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Distortions to Agricultural Incentives in Ukraine

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Executive summary

- a) Ukraine has a unique agro-climatic potential. However, due to the difficult legacy of Soviet central planning before and distortive policies since independence, Ukraine is far from realizing this potential.
- b) Agricultural performance since independence has been disappointing. Stripped of the massive support it received in Soviet times, the fundamental weaknesses of Ukrainian agriculture (inefficient structures, outdated capital stock and technologies, poor management) quickly became apparent. Production initially fell dramatically and is only recently beginning to show signs of sustainable recovery.
- c) Muddling through has been interrupted by brief episodes of agricultural reform. The most important reform phase occurred in late 1999 and 2000, when former collective farms were obliged to distribute land to their members, and the state withdrew from input supply and procurement contracts. Nevertheless, policy makers have been hesitant to take further steps that would enhance Ukrainian agriculture's ability to respond to the challenges of transition.
- d) Agricultural incentives are subject to numerous distortions in Ukraine. Tariff protection is relatively low, but increasing and becoming more heterogeneous (tariff dispersion, peaks, ubiquitous use of specific and mixed tariffs). WTO membership would arrest this trend, and tariff reform towards this end was undertaken in 2005.
- e) Agriculture in Ukraine receives significant and increasing fiscal support (2.4 percent of GDP in 2005). Much of this support is implicit (tax exemptions and privileges), but explicit fiscal support has grown in recent years as strong economic growth in Ukraine has increased the fiscal space available to policy makers. There is evidence that the majority of this aid benefits only a small proportion of farm enterprises in Ukraine.
- f) Various forms of state intervention tax Ukrainian agriculture significantly. These include more or less coercive state procurement, interference in movements of produce, state monopolies in key segments of the marketing chain, a poor investment climate that depresses inflows of capital and know-how, an unstable policy environment, and frequent *ad hoc* over-reactions to market fluctuations.
- g) After the collapse of the Soviet system in the early 1990s, Ukraine's nominal rate of assistance (NRA) to producers fell from a high positive value (measured at official exchange rates) to a low of almost -50 percent in 1995. Thereafter, NRAs climbed to values just under 0 in the early years of the new century before increasing to 7 percent in 2005. Imported products such as beef, pork and sugar receive high rates of assistance, while export products such as wheat, barley and sunflower seed are taxed, so a strong anti-agricultural trade bias remains.
- h) Most policy makers lack a clear sense of what agricultural policy can and cannot achieve given Ukraine's fiscal means and its international aspirations and obligations. Agricultural policy making is multi-polar, with the Ministry of Agriculture, the Cabinet of Ministers, the Rada and the Presidential Administration contributing in an often uncoordinated manner. Analytical capacities are weak, and the agricultural knowledge system (research, education, extension) is a shambles.
- i) Rent seeking underlies much of the agricultural policy making in Ukraine. A relatively small group of individuals and firms, often with close links to important figures in the policy making process, benefits from the current situation in which Ukrainian agriculture underperforms, but the resulting profits can be channelled and controlled. Reforms that open Ukrainian agricultural and food production to

competition would increase these profits, but also threaten the current beneficiaries' control.

- j) Agricultural production and food processing are highly heterogeneous in terms of efficiency and profitability in Ukraine. Many inefficient producers who would be forced to exit the sector under market conditions have been able to avoid this fate so far. The future development of agriculture in Ukraine will depend on whether reforms are initiated that will lead to increased exit of inefficient farms and thus make more resources (especially land) available to the better producers. Key reforms include permitting farm enterprises to go bankrupt and permitting sales of agricultural land.
- k) Membership in the WTO could play a crucial role in defining limits to future agricultural policy in Ukraine. Negotiations have reached an advanced stage and membership by 2007 appears feasible. In particular, the condition that Ukraine would not, as a WTO member, be permitted to use export subsidies implies that Ukraine would not be able to implement price support mechanisms for the agricultural products that it exports. In the medium term this group will likely include almost all major products.

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Introduction and summary

The aim of this study is threefold: to provide an overview of the evolution of agriculture and agricultural policies in Ukraine, to quantify the resulting distortions to agricultural incentives, and to discuss the political economy of past agricultural policy choices with a view to sketching the probable future course of agricultural policy in the country. Emphasis is placed on the period since Ukraine's Independence in 1991, but the historical narrative extends back to the early 20th century in order to capture several unique features of Ukraine's agricultural development.

Why consider Ukraine? Ukraine's agro-climatic endowment and its comparatively low population density combine to create a large potential for agricultural production and exports. Over the last 5 years, Ukraine has produced an average annual harvest of 33 million metric tons (mmt) of grain on roughly 14.5 million hectares (mha) of land. On average, 8 of these 33 mmt have been exported. Experts agree that in an appropriate policy environment, yields could be doubled, from 2.3 to between 4 and 5 t/ha produced at internationally competitive costs. The result would be some 60 to 70 mmt of annual production and, *ceteris paribus*, an export potential of 35 to 45 mmt. Hence, distortions to agricultural incentives in Ukraine are of interest because they have implications not only for the wellbeing of millions of farmers and consumers in Ukraine but also for world agricultural markets and, by extension, poverty and nutrition worldwide.

