long run scenario

Application	Fertiliser	Nutrients (kg Active ingredient)			Price per kg UAH/kg	Costs UAH/ha	
		Nitrogen	Phosphorus	Potassium			
Sugarbeets							
1	Nitrogen	100			0,89	89	
2	Nitrogen	70			0,89	62,3	
3	Phosphorus		170		0,85	144,5	
4	Potassium			200	0,7	140	
	Sum Nutrients kg/ha	170	170	200			
Costs for fertiliser UAH/ha						435,8	
Winter wheat							
1	Nitrogen	70			0,89	62,3	
2	Nitrogen	50			0,89	44,5	
3	Phosphorus		90		0,85	76,5	
4	Potassium			110	0,7	77	
	Sum Nutrients kg/ha	120	90	110			
Costs for fertiliser UAH/ha						260,3	
Winter barley							
1	Nitrogen	60			0,89	53,4	
2	Nitrogen	40			0,89	35,6	
3	Phosphorus		80		0,85	68	
	Sum Nutrients kg/ha	100	80				
Costs for fertiliser UAH/ha						157	
Summer barley							
1	Nitroammoniumphosphate	34			0,89	30,26	
				34		0,85	28,9
					34	0,7	23,8
2	Nitrogen	33			0,89	29,37	
	Sum Nutrients kg/ha	67	34	34			
Costs for fertiliser UAH/ha						112,33	
Sunflower							
1	Nitrogen	80			0,89	71,2	
2	Nitrogen	60			0,89	53,4	
3	Phosphorus		190		0,85	161,5	
4	Potassium			140	0,7	98	
	Sum Nutrients kg/ha	140	190	140			
Costs for fertiliser UAH/ha						384,1	
Corn							
1	Nitrogen	70			0,89	62,3	
2	Nitrogen	50			0,89	44,5	
3	Phosphorus		90		0,85	76,5	
4	Potassium			140	0,7	98	
	Sum Nutrients kg/ha	120	90	140			
Costs for fertiliser UAH/ha						281,3	
Rapeseed							
1	Nitrogen	70			0,89	62,3	
2	Nitrogen	50			0,89	44,5	
3	Nitrogen	50			0,89	44,5	
4	Phosphorus		130		0,85	110,5	
5	Potassium			200	0,7	140	
	Sum Nutrients kg/ha	170	130	200			
Costs for fertiliser UAH/ha						401,8	

Source: DUAP, BASF; NPZ LEMBKE; Own calculations.

In the long run scenario, **seed** densities are not assumed to change. However, seed costs increase in line with product prices, and it is assumed that farms use high quality prepared seed that costs 23 UAH/t more than in the medium run scenario (table 18).⁹ Compared with the medium term scenario, **fertiliser** use and **plant protection** intensities increase further (tables 19 and 20). It is also assumed that farms have not only replaced old **machinery** with equivalent Western standard machinery, but that they have also shifted to the use of the large scale machinery that is used on large farms in Western Europe (for example on the former collective farms in Eastern Germany). As in

⁹ This value is taken from KTBL, 1998, p. 132.

the base situation and the medium run scenario, the required calculations are based on KTBL data (tables 21 and 22 at the end of this chapter). The use of large scale machinery results in reduced times required for operations such as seeding and harvesting, although in the latter case this is compensated to some extent by the fact that yields have increased.

In the long-term scenario labour costs are assumed to have increased to 2 UAH/h due to general economic growth on the one hand, and the higher qualification of workers on the other. The interest rate is assumed to have fallen to 8%, and the impact of a crop on yields of subsequent crops is also adjusted to correspond to the new production technologies, yields and prices (table 23). The cost assumptions underlying the long run scenario calculations are summarised in table 24.

Table 20: Costs of plant protection in the long-term scenario

Application	Name	Herbicide (H) Fungicide (F) Insecticide (I)	Amount l/ha kg/ha	Price UAH/l UAH/kg	PSM-Costs UAH/ha
Sugarbeet					
1	Pyramin turbo	H	2,5	118,32	295,80
	Matrix	H	2	81,3	162,60
2	Pyramin turbo	H	2,5	118,32	295,80
Costs for plant protection					754,20
Winter wheat					
1	2,4 D	H	1,5	54,72	82,08
2	Decis	I	0,3	166,69	50,01
	Alto	F	0,6	181,92	109,15
3	Amistar	F	0,5	297,46	148,73
Costs for plant protection					389,97
Winter barley					
1	2,4 D	H	1,5	54,72	82,08
2	Decis	I	0,2	166,69	33,34
	Alto	F	0,2	181,92	36,38
Costs for plant protection					151,80
Summer barley					
1	2,4 D	H	1,5	54,72	82,08
	Derosal	H	0,5	136,08	68,04
2	Decis	I	0,2	166,69	33,34
	Sportak alpha	F	1	111,7	111,70
Costs for plant protection					295,16
Sunflower					
1	2,4D	H	1,5	54,72	82,08
2	Decis	I	0,2	166,69	33,34
3	Alto	F	0,2	181,92	36,38
Costs for plant protection					151,80
Corn					
1	2,4 D	H	1,5	54,72	82,08
2	Decis	I	0,2	166,69	33,34
	Alto	F	0,2	181,92	36,38
Costs for plant protection					151,80
Rapeseed					
1	Treflan	H	5	37,37	186,85
2	Bulldock	I	0,3	154,76	46,43
	Wolaton	I	1,5	79,5	119,25
3	Folicur	F	1	173,84	173,84
Costs for plant protection					526,37

Source: DUAP, BASF; NPZ LEMBKE; Price-list RHG HANNOVER; Own calculations.

Table 23: Impact on subsequent crops in the long-term scenario

Crop	Lower or higher wheat yield			Savings in machinery cost	Impact on subsequent crops	
	in %	in dt/ha	in UAH/ha		UAH/ha	UAH/ha
Sugarbeet	5%	2,75	150,15	no ploughing necessary	97,86	248,01
Winter wheat	0	0	0	-		0,00
Winter barley	0	0	0	-		0,00
Summer barley	0	0	0	-		0,00
Sunflower	-10%	-5,5	-300,3	no ploughing necessary	97,86	-202,44
Corn	5%	2,75	150,15	no ploughing necessary	97,86	248,01
Rapeseed	12%	6,6	360,36	no ploughing necessary	97,86	458,22

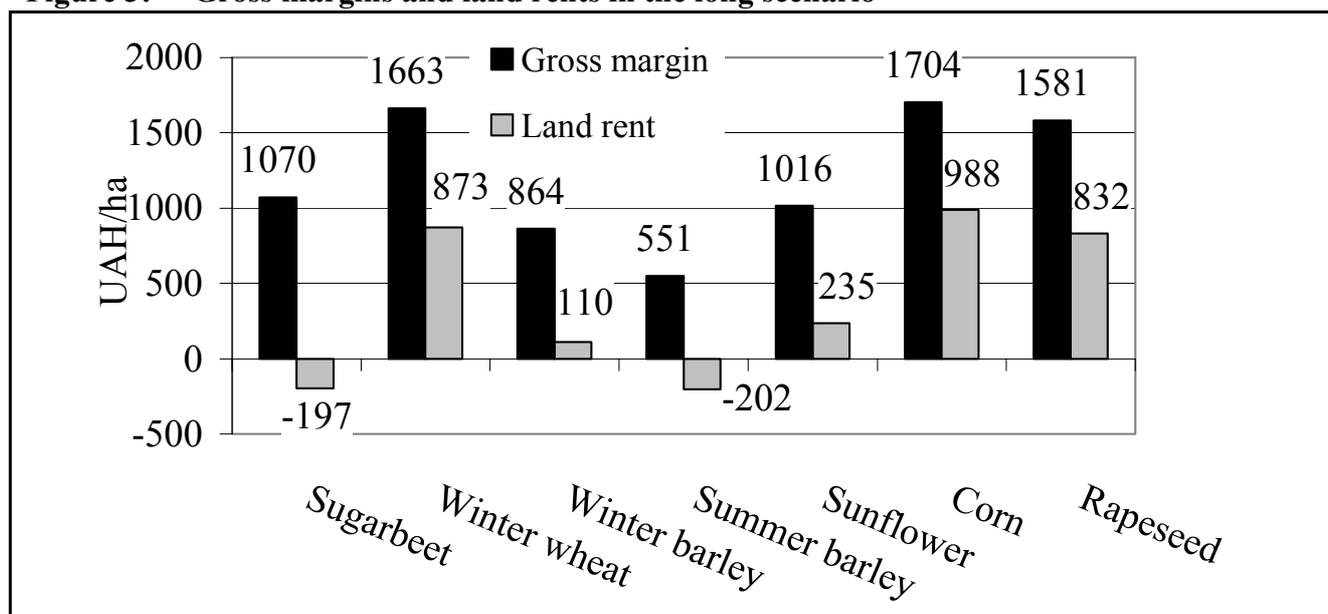
Source: Own calculations.

Table 24: Summary of cost assumptions in the long run scenario compared with the medium run scenario

Item	Assumption
Seed costs	Increase for grain due to increasing product prices and improved seed quality. Unchanged for other crops.
Fertiliser costs	Prices constant, but use increases.
Pesticides and herbicides	Prices constant, but use increases.
Machine costs	Costs based on the use of large-scale machines such as are used on large farms in Western Europe.
Interest costs	Falls to 8%.
Impact on yield of subsequent crops	Accounted for.
Labour costs	Increase to 2 UAH/hour.

2.3.4 Results of the long run scenario

As figure 3 illustrates, under the assumptions made for the long run scenario all crops produce positive gross margins. Corn, winter wheat and rapeseed are especially competitive, followed by sugarbeet and sunflower with gross margins between 700 and 500 UAH lower. Winter and summer barley also produce positive gross margins but can clearly not compete with the other crops.

Figure 3: Gross margins and land rents in the long scenario

Based on these results one might expect that corn, wheat and rapeseed would dominate the crop rotation with sunflower and sugarbeet perhaps playing a role in especially well-suited regions or on highly specialised farms. This conclusion is strengthened by the information in figure 3 on land rents that are produced with various crops. Again we see that the relative competitiveness of

sugarbeet is worse when fixed as well as variable costs are considered, mainly due to the fact that sugarbeet production is dependent on specialised machines. To produce the same rents as rapeseed, sugarbeet yields would have to increase by 33% to a level of 506 dt/ha in comparison with the assumptions made in table 16. Again, while such yields could be attained on above average farms, such farms would probably also be able to attain correspondingly higher yields of other crops as well.

Based on the results in figure 3, significant reinvestment and profitable crop production are certainly possible in Ukrainian agriculture in the long run. If our calculations are roughly correct, land rent payments in the neighbourhood of 800 UAH/ha might be expected. It must be stressed, however, that this is a long run scenario and that it will take many years before the majority of the farms in Ukraine have reached the stage of development postulated in this scenario. So-called 'pioneers' who succeed in reaching this stage earlier than most would be able to enjoy significant profits as land rents continue to be determined by the majority of less efficient farms.

3 The future development of sugarbeet prices in Ukraine

In all of the scenarios discussed above, the sugarbeet price was assumed to be 8.19 UAH/dt. Depending on a number of factors, this price could change considerably. These factors include the world market price for sugar, whether Ukraine is a net exporter or importer of sugar, marketing and processing costs for sugar in Ukraine and, of course, the strength of the Hryvnia *vis-à-vis* the US dollar.

World market prices: Between 1977 and mid-2000, the world market price for raw sugar fluctuated between 910 UAH/t and 1,880 UAH/t as a function of world market price fluctuations in US\$ and changes in the strength of the Hryvnia. Prices in Ukraine were higher than this world market price level because Ukraine has been a net importer of sugar in recent years and sugar imports are subject to tariffs.¹⁰

Processing costs: The price that processors will be willing to pay Ukrainian farmers for their sugarbeets depends not only on the price of imported sugar that competes with domestic production, but also on the price of processing domestic sugarbeet into sugar. In the following calculations, processing costs of 1,911 UAH/t of sugar are used as a basis (ZIMMERMANN, 2000, p. 49). These costs are considerably higher than processing costs in other countries (VON CRAMON-TAUBADEL, 1999). To analyse the impact of increased efficiency in Ukraine's sugar processing industry, calculations are carried out below based on the assumption that processing costs can be reduced by 25% (to 1,433 UAH/t of sugar) and by 50% (to 946 UAH/t of sugar). Furthermore, it is assumed that improved technology leads to increased extraction rates of 90% and that the average sugar content of sugarbeets in Ukraine equals 16%. Based on these assumptions, 6.944 t of sugarbeet are necessary to produce 1 t of white sugar.

Transport costs: In Ukraine farms generally have to pay the costs of cleaning, loading and transporting sugarbeets to refineries. Hence, these costs must also be accounted for when deriving the prices that refineries in Ukraine will be able to pay for sugarbeet.¹¹ In the following these costs are based on KTBL data assuming: trucks with a capacity of 24 t; an average distance of 15 km to the refinery; a round trip of 2 h; and loading times of 25 min. Table 25 presents a schematic depiction of the calculation of sugarbeet prices at the farm gate based on world market prices and the calculations and assumptions outlined above.

¹⁰ A detailed discussion of domestic sugar price determination and the impact of tariffs is provided in chapter 9 on *Who Gains and Loses – Import Tariffs and Tariff Rate Quotas for Sugar and Grain in Ukraine*.

¹¹ The situation in Germany, for example, is different in that these costs are generally included in the processing costs reported by refineries. In the final analysis, however, it makes little difference whether these costs are subtracted as part of processing costs or whether they are treated separately as above.

Table 25: Schematic presentation of the calculation of possible farm-gate sugarbeet prices

Item	Assumption
World market price for sugar	A range of high (1877 UAH/t) and low (912 UAH/t) prices assumed based on historic data (1997-2000) and an exchange rate of 5,438 UAH/US\$
+/- Marketing costs	Marketing costs of 180 UAH/t are added (subtracted) in an import (export) situation
= Domestic price level	
- Processing costs	Costs ranging from observed costs of 1911 UAH/t, to reduced costs of 75 and 50% of this level (1433.25 and 955.5 UAH/t, respectively)
= Price of sugarbeet at the refinery gate	Based on conversion factor 6.944 t of beet per t of sugar
- Costs of cleaning, transportation and loading	Assumed to equal 15.70 UAH/t of sugarbeet
= Price of sugarbeet at the farm gate	

Source: Own presentation using: price data from <http://www.fas.usda.gov:80/htp/sugar/2000/May/prices.pdf>; exchange rate data from <http://www.oanda.com>; and ZIMMERMANN (2000, p. 49)

Using the information in table 25, farm gate prices for sugarbeet in Ukraine under different assumptions regarding world market price levels and the costs of processing sugarbeet are presented in table 26. Recall that in section 2, a sugarbeet price of 81.9 UAH/t was assumed, and that even at this price, it was concluded that sugarbeet production would, for the most part, not be able to displace more profitable crops such as winter wheat and rapeseed. In table 26 we see that in a net export situation, a sugarbeet price that would lead to competitive sugarbeet production on at least some farms in Ukraine only results if we assume high world market prices and processing costs that are at one-half of their current level. Under these assumptions, a sugarbeet price of 92.09 UAH/t results. This would likely be enough to put sugarbeet into the crop rotation, at least in regions which are especially well-suited to sugarbeet production. Of course, this would only be true in such areas that are also close to very efficient sugar refineries. Furthermore, note that the high world market price that underlies this calculation is the maximum price that was attained over the entire period between January 1997 and February 2000.¹² Most of the time, the world market price was considerably lower and there is little reason to expect that this will not be true in the future. Altogether, it seems reasonable to conclude that the conditions required to make sugarbeet production competitive *vis-à-vis* other crops on Ukrainian farms for sugar are very unlikely in an export situation.

Table 26: Farm gate sugar beet prices under different assumptions regarding the world market price and processing costs

Situation	Ukraine net exporter			Ukraine net importer		
	Low	Middle	High	Low	Middle	High
World market price						
Current processing costs	-185.49	-118.95	-46.51	-133.64	-67.11	5.33
Current processing costs – 25%	-116.69	-50.15	22.29	-64.84	1.69	74.13
Current processing costs – 50%	-47.89	18.65	92.09	3.96	70.49	143.93

Source: Own calculations based on assumptions in table 24.

The conclusions is somewhat more optimistic if Ukraine remains a net importer of sugar. In this case, sugarbeet prices of 70 UAH/t and upward – which could suffice to make sugarbeet production competitive on Ukrainian farms at least in regions that are well-suited to sugarbeet production – would occur if processing costs could be reduced by 50% in the middle and high world market price scenarios, or in the high world market price scenario if processing costs could be reduced by at least 25%. Indeed, a price of almost 144 UAH/t for sugarbeet is attained in the high price scenario with greatly reduced processing costs. At this price there is little doubt that sugarbeet produc-

¹² Of course, if the Hryvnia were to devalue against the US dollar, world market prices expressed in Hryvnia would increase. However, this would not increase the competitiveness of sugarbeet production *vis-à-vis* other crops on farms in Ukraine because the prices of these other crops would also increase as a result of the devaluation.

tion would be very profitable and take up an important position in the crop rotation of Ukrainian farms. Of course, if sugarbeet was 'too' successful due to such a price, Ukraine might shift from the net import to a net export situation again, in which case the sugarbeet price would drop considerably. A plausible scenario for competitive sugarbeet production in Ukraine might therefore be that in a small number of areas that are especially well-suited to sugarbeet production, and in close proximity to a number of very modern and efficient sugar refineries, sugarbeet production would be able to 'hold its own' against other crops.

4 Conclusion

The analysis in the previous sections is highly simplified and based on many assumptions and data from the year 1999. Nevertheless, the resulting calculations are plausible and transparent, so that anyone who is willing to take the time can make whatever modifications are deemed necessary.

Based on our analysis four major conclusions can be drawn:

1. Sugar production in Ukraine can only become competitive if the efficiency of Ukraine's sugar refineries increases significantly.
2. Based on farm gate prices for sugarbeet of roughly 9 UAH/dt, sugarbeet yields of roughly 500 dt/ha would appear to be necessary to make sugarbeet production competitive *vis-à-vis* other crops. While such yields might be reached by especially qualified managers in regions that are very well-suited to sugarbeet production, other crops will be correspondingly more competitive on the same farms.
3. In the medium and long run, Ukrainian farms will be able to reinvest in necessary machinery and produce a number of crops (winter wheat, rapeseed and corn) competitively. Of course, this will also hold for a number of crops (for example legumes) that have not been considered in our calculations.
4. As a result, rental and, if permitted, sale prices of farm land can be expected to increase in the medium to long run.

Hence, with due regard to all the *caveats* associated with the calculations that we have carried out, we are tempted to conclude that sugarbeet production will probably develop into a highly regional activity in Ukraine carried out on a fairly small number specialised farms in the proximity of a handful of very modern sugar factories. While this might appear to be a pessimistic result from the point of view of the Ukrainian sugar industry, it is not so from the point of view of Ukrainian agriculture as a whole. There are many very profitable alternatives to sugarbeet production available to Ukrainian farms, so from an overall economic point of view there is no need to waste valuable resources (scarce land, scarce capital for investment in new machinery and scarce variable inputs such as fuel and plant protection chemicals) on sugarbeet production.

In the short to medium run, it might be possible to make sugarbeet production competitive on Ukrainian farms at the expense of the sugar refineries. If these refineries do not reinvest or account for depreciation but rather continue to operate until they are completely run down, then they might be able to pay farmers enough to make sugarbeet production profitable. Since the capital that is tied up in Ukraine's sugar refineries probably has very few alternative uses, this might even be a sensible strategy from an economic point of view. Since most of Ukraine's sugar refineries are very old and have already been run down considerably in the years since Independence (and before), however, it is clear that this strategy could only be successful for a number of years. Hence, it does not provide the basis for sustainable, profitable sugar production in Ukraine.

Of course, policy makers could use policy tools such as production quotas and import barriers to artificially increase sugar prices in Ukraine and thus make sugarbeet production artificially

competitive. However, this strategy is subject to important limitations. First, as argued elsewhere¹³ it makes little economic sense, even if it might please a small number of rent seeking beneficiaries. It would make Ukraine as a whole poorer, not richer. Second, this strategy is already being pursued by Ukrainian policy makers but it has not proven very successful. According to law, Ukraine has been implementing production quotas for sugar for several years now. It has also been implementing import tariffs, supporting domestic prices for above world levels. But production continues to decline. While agriculture as a whole in Ukraine has been characterised by a sense of optimism in recent months, the outlook in the sugar industry remains gloomy. Is this not confirmation of the fact that sugarbeet production is, for the most part, not competitive *vis-à-vis* a number of other important crops on Ukrainian farms? Is it realistic to expect policy makers to provide *even more* protection than they do at the moment?

Sugarbeet production is not likely to disappear in Ukraine, but unless world market conditions change considerably or the government of Ukraine succeeds in very severely distorting domestic agricultural markets, it is not likely to return to the prominence that it once had. There is no need to mourn this loss of prominence, however, given the many very promising alternatives available to Ukrainian farmers.

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¹³ See VON CRAMON-TAUBADEL, 1999.