What constitutes Ukraine's agro-climatic potential? Over 80 mha of agricultural land, of which roughly 33 mha are arable (World Bank and OECD 2004, p. 1), provide an excellent basis for the production of temperate crop and animal products. Over one-half of Ukraine's arable land is composed of black chernozem soils, ideally suited for field crop production. Indeed, roughly one-third of the worldwide stock of these soils is located in Ukraine. Ukraine's Black Sea harbours

remain ice-free year round and provide direct access to world markets, and Ukraine is close to important import markets in the Middle East, North Africa and the European Union (EU).

These natural advantages are moderated by several factors. Precipitation is often a limiting factor for crop production, falling from average levels around 700 mm/year in the Northeast to as low as 300 mm/year as one moves Southeast. Winters can be harsh and are not always accompanied by enough snow to protect winter crops and provide sufficient moisture in the spring. On average, drought and/or winter-kill will have a significant impact on agricultural production every 3-5 years; the last examples of this being the poor and very poor harvests recorded in 2000 and 2003.

Another limitation is, perhaps surprisingly, soil fertility. The rolling landscape that characterizes much of Ukraine's agricultural heartland is susceptible to erosion. Penkaitis (1994, p. 16) cites Ukrainian sources that refer to over 12 mha of arable land as being significantly affected by erosion. As a result of distorted incentives, the vaunted chernozems have in many locations been 'mined' of their nutrient and humus content over decades, exacerbating problems with moisture retention in years of low precipitation (see also Breburda 1990, Spaar and Schuhmann 2000). The Chernobyl nuclear accident created additional limitations in the form of radioactively contaminated farm land. As the prevailing winds were blowing from South to North when this catastrophe occurred, much of this contamination affected regions in what is now Belarus (e.g. Gomel) and Russia (e.g. Bryansk). However, four of the ten most affected regions in the Soviet Union (Kiev, Zhitomir, Chernigov and Cherkassy in descending order of contamination) belong to Ukraine (Penkaitis 1994, p. 16).

Finally, as agriculture becomes increasingly sophisticated and competitiveness is increasingly determined by transformations that take place post-harvest in a complex food web, the importance of purely production-based natural conditions is declining. Ukraine's most important agricultural handicap is that it combines its bundle of high-potential agro-climatic inputs with insufficient amounts of human capital, marketing systems and sustainable policy facilitation.¹ This is a result of both the difficult legacy that Ukraine inherited from the Soviet Union and inadequate policies since Independence.

¹ Anderson (1993, p. 305) illustrates that the Former Soviet Union, at the outset of transition, was endowed with a low stock of capital per worker and a high stock of natural resources per worker relative to the rest of the world. As agri-food systems becomes increasingly capital intensive, the comparative advantage in agriculture implied by this natural resource endowment will be eroded.

History of growth and structural change in the Ukrainian economy

To put the detailed discussions of Ukrainian agricultural policy and distortions in the body of this paper into context, this section begins with a brief overview of major economic structures and trends in the country. The period prior to Independence is considered where possible, but data availability is often constrained by Soviet secretiveness, the fact that Ukraine did not exist as an independent country until 1991, and the fact that many variables of interest were defined differently or not considered relevant in the Soviet system.

Traditionally, Ukraine was the ‘bread basket’ of the Soviet Union, producing almost 60 percent of its corn, 50 percent of its sugar beet, over 40 percent of its wheat and sunflower seed and 25 percent of its pork on only 15 percent of the Soviet Union’s arable land (World Bank 1995, p. 1). This importance of agriculture was reflected in a share of agriculture in total Ukrainian GDP that exceeded 25 percent in 1990 (Table 1). This share has fallen to roughly 11 percent in recent years. Most of agriculture’s falling GDP share has been taken up by trade and transport, services that were neglected in Soviet times. The shares of industry, construction, and other services have fallen slightly over the period since 1995 for which consistent data on sectoral shares are available (Table 1).

Ukraine’s population grew rapidly in the 1960s and 1970s, and continued to grow at a slower rate up to 1992, when it peaked at 52.2 million. Since then it has fallen by 0.4 to 0.5 million individuals per year, one of the most rapid rates of population decline in the world. The share of the population living in rural areas was over 50 percent in 1960 but fell to roughly 33 percent in the early 1990s. This share has since remained more or less constant, as subsistence agriculture has provided a haven for many who lost employment in the rest of the economy during the transition crisis of the 1990s. The share of agriculture and food processing in total employment increased from 19.1 percent in the early 1990s to 21-22 percent in 2000-2001 (Table 1).

Table 1 also provides information on the transition crisis. Real GDP growth in Ukraine was negative between 1990 and 1999. Inflation topped 4700 percent in 1993,

890 percent in 1994 and 370 percent in 1995, and remained in the double-digit range until 2001. Per capita GDP in constant 1995 purchasing power parity (PPP) US dollars fell by more than half from \$7,800 in 1990 to \$3,500 in 1997-99. Economic growth resumed in 2000, and by 2005, per capita GDP had increased to US\$5,500 constant 1995 PPP. Putting the pieces together, agriculture's share of a shrinking GDP fell in the course of the 1990s, while agriculture's share of employment increased. It follows, therefore, that relative wages in agriculture fell strongly over this period, from 76 percent of average wages in the economy in 1996 to 48 percent in 2000, a value that has increased only slightly since (Zorya 2006).