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Table 6: Machine costs in the base situation

Machine	Price (DM)	N = Life (years)	n = Opera- tion (hours)	n/N	Depreciation (DM/year)	Capital costs	Fixed costs (DM/year)	Fixed costs (DM/hour)	Fixed costs (UAH/hour)	Variable costs (UAH/hour)
Tractor 75 HP	65,000	12	10,000	833.33	5416.00	8,125.00	13,541.67	16.25	43.06	33.00
Tractor 150 HP	123,000	12	10,000	833.33	10,250.00	15,375.00	25,625.00	30.75	81.49	51.65
Tractor 170 HP	149,000	12	10,000	833.33	12,416.67	18,625.00	31,041.67	37.25	98.71	58.50
Truck	123,000	12	10,000	833.33	10,250.00	1,5375.00	25,625.00	30.75	81.49	67.80
Combine 6m	270,000	10	30,000	300.00	27,000.00	3,3750.00	60,750.00	202.50	536.63	139.95
Soil preparation			(ha)	(ha)				(DM/ha)	(UAH/ha)	(UAH/ha)
5-furrow plough	28,000	14	2,500	178.57	2,000.00	3,500.00	5,500.00	30.80	81.62	39.75
Disk 6m	44,000	14	4,500	321.43	3,142.86	5,500.00	8,642.86	26.89	71.26	18.55
Weeding harrow 18m	9,000	14	3,600	257.14	642.86	1,125.00	1,767.86	6.88	18.22	5.30
Harrow 7m	12,300	14	2,500	178.57	878.57	1,537.50	2,416.07	13.53	35.85	6.63
Cultivator 5m	12,000	10	2,500	250.00	1,200.00	1,500.00	2,700.00	10.80	28.62	10.60
Roller 4.2m	10,000	14	3,000	214.29	714.29	1,250.00	1,964.29	9.17	24.29	1.99
Seeding										
Seed drill 4m	20,000	14	3,000	214.29	1,428.57	2,500.00	3,928.57	18.33	48.58	7.95
Sugarbeet drill 12 row	26,000	8	1,500	187.50	3,250.00	3,250.00	6,500.00	34.67	91.87	26.50
Corn drill	32,000	8	1,500	187.50	4,000.00	4,000.00	8,000.00	42.67	113.07	26.50
Plant protection										
Sprayer 18m	47,000	10	9,000	900.00	4,700.00	5,875.00	10,575.00	11.75	31.14	5.30
Fertiliser broadcaster 18m	6,000	10	7,500	750.00	600.00	750.00	1,350.00	1.80	4.77	1.86
Mechanical Hoe 12rows	18,000	12	3,000	250.00	1,500.00	2,250.00	3,750.00	15.00	39.75	10.60
Harvest										
Sunflower header	5,300	10	1,000	100.00	530.00	662.50	1,192.50	11.93	31.60	15.90
Corn header	84,000	10	12,000	120.00	8,400.00	10,500.00	18,900.00	15.75	41.74	111.73
Sugarbeet harvester stage I	28,000	8	2,000	250.00	3,500.00	3,500.00	7,000.00	28.00	74.20	106.00
Sugarbeet harv. II	47,000	10	2,000	200.00	4,700.00	5,875.00	10,575.00	52.88	140.12	106.00
Sugarbeet pickup	55,000	10	2,000	200.00	5,500.00	6,875.00	12,375.00	61.88	163.97	106.00

Source: KTBL; Own calculations.

Table 11: Fertiliser costs in the medium run scenario

Application	Fertiliser	Nutrient (kg active ingredient)			Amount kg/ha	Price per kg active ingre- dient UAH/kg	Cost UAH/ha
		N	P	K			
Sugarbeet							
1	Nitroammoniumphosphate	54			200	0.89	48.06
			54			0.85	45.9
				54		0.7	37.8
2	Ammonium Celitra	68			200	0.89	60.52
Total fertiliser costs (UAH/ha)							192.28
Winter wheat							
1	Ammonium Celitra (33%)	40			133	0.89	35.6
2	Phosphorus (46%)		30		65	0.85	25.5
Total fertiliser costs (UAH/ha)							61.1
Winter barley							
1	Nitrogen (33%)	100			300	0.89	89
2	Phosphorus (46%)		80		174	0.85	68
Total fertiliser costs (UAH/ha)							157

Source: DUAP (2000); Own calculations.

Table 13: Machine use by crop in the medium run scenario

	Hours/ha	Tractor (horsepower)	Sugarbeet	Winter wheat	Winter barley	Number of applications			
						Summer bar- ley	Sunflower	Corn	Rapeseed
Soil preparation									
5-furrow reversible plough	1.10	170	1	1	1	1	1	1	1
Furrow press 1,7 m	1.10	-	1	1	1	1	1	1	1
Disk 6m	0.25	170	1	2	2	2	1	1	1
Seedbed combination 6m	0.30	150	1				1	1	
Rotary harrow 4m*	0.77 G/ 0.59 R**	150		1	1	1			1
Seeding									
Seed drill 4m*	0.77 G/ 0.59 R**	150		1	1	1			1
Sugarbeet drill 12 row	0.52	75	1						
Corn drill	0.35	75					1	1	
Plant protection									
Sprayer 18m	0.21	75	2	3	2	2	3	2	3
Fertiliser broadcaster 18m	0.11	75	2	2	2	2	1	2	3
Hand hoe	50		2						
Harvest									
Sunflower header							1		
Corn header								1	
Sugarbeet harvester SF	1.70		1						
Combine	0.6			1	1	1	1	1	1

Note * = The rotary harrow and the drill are used in combination. ** G = Grain, R = Rapeseed

Source: KTBL-Taschenbuch 1998/99; Own calculations.

Table 14: Machine costs in the medium run scenario

Machine	Price (DM)	N = Life (years)	n = Operation (hours)	n/N	Depreciation (DM/year)	Capital costs	Fixed costs (DM/year)	Fixed costs (DM/hour)	Fixed costs (UAH/hour)	Variable costs (UAH/hour)
Tractor 75 HP	65,000	12	10,000	833	5,417	4,875	10,292	12.35	32.73	33.00
Tractor 150 HP	123,000	12	10,000	833	10,250	9,225	19,475	23.37	61.93	51.65
Tractor 170 HP	149,000	12	10,000	833	12,416	11,175	23,592	28.31	75.02	58.50
Truck	123,000	12	10,000	833	10,250	9,225	19,475	23.37	61.93	67.80
Combine 6m	270,000	10	3,000	300	27,000	20,250	47,250	157.50	417.38	139.95
Soil preparation			(ha)	(ha)				(DM/ha)	(UAH/ha)	(UAH/ha)
5-furrow plough	28,000	14	2,500	179	2,000	2,100	4,100	22.96	60.84	58.30
Furrow press 1,7m	5,700	14	2,000	143	407	428	835	5.84	15.48	2.92
Disk 6m	4,4000	14	4,500	321	3,143	3,300	6,443	20.04	53.12	18.55
Seedbed combination 6m	17,000	10	3,500	350	1,700	1,275	2,975	8.50	22.53	10.60
Rotary harrow 4m comb.	28,000	8	4,000	500	3,500	2,100	5,600	11.20	29.68	21.20
Seeding										
Seed drill 4m in comb.	20,000	14	3,000	214	1,429	1,500	2,929	13.67	36.22	7.95
Sugarbeet drill 12 row	26,000	8	1,500	188	3,250	1,950	5,200	27.73	73.49	26.50
Corn drill	32,000	8	1,500	188	4,000	2,400	6,400	34.13	90.45	26.50
Plant protection										
Sprayer 18m	47,000	10	9,000	900	4,700	3,525	8,225	9.14	24.22	5.30
Fertiliser broadcaster 18m	6,000	10	7,500	750	600	450	1,050	1.40	3.71	1.86
Harvest										
Sunflower header	5,300	10	1,000	100	530	398	928	9.28	24.58	15.90
Corn header	84,000	10	12,000	1,200	8,400	6,300	14,700	12.25	32.46	111.73
Sugarbeet harvester SF	490,000	8	3,500	4380	61,250	36,750	98,000	224.00	593.60	427.00

Source: KTBL; Own calculations.

Table 21: Number of treatments in the long-term scenario

	Number of Treatments								
	Capacity per hour (h/ha)	Tractor	Sugarbeet	Winter wheat	Winter barley	Summer barley	Sunflower	Corn	Rapeseed
Tillage									
9-furrow reversible plough	0,830	280 PS	1	1	1	1	1	1	1
Furrow press 3m	0,83	-	1	1	1	1	1	1	1
Disk 7m	0,25	180 PS	1	2	2	2	1	1	1
Seedbed combination 10m	0,22	180 PS	1				1	1	
Rotary harrow 6m*	0,44 G/ 0,36 R**	180 PS		1	1	1			1
Seeding									
Seed drill 6m*	0,44 G/ 0,36 R**	110 PS		1	1	1			1
Sugarbeet drill 18 row	0,38	110 PS	1						
Corn drill	0,25	110 PS					1	1	
Plant protection									
Sprayer 24m 3000l	0,12	110 PS	2	3	2	2	3	2	3
Fertiliser broadcaster 24m 6t	0,15	110 PS	2	2	2	2	1	2	3
Hoe	50		2						
Harvest									
Sunflower header							1		
Corn header								1	
Sugarbeet harvester SF	1,70		1						
Combine	0,69			1	1	1	1	1	1

Note: *= The rotary harrow and the grain drill are use in combination, **G = Grain, R = Rapeseed

Source: KTBL-Taschenbuch 1998/99; Own calculations.

Table 22: Machinery cost in the long-term scenario

Machine	Price (DM)	N = Life (years)	n = Operation (hours)	n/N	Depreciation (DM/year)	Capital costs	Fixed costs (DM/year)	Fixed costs (DM/hour)	Fixed costs (UAH/hour)	Variable costs (UAH/hour)
	in DM	in Years	in ha	in h	in DM/Jahr	0,5x0,08%	in DM	in DM	in UAH	in UAH/h
Tractor 110 PS	101,000	12	10,000	833	8,417	4,040	12,457	14,95	39,61	45,02
Tractor 180 PS	174,000	12	10,000	833	14,500	6,960	21,460	25,75	68,24	67,84
Tractor 280 PS	200,000	12	10,000	833	16,667	8,000	24,667	29,60	78,44	90,44
Truck	123,000	12	10,000	833	10,250	4,920	15,170	18,20	48,24	67,80
Combine 7,5 m	330,000	10	3,000	300	33,000	13,200	46,200	154,00	408,10	156,83
Tillage			in ha	in ha				Fixed costs/ha	Fixed costs/ha	UAH/ha
9-furrow reversible plough	80,000	14	4,500	321	5,714	3,200	8,914	27,73	73,49	58,30
Furrow press 3 m	8,200	14	3,000	214	586	328	914	4,26	11,30	2,92
Disk 7m	50,000	14	5,250	375	3,571	2,000	5,571	14,86	39,37	18,55
Seedbed combination 10m	45,000	10	6,000	600	4,500	1,800	6,300	10,50	27,83	10,60
Rotary harrow 6m in comb.	53,000	8	6,000	750	6,625	2,120	8,745	11,66	30,90	21,20
Seeding										
Seed drill 6m in comb.	32,000	14	4,500	321	2,286	1,280	3,566	11,09	29,40	7,95
Sugarbeet drill 18 row	44,000	8	2,250	281	5,500	1,760	7,260	25,81	68,41	26,50
Corn drill 12 row	45,000	8	2,800	350	5,625	1,800	7,425	21,21	56,22	26,50
Plant protection										
Sprayer 3000l 24m	65,000	10	12,000	1,200	6,500	2,600	9,100	7,58	20,10	5,30
Fertiliser broadcaster 24m 6t	70,000	8	50,400	6,300	8,750	2,800	11,550	1,83	4,86	3,98
Harvest										
Sunflower header	5,300	10	1,000	100	530	212	742	7,42	19,66	15,90
Corn header	84,000	10	12,000	1,200	8,400	3,360	11,760	9,80	25,97	111,73
Sugarbeet harvester SF	490,000	8	3,500	438	61,250	19,600	80,850	184,80	489,72	427,00

Source: KTBL-Taschenbuch 1998/99; Own calculations.

16 Developing Sustainable Agricultural Extension Services: Conceptual Issues and Policy Implications for Ukraine

ALEXANDER KOBZEV & OLENA BORODINA

1 Introduction

Sustainable economic growth and development depend primarily on the effectiveness of decision making by economic agents engaged in production and consumption. In agriculture, the number of relatively independent economic agents is high and many important decisions are made at the farm level. The outcome of these decisions depends on how knowledgeable and resourceful decision-makers are, and how complete and reliable the information upon which they base their decisions is. Under these conditions, so-called agricultural extension services can play a vital role.¹

Agricultural extension can be defined as knowledge-transfer which promotes the development of agriculture by maintaining and increasing its profitability in the face of changing socio-economic conditions. The main mission of agricultural extension services is to promote a more effective application of human, economic, and environmental resources in agriculture. Agricultural extension acts as a link and facilitator in the relations between agricultural producers, processors, research and educational organisations, agricultural market institutions, and the government.

In this chapter we consider the role and evolution of modern agricultural extension with special reference to the present situation in Ukraine. Following section 2 on the role and evolution of agricultural extension and the state of agricultural extension in Ukraine, we then analyse the nature of the services provided by extension in section 3. To this end, we discuss the differences between public and private goods and the issue of externalities in agricultural extension. This sets the stage for a discussion of the role and place of government in providing and promoting agricultural extension services and of the different organisational forms of extension institutions in section 4.

We close with conclusions and policy recommendations for the development of agricultural extension institutions in Ukraine.

2 Setting the stage

2.1 The role and evolution of agricultural extension

What contribution can agricultural extension make to agricultural production? One of the approaches in assessing agricultural extension's impact is to measure the relationship between extension activity and changes in farmer awareness, knowledge, and farm productivity, efficiency, and profitability (WEBER, 1987). In a number of studies, the economic impact of agricultural extension is measured in this manner.

As found in a number of surveys conducted across different states in the US, on average nearly half (48%) of the clients seeking assistance from extension services on crop management indicated they made a tangible change in their operation as a result of the advice they received. In the area of livestock production, 47% of the respondents reported that provided services brought positive financial results. The economic value of this advice varies across farms of different types and across states. On average, respondents indicated that extension information and advice saved

¹ In English, the term 'extension' is traditionally used in the context of agriculture to describe what in other languages is referred to as 'consulting' or 'advisory services'. This use of the term extension, which is somewhat puzzling to non-agriculturalists, conveys a sense of 'outreach' from the primarily public institutions that traditionally used to provide the services in question (colleges, universities and research stations) to farmers.

them roughly 27 US\$ per hectare in crop production, around 10 US\$ per head for cattle, and 1.01 US\$ per head in swine production (CONGLOSE, 2000).

The spectrum and nature of the services provided by agricultural extension offices have been constantly changing from the moment these services were introduced. Initially agricultural extension dealt primarily with a number of practical but rather constrained issues in the areas of crop and live-stock production – mostly biological and veterinarian aspects. Assistance in improving farm organisation, home economics, and accountancy were also among the services provided by the first agricultural advisory agencies (AGBAMU, 2000).

As agricultural technologies and research progressed, a set of new extension services emerged in the areas of mechanisation in agriculture, the application of advanced techniques for plant protection, fertilisation, and others. In recent years, the need for adjustment to changing market conditions and environmental constraints has forced agricultural extension to re-orient its activities. The professional analysis of agricultural commodity markets, environmental limitations and the issue of the multifunctional development of rural communities have entered the agenda of many agricultural extension providers.

Therefore, agricultural extension agencies do not provide a homogeneous product. This makes it necessary to speak about different types of advisory services. Some services have the character of public goods that produce significant social spill-overs. At the same time, many advisory products represent private goods, the provision of which exclusively benefits final consumers. Clearly, the role and institutional arrangements of extension agencies will differ depending on the nature of the products they provide. This will be discussed in greater detail in section 3 below.

2.2 The international experience in establishing agricultural advisory services

There are many different models of agricultural extension service around the world. Despite differences in their organisational forms and financing, the purpose for the establishment of such services was always rather similar. The primary purpose behind agricultural advisory service in the countries of Western Europe and North America were as follows:

- To increase agricultural production;
- To stabilise the income of the agricultural population and help adjust it to incomes in the rest of society; and
- To help solve social issues in rural areas.

In many cases, agricultural extension programs were originally viewed as socially important activities and their provision was mostly free of charge for farmers. The main part of the financing of this agricultural extension was assumed by the state. In the majority of countries, extension was often a public institution closely connected with the national system of agricultural education. Starting in the mid-1950s, the role of government in the provision of agricultural extension and the share of state funding began to decrease in many countries. At the same time, private consulting agencies were becoming the main provider of agricultural extension. This was especially the case in many countries of Western Europe, where government involvement in agricultural extension is increasingly constrained to social and environmental programs (BLUM, 1996).

In recent years, agricultural extension in the majority of developed countries has been in transition from downstream extension, where the government takes a lead in all programs and activities, to upstream extension, where farmers determine extension programs with little or no intervention from the government. Now in many cases extension service takes the form of individual consultations (FEDER *ET AL.*, 2000). The adjustment of extension services to changing conditions and needs occurred in two areas: in the scope and in the nature of agricultural extension as well as in its organisational and institutional forms. Despite differences in the nature and the scope of agricultural ex-

tension in specific countries, a general trend lies in the broadening of extension services into new areas, and the shifting of priorities within agriculture.

The two well-known models of agricultural extension are the university-based co-operative extension system and the system of diversified agricultural extension in Germany. In the US, the mission and tasks of extension services lie primarily in providing education training and technical assistance in four main areas: crop and livestock production, farm and consumer economics, youth programs, and community development. The service is based on applied research developed within the university system and disseminated through multiple local county offices. The funding and administration of advisory service is realised in partnerships between the national and subnational governments. The share of the federal government amounts to 20%, about 45% is provided by states, and 25% by counties. Non-public sources, primarily donations, constitute the remaining share. During the 1980s and 1990s the burden of funding was gradually shifted from the federal government to the states. The federal government remains responsible for the delivery of socially oriented programs such as rural nutrition and rural poverty reduction, water quality, pest management, environmental programs, agricultural telecommunication, and some youth related programs (BAHN, 1996). Traditionally, the principle role in providing advisory services in the US belongs to a co-operative extension agent. County extension agents provide assistance ranging from educational training to farmers to youth development opportunities. The past decades have brought major changes to the extension system in the US. Many states have re-organised the structure of their extension service, reduced staff, and introduced interdisciplinary teams and partnerships to implement programs.

Other forms of agricultural extension in the US are provided by so-called 'semi-private' and private commercial services. Semi-private extension services are provided by professional organisations such as farmer associations and co-operatives. Commercial extension is usually provided through private consultants or entrepreneurs and tends to be commodity oriented and ensures a high degree of interaction between the provider and client of a specialised assistance (MURE, 2000).

Compared to the American extension model, the organisation of agricultural extension in Germany represents a combination of different organisational forms. The advisory service network includes public institutions, local Chambers of Agriculture, and private extension agencies. Agricultural consultancy and education programs are also provided by farmer unions, free-lance extension agents, and special extension service co-operatives (RUDERT, 2000).

Germany is made up of sixteen states (Länder) that are responsible for providing agricultural extension. In the north and northwest of Germany, public extension is the responsibility of the Chambers of Agriculture. In the south, this service is provided by the state ministry responsible for agriculture, often the State Agricultural Office. In the northeast, various types of privately organised extension systems co-exist (OFENHITZER, 1996).

Chambers of Agriculture are regional organisations representing the interests of all local farmers, governed by elected farmer representatives and run by hired managers. The government pays the Chamber to carry out such functions as applied research, training programs, administration and monitoring of the agricultural sector. User fees are usually charged to farmers for the provision of special individualised services such as soil sampling, soil analysis and assistance in farm planning (HOFFMANN *ET AL.*, 2000).

In the majority of the Eastern Länder (the so-called 'new' Länder of former GDR), extension services are offered either by private individuals or companies. Note that a chamber system was not established in any of the new Länder! Such private providers must be officially registered with the local government: In this way the government regulates the market for extension services. Furthermore, local governments often subsidise the cost of some extension services, in some cases up to 80%. Some states set an annual ceiling on the amount of services that can be subsidised by the stated budget. One such annual ceiling is equivalent to 1,250 US\$ for family farms and 3,125 US\$ for

company farms. About 50% of all agricultural producers take advantage of the available subsidies. In this way, the government attempts to incorporate an element of client-driven demand into extension provision (HOFFMANN *ET AL.*, 2000).

2.3 Agricultural extension in Ukraine: Historic overview and the present situation

One of the primary goals of agricultural reforms in transition economies is to increase the economic efficiency of agricultural producers. In Ukraine, this goal has not been achieved so far. In Soviet times, Ukraine had a so-called 'system of extension of agricultural knowledge and informational support'. The structure and ideology of this system corresponded to the requirements of the Soviet administrative system as a whole. Hence, it had a number of specificities that corresponded to the goals and task of the centrally-planned economy. First, the extension of agricultural knowledge and information was realised exclusively by state structures and was focused on large collective agricultural enterprises. Second, the system was dominated by the communist ideology and unified approaches in dealing with regional and local specifics. The provision of services was not demand-driven to meet farmers' real needs. And third, the state often used its strict control over the system to manipulate rather than aid agricultural producers.

Thus, for decades in the Soviet planned economy, farmers relied exclusively on the government as the main decision-maker. Now the state is no longer in a position to decide on everything and for everybody. At the same time, the private initiative and entrepreneurial skills required to capitalise on the advantages of the market economy are scarce in Ukrainian agriculture. This situation has been compounded by the accelerated reorganisation of collective agricultural enterprises that began in late 1999.² A large number of new participants have entered the process of agricultural production. Many of these participants have never run their own agricultural businesses and their knowledge of modern, effective agricultural management is often rudimentary.

Despite the fact that Ukraine's agricultural sector has undergone some significant changes in the last decade, agricultural market infrastructure remains underdeveloped. The character of agricultural research, education and extension in Ukraine does not correspond to the current needs of the agricultural sector. Chronic underfunding of research, the dominance of fundamental over applied research, inadequate ties between research centres, educational institutions and agricultural producers, and weak co-operation among these institutions in transferring agricultural know-how and expertise; these are some of the most evident specifics of the present situation.

Agricultural extension as a network of institutions that could provide educational and consulting services for farmers is practically absent in Ukraine. A number of promising international pilot projects in a few regions of the country and some extension-type commercial services have been established in Ukraine (see box). But their number remains very small – presently there are at most a dozen such projects in the country – compared with the spectrum of emerging needs. In addition, the overwhelming majority of projects are funded by international donor organisations. That makes the sustainability of these projects uncertain. As regards the existing commercial agricultural consulting agencies, their services remain rather fragmented. They provide mostly market commodity price and input information and cater primarily to traders' and agricultural market operators' needs. Input providers and agrobusinesses provide some commercial consulting services, but their services often are rather narrow and deal with particular commodities or brands. Hence, many other agricultural producers' needs remain unmet.

Box: The experience of the Donetsk AgroConsult Extension Service Project

The Project was started in January 1999 and is financed by the British Government which provides four years of funding. By the end of the fourth year, 75% of the incurred costs should be covered by the Project's own revenue.

² See Chapter 13 on *Evolution of Farm Structures in Ukraine*.

The Project has a central office and a network of regional offices. The Project's target clientele includes restructured agricultural enterprises of various forms. The main product of the Donetsk AgroConsult is agricultural advisory services, which are to raise the profitability of local agricultural production and diversify activities in rural areas and in this way to address the issue of rural unemployment. All the provided services can be broken down into two main categories – socially useful services and commercial services. The former are the services that do not directly affect the profitability of agricultural production, but promote the efficient operation of the rural economy. These services are:

- Assistance in restructuring collective agricultural enterprises into new private structures;
- Legal assistance to farmers in obtaining land share certificates and shares of collective property as well as representation of farmer's interests in courts of arbitration;
- Development of programs to address diversification of local labour markets and promote self-employment; and Commercial services include those services which provide farmers with additional profits. Such services include:
 - Developing business plans and providing assistance in obtaining external financing;
 - Providing marketing information and assistance in finding alternative sources of agricultural inputs;
 - Introducing accounting and tax bookkeeping and helping in relations with the tax authorities; and
 - Developing balanced rations to feed animals.

As the international funding is scaled down, Donetsk AgroConsult intends to charge farmers the full cost of commercial services. In return for membership fees, Project members will be delivered a set of the most needed extension services for a given period. This is expected to save both the time of extension specialists and reduce farmers' expenditure for ex-tension. Currently the Project is attempting to diversify its sources of financing and exploring different cost recovery mechanisms (see also BORODINA, 2001).

3 The efficient provision of agricultural extension services

Extension services can be provided by a variety of public and private structures. Different types of organisational structure will be able to provide the different services that compose extension with differing degrees of efficiency. A major distinction between two broad groups of extension services is the distinction between public and private goods. This distinction and its importance for the organisation and financing of extension services are the topic of this section.

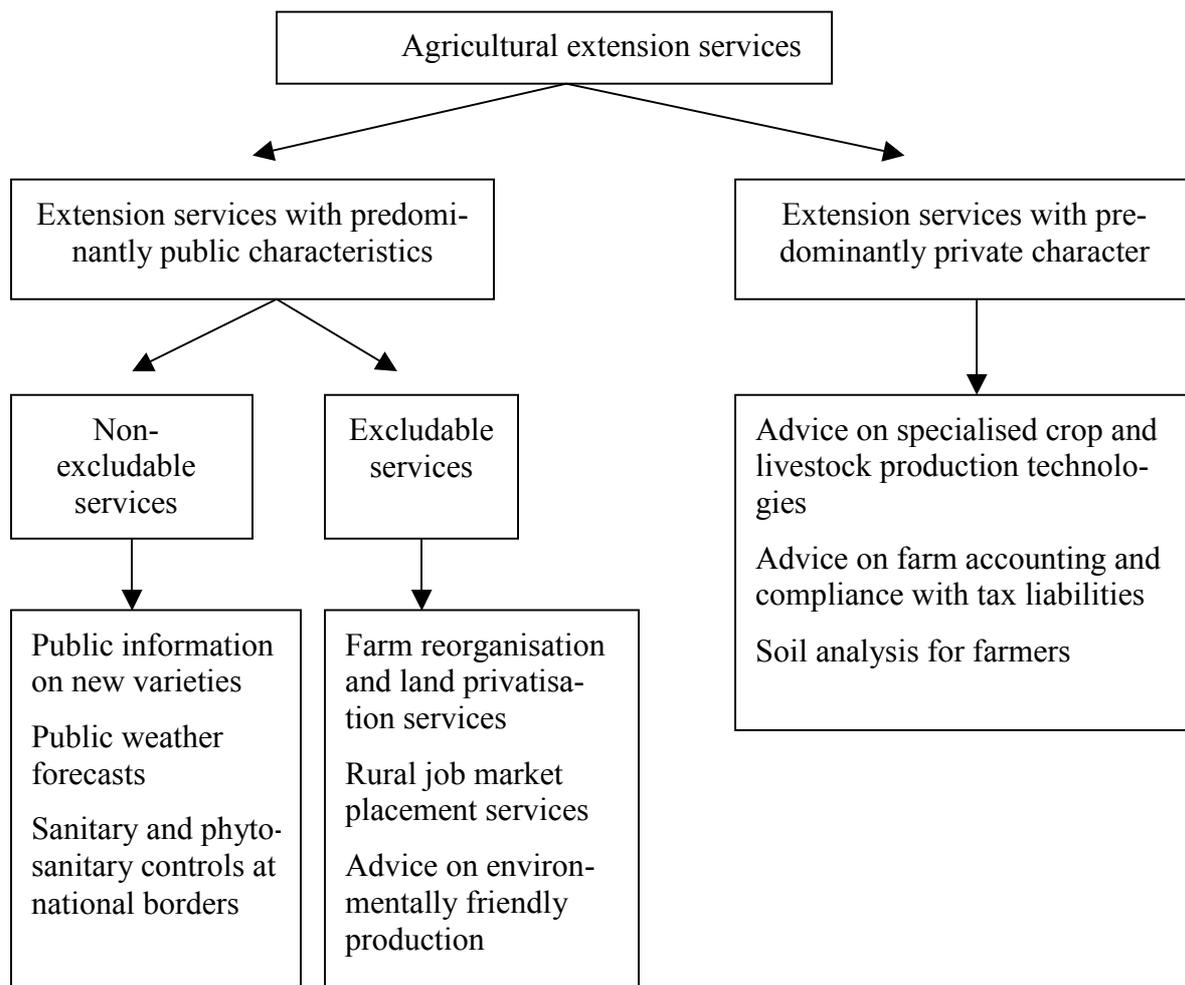
3.1 Private and public goods in agricultural extension

An important problem inherent in agricultural extension is that some extension products have features of public goods. Public goods provide benefits that cannot be withheld from those who do not pay. This characteristic is called non-excludability in economics. As a rule, public goods are also non-rival in consumption: A given quantity of such a good can be consumed by more than one consumer without decreasing their benefits (HYMAN, 1996). Consider, for example, detailed regional weather forecasts that permit farmers to improve the timing of critical operations such as seeding or spraying crops. If such forecasts are broadcast on radio and television they are largely non-excludable, their benefits cannot be withheld from anyone who owns a radio or a television, regardless of whether he or she pays for the forecast. Such forecasts are also non-rival; the fact that one farmer makes use of a weather forecast does not diminish the utility of this forecast for other farmers.

As an example of a private extension service, on the other hand, consider a detailed soil analysis that can be used to make decisions on fertilisation. As a rule, such an analysis is excludable; if a farmer does not pay he or she will not receive the results of the soil analysis. It is also rival to the extent that such analyses are highly location-specific and of little use to other farmers.

Many extension services are likely to lie somewhere on a continuum between pure public and pure private goods. Public good services are sometimes called 'policy-driven services' (BEYNON *ET AL.*, 1998). An important category of intermediate goods and services are those that have the public characteristic of non-rivalry, but are nonetheless at least partially excludable. Such goods and services bring benefits not only to a narrow circle of paying consumers, but also to society as a whole (economists often speak in this connection of goods or services that generate positive externalities). Examples of such extension services are educational programs on environmentally friendly production, assistance in restructuring agricultural enterprises, rural community development programs, and others. Figure 1 presents this classification of extension services according to degree of publicness along with several examples.

Figure 1: Private and public good character of certain extension services



Note that the distinction between excludable and non-excludable public goods is sometimes somewhat arbitrary. For example, information on new varieties can be packaged in a way that is excludable (for example exclusively to paying subscribers) or that is non-excludable (for example as part of a regular radio broadcast or at public agricultural shows).

Goods and services with public characteristics cause problems for resource allocation in a market system. If these goods and services are non-excludable, then market participants have an incentive to 'free-ride', i.e. to consume the good in question without paying for it. As a result, no private entrepreneur can be expected to produce such goods and services. Even if they are (partly) excludable, the market mechanism without state intervention will tend to produce a sub-optimal amount of the goods and services in question, as buyers and sellers fail to take account of the associ-

ated positive externalities. Hence, the presence of goods and services with public characteristics can justify state intervention. In the case of extension services, state provision (or private provision coupled with state subsidies) can, in theory, be superior to pure market provision.

The caveat 'in theory' is, however, important. First, not all aspects of agricultural extension are public. A service that is of value only to a certain farmer (e.g. a soil analysis) is a private good. Such services are perfectly excludable and rival in consumption. Second, even if an extension service has public characteristics, it is not automatically guaranteed that state provision or subsidies will lead to a situation that is superior to pure market provision. State provision is costly (information, personnel and resources) so that the costs of 'correcting' the sub-optimal market outcome may exceed the resulting benefits. The theoretical justification for state intervention in the presence of extension services with public characteristics is general and conditional; the onus is on the state to prove in each specific case that intervention will lead to a net improvement.

3.2 The financing and the provision of agricultural extension services

Once it has been determined that an extension service has public good characteristics and, therefore, will not be optimally provided by the market mechanism, the question arises as to what form of state intervention is most appropriate. Most generally, the state can respond in two ways. First, the state in the form of some public institution such as a ministry, agency, or state enterprise, can provide the extension service in question itself. Second, the state can provide subsidies to a private producer of the extension service in question or to its consumers, thus influencing the market outcome in such a way that more of this service is produced and consumed than would otherwise be the case. What the second of these two options makes clear is that state intervention in agricultural extension must by no means always take the form of direct state provision of extension services. This point is often missed in transition economies, where policy makers often jump to the conclusion that the need for extension automatically implies the creation of a large state bureaucracy to create and disseminate extension services. In fact, direct state provision is often likely to be one of the least efficient means of providing extension services. For example, rather than the state hiring instructors to provide farmers with training on the use of environmentally friendly farming practices, it might be much less expensive to allow farmers to deduct the costs of taking such courses from private instructors from their income tax. Whether or not this is so will vary from case to case depending on the characteristics of the extension service in question. But note that it was the system chosen for Germany's new Länder, where farm structures are quite similar to Ukraine.

In general, public funding of agricultural extension raises a number of issues:

- **Accountability:** The spending of extension funding should be accountable to both the beneficiary and the provider and scrutinised by a third party such as a supervisory board;
- **Transparency:** Information about the appropriated funds should be freely available and published in detail;
- **Measurability:** Public intervention in agricultural extension should produce results that can be measured. These results should be clearly defined *ex ante*; and
- **Service provision:** The distance between the provider and the recipient of extension should be short and state funds should move through no more departments and organisations than necessary, to reduce waste and the scope for embezzlement.

A mixed funding approach to extension based on cost sharing between the government and private institutions is increasingly applied. These private institutions can be farmer professional association or agricultural businesses, which apply user-fees and direct charges for their customers. The share of the government subsidy can cover public and/or collective services, such as applied research or training of farmers and extension agents. At the same time, costs of the services that have a private good character are recovered by the private provider.

The experience of many countries shows that agricultural extension has evolved from being fully financed by the state to various commercial forms with a growing participation of agricultural producers in cost sharing. Indeed, the history of agricultural extension in North America and Western Europe shows that government usually takes a lead at the initial stages of the development of agricultural advisory institutions. Over the time, however, its role and involvement scaled down whereas market mechanisms were gaining more importance (AGBAMU, 2000). Today, in the majority of developed countries, government performs functions of regulation and oversight on the market for agricultural extension services rather than being directly involved in their provision (BLUM, 1996). The most important government functions are:

- Licensing the main providers of agricultural services to ensure the provision of high quality services nation-wide;
- Providing professional training for extension agents so that extension agents have the needed knowledge and skills; and,
- Providing government support for those services that bring clear social benefits or those that have high priorities on the national agenda.

This trend towards reduced direct government involvement in the provision of extension services has important implications for the current situation in Ukraine. If private provision, sometimes combined with government assistance is proving superior to government provision then perhaps Ukraine would be well advised to begin with a predominantly private system from the outset, rather than establishing a system of government provision that could quickly prove to be inefficient and obsolete. More generally, one advantage of economic transformation – besides the many costs and burdens it implies – is that it provides countries such as Ukraine with the opportunity to learn from experience that has been gathered elsewhere, and perhaps avoid mistakes or at least leap-frog over stages of development that may have appeared unavoidable in the past but have been rendered unnecessary in the light of experience and changing technological and socio-economic circumstances. In the area of agricultural extension, for example, improved infrastructure in the form of telephones, fax and increasingly the internet are completely changing the modes, speed and cost of providing farmers with information.

What are some of the disadvantages of government provision or a heavy dependence on government funding for agricultural extension? First, strong dependency on government funding can threaten the impartiality of the services provided. Under same conditions, agricultural extension can be used as an instrument for the enforcement of government policies. When the government acts as the main agenda-setter, resource allocation is largely guided by political concerns rather than by market-driven demand. Furthermore, in the 'top-down', supply-driven public sector environment, the extension agent may feel more accountable to his ministry supervisors than to his customers, the farmers. These dangers are especially present in the current Ukrainian context in which both policy-makers and farmers have been conditioned by decades of central planning. In this context, the very important distinction between providing extension advice on the one hand and 'binding recommendations' on the other, may be lost on many. A government monopoly on extension services would be exceedingly dangerous in the context. Competition from private providers would help to ensure that government services do not become dirigistic and heavy-handed.

Centralised, national and government funded extension services can also tend to prescribe centralised and national solutions. In a country as varied as Ukraine, agricultural extension must be very differentiated at the regional level. State-run extension services also often fail to take sufficient advantage of the huge laboratory represented by the existing network of commercial farms in a country. The knowledge and advice that is passed on to farmers by private consultants has its origins mainly in the experience of actual farms, in other words in the successes and failures of their customers and not in textbooks or experimental farms. This point will be of special relevance in Ukraine. Over the last ten years, farms in Ukraine have had to experiment and improvise a great

deal. Ukrainian agriculture has been exposed to a wide palette of new technologies and management techniques. It is highly unlikely that state-trained extension specialists will have much knowledge of or experience with these new technologies and techniques. However, some farms will have gathered considerable experience with their implementation in recent years. Tapping this reservoir of experience represents an important challenge to any future Ukrainian extension service. In essence, the flow of information from farmers to extension specialists will, at least initially, be at least as important as the flow from specialists to farms.

A constant pressure to reduce budget deficits and the resulting program underfunding can negatively affect staff recruitment and retention and the quality of the provided services. Channeling resources to public advisory also restricts the ability of policy makers to allocate revenues to other agricultural programs that may yield higher social rates of return. Since budget discipline is of paramount importance in Ukraine today, the state is not in a position to provide generous funding to develop agricultural extension services. Of course, through its network of oblast and rayon offices, the agricultural ministry does have access to a very extensive network of personnel. It is understandable that some policy makers believe that this network could form the basis of a new extension service in Ukraine. Since the employees in question are on the state pay-roll anyhow, this would also represent a relatively low cost option. However, several words of warning are in order. The personnel in question is probably, on average, fairly advanced in age and received its training under the completely different non-market conditions that prevailed prior to Independence. Without very extensive and expensive retraining, it is doubtful that this personnel would be able to provide the sort of up-to-date advice in the areas of production technology, and most importantly, economic farm management principles, that Ukrainian farmers need to become internationally competitive. Furthermore, as mentioned above, many members of this personnel may have a difficult time suppressing the urge to dictate plans as a pose to providing advice.

Experience from a German funded extension project in the Russian oblasts Vladimir and Voronezh may be instructive in this regard.³ In these two oblasts, donor funding has helped to establish private consulting firms that provide advice to farmers in return for commercial fees. After three years of work in Vladimir the donor contribution has been reduced, and roughly fifteen former collective agricultural enterprises are paying approximately 3,000 rouble per month for the extension advice they receive. In interviews, the managers of several farms involved in this project stated very clearly that they would much rather pay 3,000 rouble per month for the extension provided by the young and western trained commercial consultants than receive advice for free from the government agricultural representatives at the rayon and oblast level. The latter, it was stated, still tended to act not as providers of advice but rather as agents of the rayon and oblast authorities who's primary interest was in ensuring that the farm continue to deliver to the local rayon processing enterprises (for example dairies) rather than better paying competitors in neighbouring rayons or oblasts. Furthermore, the older government employees of the rayon and oblast agricultural offices were not in a position to provide advice for example on modern gross margin based book-keeping methods in agriculture, which are required to make decisions on the relative profitability of the different operations that take place on large former collective farms (different grain and oilseed crops, forged production milk and meat).

In many countries and certainly in Ukraine, many agricultural production units are large and potentially profitable enough to be able to pay for the service provided by private extension agencies (BLOOME, 1993, HEALY, 1997). Private extension is more clientele-driven, deriving its agenda directly from the demands of the people it serves. Through payments users exercise direct influence on the system and can clearly judge about the value of the advice provided, switching to alternate suppliers if one proves to be less effective. Private extension also tends to be quicker in responding to

³ See VON CRAMON-TAUBADEL (2000).

new opportunities and challenges, and is less subject to the political intrigues and lobbying which can handicap government services.

At the same, an exclusive reliance on private extension services can be counterproductive. Private extension services tend to focus primarily on larger-scale, more commercially-oriented producers who are able to pay for advice and to whom advice can be provided in larger ‘bundles’, thus reducing the fixed costs of provision (i.e. the number of farm visits, the number of relationships that have to be maintained, etc.). As a result, small-scale producers may tend to be overlooked by private extension providers. In the Ukrainian context, this means that the many small private farms could receive less extension than is warranted by economic and social considerations. A possible solution to this problem would be for the state to provide subsidies to such farms to cover the costs of extension; for example in the form of vouchers that could be redeemed with private extension providers or by making extension expenses tax deductible. An open question is also the extent to which private institutions are willing to address environmental and social issues – important preconditions for sustainable rural development.

Beside public and private extension providers other forms of agricultural extension have emerged in several countries. For example, agricultural extension is also provided by farmer organisations, agrobusiness firms, marketing boards, local research and development corporations, cooperative research centres, and university departments. In recent years, especially agrobusiness firms have been playing an increasing role in the provision of extension services. These firms, for example, agrochemical suppliers, often employ specialists or have special consulting divisions on providing advice to individual producers, often linked to merchandise sales. This extension approach is rather specialised and relatively cost-effective: Through levies on product sales or by factoring cost-recovery into product or input prices, fiscal sustainability is achieved. On the other hand, commodity-specific extension tends to deal with a limited number of agricultural commodities and, being tied to the commercial interests of the agrobusiness firm in question, may not be entirely objective.

4 Conclusions

There is little question that farmers in Ukraine are in great need of extension services. They are confronted by new tax systems, new land relationships and the need to modernise their production considerably. A simple example of the latter is provided by seeding densities in Ukrainian grain production. Western experts continue to be perplexed by the very high seeding densities that are employed by Ukrainian farm managers, densities that inflate costs and depress yields. Extension services that carry out field trials in different regions of Ukraine either on experimental farms or on commercial farms could provide farmers with evidence on the costs and benefits of current seeding practices. The potential cost savings could be very significant.

As they consider options for the development of agricultural extension in Ukraine, policy-makers can take the following observations and recommendations into account:

- Some extension services have public good characteristics and will tend to be underprovided by the market. In such cases, government intervention can be justified.
- Many other extension services are either private or very close to being private goods. There is very extensive evidence that public institutions tend to be relatively inefficient and inflexible in the provision of such goods.
- Even if government interference on the market for extension services is justified, direct government provision is not necessarily the most efficient course of action. It will often be far more efficient to either subsidise private firms to provide these services or to provide subsidies to farmers who purchase these services from private firms.
- These points are confirmed by experience in the countries of Western Europe and North America, where extension services that used to be predominantly publicly organised and

funded are increasingly being transferred into the private domain. This transfer is being driven by the changing needs of increasingly larger commercial farms and changing technologies (for example the internet) that can dramatically reduce the costs of communication and information transfer, thus eliminating the argument that without government provision too many farms will not have sufficient access to extension services.

- Ukraine should avoid the trap of simply duplicating extension structures that it observes in other countries. These structures were largely established many decades ago when the needs of agriculture and the available technologies were radically different from today. Indeed, throughout the industrialised world these structures are currently undergoing major changes. Ukraine should aim to create the sorts of structures that are emerging in other countries today instead of duplicating the remains of structures that were created in the 1950s or earlier elsewhere.
- An extension system in Ukraine based on the structure and personnel of the ministry of agriculture's local oblast and rayon offices would have the advantage of making use of resources that are currently available. But it would have the very serious disadvantage that the structure as well as the training and experience of most of the personnel in question is heavily conditioned by the central-planning that prevailed prior to Independence. Agricultural extension is too important for to be mis-used as a new excuse to provide employment and justification for out-dated structures. Where appropriate private extension providers have been established, farm managers in the former Soviet Union have demonstrated that they would much rather pay for such services than receive services from the old government structures for free.
- Extension is not simply a flow of information from specialists to farms. Especially in the Ukrainian context where most government specialists expertise is out of date, and some farms had been quite successful in restructuring, modernising and adopting new technologies, farmers will have a great deal more to tell the so-called specialists than *vice versa*. The most valuable advice that could be provided to Ukrainian farms is not in the heads of specialists or in textbooks but rather is waiting to be tapped in the experience of farms that have had to find their own way through the turbulent last ten years.
- The backbone of any extension service is people. The providers of extension services must be willing and able to engage in an almost continuous process of retraining so that they are able to provide farmers with the most up-to-date information. Instead of a dogmatic attitude (for example, dairy cows must be milked three times per day) extension providers must be open to change and willing to question received wisdom (i.e., may be it makes sense to milk only two times a day). One of the most important contributions that the government of Ukraine could make to the development of agricultural extension would be to invest in the education of young, flexible potential extension providers. This investment can take the form of spending on Ukraine's agricultural universities and research stations, which has been very neglected in recent years, as well as scholarships for young Ukrainians to study and learn about agriculture abroad and subsidies for farms and agrobusiness firms that invest in the training of their employees. Ukraine would probably find that donors would be willing to provide significant support in the area of scholarships and assistance to Ukrainian agricultural universities and colleges.

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Appendix 1: Statistical Data

Table 1: Agricultural production in Ukraine (mill. t)

	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Crop products												
Grains and pulses, of which:	37.9	51.0	38.7	38.5	45.6	35.5	33.9	24.6	35.5	26.5	24.6	24.4
Wheat	18.1	30.4	21.2	19.5	21.8	13.9	16.3	13.5	18.4	14.9	13.6	10.2
Corn	6.5	4.7	4.7	2.9	3.8	1.6	3.4	1.8	5.3	2.3	1.7	3.8
Barley	7.7	9.2	8.1	10.1	13.6	14.5	9.6	5.7	7.4	5.9	6.4	6.9
Sugarbeet	39.0	44.3	36.2	28.8	33.7	28.1	29.7	23.0	17.7	15.5	14.1	13.2
Sunflower	2.3	2.6	2.3	2.1	2.1	1.6	2.9	2.1	2.3	2.3	2.8	3.5
Potatoes	20.0	16.7	15.6	20.3	21.0	16.1	14.7	18.4	16.7	15.3	12.7	20.2
Vegetables	7.4	6.7	5.9	5.3	6.1	5.1	5.9	5.0	5.2	5.5	5.3	5.7
Fruits and berries	na	2.9	1.5	2.1	2.8	1.2	1.9	1.9	2.8	1.1	0.8	2.0
Animal products												
Meat, of which:	3.7	4.4	4.0	3.4	2.8	2.7	2.3	2.1	1.9	1.7	1.7	1.7
Beef and veal	1.6	2.0	1.9	na	na	na	1.2	1.1	0.9	0.8	0.8	na
Pork	1.4	1.6	1.4	na	na	na	0.8	0.8	0.7	0.7	0.7	na
Poultry	0.6	0.7	0.7	na	na	na	0.2	0.2	0.2	0.2	0.2	na
Milk	23.0	24.5	22.4	19.1	18.4	18.1	17.3	15.8	13.8	13.7	13.4	13.4
Eggs (bln)	16.6	16.3	15.2	13.5	11.8	10.2	9.4	8.8	8.2	8.3	8.7	8.7

Table 2: The structure of the agricultural sector in Ukraine

	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Number of farms, (1,000)										
Public sector farms*,	13,004	13,345	14,010	14,293	15,081	15,462	15,609	15,739	15,984	16,012	16,010
of which:											
Collective farms	7,363	8,820	9,351	9,575	9,722	9,977	10,356	11,299	12,019	12,401	12,426
State farms	2,237	4,525	4,659	4,718	5,359	5,485	5,253	4,440	3,965	3,525	3,500
Household plots	3,400	9,200	9,763	10,679	10,861	11,057	11,249	11,433	11,547	11,560	11,555
Private farms	na	332	2,687	17,474	30,344	34,692	37,133	38,988	39,880	35,485	36,123
	Crop land (1,000 ha)										
Public sector farms,	38,900	38,701	36,235	33,642	34,795	34,684	34,362	34,110	33,827	33,900	32,901
of which:											
Collective farms	29,300	28,774	26,922	25,069	26,046	26,323	27,246	29,726	31,126	31,250	30,900
State farms	9,600	9,927	9,313	8,574	8,749	8,361	7,116	4,384	2,701	2,302	2,001
Household plots	3,400	2,669	3,864	4,607	5,011	5,357	5,589	5,694	5,789	5,890	6,204
Private farms	na	4	49	350	619	742	822	906	1,037	1,029	1,205
	Number of cattle at year end (1,000)										
Public sector farms,	22,200	21,083	20,186	17,800	17,717	15,742	13,674	11,545	8,950	7,825	6,681
of which:											
Collective farms	17,200	16,211	15,583	14,518	13,701	12,387	11,260	10,364	7,968	7,025	na
State farms	5,000	4,872	4,602	4,282	4,016	3,355	2,415	1,181	982	800	na
Household plots	4,900	3,540	3,537	3,643	3,869	3,856	3,856	3,742	3,764	3,843	3,921
Private farms	na	0.2	5	14	22	27	27	25	28	28	24

Table 2 (continued): The structure of the agricultural sector in Ukraine

	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Number of dairy cows at year end (1,000)										
Public sector farms*,	6,500	6,192	5,986	5,623	5,439	5,005	4,579	4,039	3,322	2,883	2,465
of which:											
Collective farms	4,900	4,686	4,548	4,278	4,150	3,895	3,752	3,640	2,965	2,583	na
State farms	1,600	1,506	1,438	1,345	1,289	1,109	826	400	357	300	na
Household plots	2,250	2,187	2,275	2,429	2,628	2,799	2,936	2,917	2,921	2,927	2,955
Private farms	na	0.1	1.4	5.6	10.8	14.9	16.4	16.0	16.7	17.0	11.2
	Number of pigs at year end (1,000)										
Public sector farms,	14,200	14,071	12,557	10,913	9,724	8,044	7,112	5,496	3,979	4,216	4,081
of which:											
Collective farms	10,800	9,708	8,452	7,089	6,370	5,460	5,094	4,464	3,107	3,516	na
State farms	3,400	4,363	4,105	3,824	3,354	2,584	2,019	1,032	872	700	na
Household plots	5,720	5,356	5,276	5,245	5,549	5,864	5,992	5,699	5,456	5,651	5,960
Private farms	na	0.3	6.2	16.9	25.0	37.8	40.3	40.9	37.1	40.2	32.0
	Number of poultry at year end (1,000)										
Public sector farms,	na	133,000	127,900	105,000	84,000	65,000	53,800	34,000	30,000	30,700	27,700
of which:											
Collective farms	na	32,000	26,000	16,000	13,000	13,000	21,000	27,000	23,000	23,000	na
State farms	na	101,000	102,000	89,000	71,000	52,000	33,000	7,000	7,000	7,000	na
Household plots	na	113,100	115,200	110,000	106,000	100,000	95,700	95,100	93,000	98,400	98,200
Private farms	na	na	na	100	200	200	200	300	300	400	200

Note: * The number of public sector farms exceeds the sum of collective and state farms as it also includes the so-called interfarms, which are not listed here.

Table 3: Macroeconomic indicators

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Population (mill.)³	50.1	51.0	51.7	51.8	52.0	51.9	51.5	51.1	50.6	50.2	49.9	49.5	49.4
Rural population (mill.)³	19.1	18.0	16.9	16.8	16.8	16.8	16.6	16.5	16.4	16.3	16.1	16.0	na
Real GDP (1990 Rouble)¹	na	na	na	na	137.4	100.5	60.3	55.9	52.6	52.3	50.6	50.2	56.3
Real GDP growth (%)²	na	na	na	-8.4	-9.7	-14.2	-22.2	-12.2	-10.0	-3.0	-1.9	-0.4	6.0
Growth in gross agricultural output (%)³	na	na	na	-13.2	-14.5	-1.8	-13.7	-4.6	-9.5	-1.9	-9.8	-6.9	7.6
Agriculture's share of GNP (%)²	na	na	25.2	22.7	20.8	21.5	15.0	14.6	13.1	12.1	11.2	11.4	11.0
Employment in agriculture ('mln)³	5.7	4.9	4.9	4.8	4.9	4.9	4.7	5.3	4.9	4.9	5.0	4.9	na
Agriculture's share of total employment (%)³	22.6	21.1	20.5	20.2	20.1	20.4	20.6	22.2	21.4	22.1	22.5	22.6	na

Sources: ¹TACIS - UEPLAC, Ukrainian-European Policy and Legal Advice Centre (2000): Ukrainian Economic Trends, Monthly Update November 2000.

² Data base of Institute for Economic Research and Policy Consulting, Kyiv, Ukraine.

³ State Statistics Committee of Ukraine (2000): Agricultural Yearbook.

Appendix 2: A concise chronology of agricultural policy measures in Ukraine since Independence

Date	Measure	Description
Aug. 24, 1991	Ukraine declares Independence	
Dec. 20, 1991	Law of Ukraine "On Private (Peasant) Farm"	<ul style="list-style-type: none"> Creates conditions for private farming
Jan. 30, 1992	Law of Ukraine "On Forms of Land Ownership"	<ul style="list-style-type: none"> Defines three types of land ownership: State, collective and private
Feb. 14, 1992	Law of Ukraine "On Collective Agricultural Enterprises"	<ul style="list-style-type: none"> Regulates the functioning of collective agr. enterprises (CAE) Basis for transformation of state and collective farms into CAEs
Jan. 11, 1993	CMU (Cabinet of Ministers) Resolution "On Export Duties in 1993"	<ul style="list-style-type: none"> Establishes export duties of between 10 and 30% for most agr. goods Agricultural commodities exported under export quotas or to repay foreign debts under government sovereign guarantees are exempted from export duties Export duties are later cancelled on December 26, 1993
Jan. 12, 1993	CMU Resolution "On Quotation and Licensing of Export of Goods (Work and Services)"	<ul style="list-style-type: none"> Determines a list of goods subject to (non-tradable) export quotas Only government and state companies such as the Ministry of Agriculture or the State Bread Product Company (Derzhkhlibprodukt) have access to export quotas Licenses are required for all exports (with and without quota) Private traders are only granted licences if they have fulfilled delivery commitments to the state and the export price is approved by the licensing authority
Nov. 10, 1994	Presidential Decree "On Urgent Measures to Accelerate Land Reform in Agriculture"	<ul style="list-style-type: none"> Establishes the legal basis for land reform Members of the CAEs receive right to land shares and can leave the CAE with their shares
Jan. 18, 1995	CMU Resolution "On Quotation and Licensing of Exports in 1995"	<ul style="list-style-type: none"> Export quotas and licenses are eliminated by March 1996
May 7, 1996	Law of Ukraine "On Export Duty for Live Animals and Skins"	<ul style="list-style-type: none"> Sets export duties for live animals and skins ranging from 50 to 75%
July 10, 1996	Law of Ukraine "On Specificity of Privatisation in Agroindustrial Complex"	<ul style="list-style-type: none"> Regulates privatisation of food processing and agr. service enterprises according to the following scheme: <ul style="list-style-type: none"> 51% of shares to farms that were customers of the enterprise in question 10% to the enterprise's employees 25% to state ownership for 5 years 14% for sale
Aug. 22, 1996	CMU "On Establishment of State Company 'Klib Ukrainy'"	<ul style="list-style-type: none"> 543 enterprises (primarily grain elevators and storage facilities) transferred to the state holding Klib Ukrainy (Bread of Ukraine)
May 23, 1997	Law of Ukraine "On Stopping Decline of National Agricultural Production and Food Security in 1997-1998"	<ul style="list-style-type: none"> Farm debts to the budget as of April 1, 1997 are rolled over for 5 years without interest rate accumulation Debt penalties as of April 1, 1997 are written off
July 17, 1997	Law of Ukraine "On Agricultural Co-operation"	<ul style="list-style-type: none"> Creates the legal framework for agr. co-operatives
July 17, 1997	Law of Ukraine "On State Regulation of Agricultural Imports"	<ul style="list-style-type: none"> Sets prohibitively high import tariffs and seasonal import duties on many products (e.g. sugar and oilseeds) Establishes import quotas for live animals and meat products of not more than 10 % of domestic consumption
Nov. 5, 1997	CMU "On Accelerating Privati-	<ul style="list-style-type: none"> Provides for the privatisation of 435 grain marketing enter-

	sation of Grain Purchasing and Procurement Enterprises”	prises (101 enterprises to remain the property of Khliv Ukrainy)
Sept. 18, 1997	CMU Resolution “On Establishment of a State Leasing Fund for Technical Renovation of Agriculture”	<ul style="list-style-type: none"> Establishes a state-financed State Leasing Fund (SLF) for agr. machinery The SLF is liquidated by a CMU Resolution on July 26, 1999 and its assets transferred to ‘Ukragroleasing’
Nov. 3, 1997	CMU Resolution “On Establishing Minimum Customs Values”	<ul style="list-style-type: none"> Introduces minimum customs values covering all important agr. products, including grain and flour, oilseeds and vegetable oil, sugar, pork and poultry. Cancelled on July 29, 1999
Dec. 12, 1997	Law of Ukraine “On Amendments to the Law of Ukraine ‘On Value Added Tax’”	<ul style="list-style-type: none"> Milk and meat producers granted a VAT exemption Processing plants pay VAT from sales of processed milk and meat to farms Valid for 1998, prolonged for 1999 and 2000
July 8, 1998	Presidential Decree “On Measures to Regulate Sunflowerseed Export from Ukraine”	<ul style="list-style-type: none"> Stipulates that exporters deposit 100% of the contract value prior to export, to be returned after acknowledgement of receipt of export revenue by the export bank account Export sales bound by an indicative export price for sunflower Cancelled by Presidential Decree on September 3, 1998
Sept. 18, 1998	CMU Resolution “On Measures to Stabilise Agricultural Production”	<ul style="list-style-type: none"> Cancels Resolution No. 1146 “On Regulating the Use of this Year’s Grain Harvest and Insuring that the Agricultural Producers Pay for the [Cash] Advances and Inputs They Received”, that had ordered agr. producers to deliver their grain first to fulfil contracts with the state reserve, state stocks and regional authorities and, only then, as contractually agreed to private input suppliers
Oct. 6, 1998	Law of Ukraine “On Land Leasing”	<ul style="list-style-type: none"> Provides for the leasing of land plots which are owned by legal units, citizens of Ukraine, and the state Permits CAE members to take their land shares from CAEs lease them to others Only local counsel assemblies can approve the leasing of state land. A lessor of agr. land must be a legal unit which has agr. production in its foundation documents, or a person who has agr. education and experience Land lease can be organised by auctions and competitive bidding, and the right to lease land can be inherited Lease agreements must be confirmed by a notary and registered by the state. Lease payments may be made in cash or kind (cash only for state and municipal land).
Dec. 17, 1998	Law of Ukraine “On Fixed Agricultural Tax”	<ul style="list-style-type: none"> For agr. producers, 12 individual taxed are replaced by a single land tax based on land value 30% of this tax (the local budget share) is cancelled for 1999 to 2001
Dec. 2, 1998	Presidential Decree “On Support of Agricultural Producers”	<ul style="list-style-type: none"> Exempts farms from VAT payment to the budget during 1999 to 2004 Cancelled on May 23, 2000
June 3, 1999	Law of Ukraine “On Writing Off and Restructuring of Tax Arrears of Sugar Plants on January 1, 1998 and Farms on January 1, 1999”	<ul style="list-style-type: none"> Farm tax debts are restructured for 120 months with payment first due on January 1, 2004 The penalties for overdue taxes are written off
Sept. 10, 1999	Law of Ukraine “On Export Duties for Oilseeds”	<ul style="list-style-type: none"> Imposes a 23% export tax for oilseeds, combined with binding indicative prices
Sept. 24, 1999	Law of Ukraine “On Writing Off and Restructuring Budget Loan’s Debts of Farms and Procurement Enterprises”	<ul style="list-style-type: none"> Farm debts for budget loans during 1994-1998 are restructured for 5 years with the payment due on January 1, 2001 Writes off debts of the farms that have suffered from severe climate conditions

		<ul style="list-style-type: none"> The debts of the procurement enterprises are restructured and partially written off
June 17, 1999	Law of Ukraine "On State Regulation of Sugar Production and Sales"	<ul style="list-style-type: none"> Establishes a quota system for sugar beet and sugar as well as minimum prices for sugar beet purchase and sugar sales
June 30, 1999	Law of Ukraine "On amending the Law of Ukraine 'On Bankruptcy' of 1992"	<ul style="list-style-type: none"> Stipulates that farmers cannot be subjected to bankruptcy procedures until 2004.
Dec. 3, 1999	Presidential Decree "On Urgent Measures for Accelerating Reformation of the Agrarian Sector of the Economy"	<ul style="list-style-type: none"> Stipulates that all CAEs distribute land shares and restructure to form new entities by no later than April 30, 2000
Jan. 17, 2000	CMU Resolution "On New Approaches to Supply Inputs to Farms"	<ul style="list-style-type: none"> Stipulated that the government will supply inputs only on a cash payment basis Farms to receive compensation of 50% of the NBU interest rates paid on commercial bank loans for agr. inputs (175 mUAH set aside in the budget) Represents a major break from standard practice of previous years, in which numerous Resolutions provided for input supply (fertiliser, fuel, machinery, feed and seed) in return for later delivery of output (the so-called State Order)
Mar. 9, 2000	Presidential Decree "On Some Measures to Improve Conditions for Non-State Agricultural Enterprises"	<ul style="list-style-type: none"> Transfers the social spheres of the agr. enterprises to local authorities
Mar. 16, 2000	Law of Ukraine "On Writing Off Tax Debts Due to Reform of Agricultural Enterprises"	<ul style="list-style-type: none"> Writes off 6,8 bUAH of farm debt (tax debt and budget loans) to the state This write-off is only available to farms that have restructured according to the Presidential Decree of December 3, 1999
June 6, 2000	Presidential Decree "On Measures to Ensure Formation and Functioning of Agrarian Market"	<ul style="list-style-type: none"> Decree calls for the creation and development of the agr. infrastructure
June 29, 2000	Presidential Decree "On Immediate Measures to Support Production of Grain and Development of Grain Market"	<ul style="list-style-type: none"> Provides for the implementation of a price support scheme for grain producers modelled on the US loan rate system Stipulates that grain export contracts be registered on agrarian exchanges Khlib Ukrainy is given powers to monitor and control grain trade
July 6, 2000	Law of Ukraine "On the Land Code" (approved in first of three readings)	<ul style="list-style-type: none"> Abolishes collective land ownership Stipulates that land can be subject to sale and purchase and used as collateral Foreigners may lease but not own agricultural land in Ukraine
Nov. 2, 2000	Amendment to Law of Ukraine "On Peasant (Private) Farm"	<ul style="list-style-type: none"> Allows the private farm managers off-farm works
Jan. 18, 2001	Amendment to Law of Ukraine "On Value-Added tax"	<ul style="list-style-type: none"> Prolongs the value-added tax exemption for farmers until 2004
Jan. 18, 2001	Law of Ukraine "On Writing-Off the Farm Debts for Supplied State Grain during 1994-1999"	<ul style="list-style-type: none"> Foresees to write off 800 mUAH as farm debts accumulated in 1994-1998
Jan. 18, 2001	Law of Ukraine "On Stimulation of Agricultural Development for 2001-2004" also provides for mandatory crop insurance	<ul style="list-style-type: none"> Foresees the introduction of procurement prices for grain Foresees mandatory insurance for grain and sugar beet crops for all farms The budget expenditures to agriculture should be not less than 5% Forbids changes to agricultural legislation during 2001-2004
Jan. 27, 2001	CMU Resolution "On Partial Compensation of Interest Rate for Credits Provided by Com-	<ul style="list-style-type: none"> Increases the budget compensation for interest rates on commercial bank credits to agricultural products from 50% to 70%

	mercial Banks to Farms and other Agroindustrial Complex Companies in 2001"	
Jan. 30, 2001	Presidential Decree "On Measures to Facilitate Protection of the Property Rights of Peasants During the Process of Reforming the Agricultural Sector of the Economy"	<ul style="list-style-type: none"> • Enables the sharing of the assets of former collective agricultural enterprises to peasants • Adds to the Presidential Decree from December 3, 1999 on land sharing

Source: Own presentation based on: The internet site of the Ukrainian Parliament (VERKHOVNA RADA) www.rada.kiev.ua (accessed April 20, 2001); WORLD BANK (1994); *Ukrainian News*, various issues.

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