Agricultural production has mirrored the general pattern of significant contraction in the 1990s followed by partial recovery since 2000 (Figure 1). The production of most major agricultural crops increased rapidly in the 1960s, increased less rapidly and in some cases stagnated in the 1970s and 1980s, fell in the 1990s, and began to recover in 2001/2002 (Table 1). Meat and milk production also followed this general pattern but contracted more strongly than crop production in the 1990s and have not – with the exception of poultry – recovered notably since.

For political and ideological reasons, the existence of phenomena such as unemployment, inflation and poverty was denied in the Soviet Union. Household budget surveys were kept secret and little data on poverty in Soviet times is available, making it difficult to analyse trends (Revenko 1997). Nevertheless, the severe economic contraction of the 1990s clearly increased the incidence of poverty in Ukraine. Households were affected in three ways (World Bank 1996). First, as a result of weak demand for labor the real wage fell precipitously (by 60 percent between 1990 and 1993). Second, hyperinflation wiped out household savings. Finally, social benefits – poorly targetted in the first place² – fell in real terms.

According to some estimates, the incidence of poverty was as high as 29.5 percent in 1995 (World Bank 1996), using a poverty line defined in terms of per capita household consumption and equivalent to roughly \$24 per person per month), and 30.9 percent (35.2 percent in rural areas and 29.0 percent in urban areas) in 2001 (German Advisory Group 2006, using the \$1 a day poverty line). However, the incidence of poverty has fallen as a result of economic growth in recent years (Galushko and von Cramon-Taubadel 2004). Recent estimates by the German

² See, for example, German Advisory Group (2006) on the targetting of social benefits in Ukraine.

Advisory Group (2006, p. 4) using the \$1 a day poverty line indicate a poverty incidence of roughly 7.9 percent (11.2 percent in rural areas and 6.4 percent in urban areas) in 2004.

History of agricultural policy evolution prior to independence

For most of the 20th century, the development of Ukrainian agriculture took place under planned economy conditions. The leaders of the Bolshevik Revolution were somewhat uncertain in their dealings with agriculture. The theories upon which they intended to build a new society had much to say about relations between labour and capital in an industrial setting, but comparatively little about relations in agrarian settings such as Russia, where industrialisation had just begun (Wädekin 1990b, p. 321). The great majority of the population of Soviet Union was agrarian, and agriculture was of vital importance both as a source of food and nutrition, and as a source of resources that could be channelled into the modernization of an otherwise backward Soviet economy. Hence, a solution for integrating agriculture into the socialist economy had to be found.

Immediately following the Bolshevik Revolution, strict state control of agricultural markets (requisition of surplus production above subsistence minima from peasants, coupled with centralized rationing and distribution of food) prevailed under 'War Communism'. This policy led to a dramatic reduction in food production and added to the many war-related hardships already burdening the population. The result was unrest in the form of worker and peasant revolts culminating in the Kronstadt rebellion of Soviet sailors in February/March 1921. This rebellion was crushed, but startled the Bolshevik leadership under Lenin into implementing the so-called 'New Economic Policy' (NEP) in March 1921. The NEP, by allowing farmers to market a proportion of their surplus production for personal gain, and to lease and hire labour, re-introduced elements of private enterprise into agriculture. It was successful in that it sparked a rapid and significant increase in agricultural production, which returned to pre-World War 1 levels by 1928. However, the NEP maintained 'capitalist' structures and relations in agriculture, a betrayal of fundamental principles for many Marxists.

Following his rise to absolute power in the mid-1920s, Stalin implemented a policy of rapid industrialization and pervasive central planning, with the first 5-year plan introduced in 1928. Harnessing agriculture to this goal and eliminating the remaining capitalist elements in agriculture were accomplished by a policy of rapid and forced collectivization launched in 1929. The relatively wealthy agricultural producers and traders who had emerged as a result of the NEP – ‘Kulaks’ and ‘Nepmen’, respectively – were stylized as exploiters and enemies of justice and reform; a class to be, in Stalin’s words, “liquidated”. This was accomplished by means of economic and social pressure, culminating in executions and deportations. Ukraine was especially hard hit by forced collectivisation and the liquidation of the Kulaks. This can be attributed to the special importance of agriculture in Ukraine, but was also related to a desire on the part of the Soviet leadership to crush nationalist sentiments in Ukraine.³

The brutal climax of this policy was reached in 1932-33. Agricultural production was already reeling from the impact of forced collectivization when Stalin decreed a 40 percent increase in Ukraine’s grain procurement quotas. These quotas were enforced with the help of troops and secret police. The quotas had to be fulfilled before farms could provide their peasant members with grain, and they were so high that insufficient grain remained for survival. Peasants caught hoarding or stealing grain were executed or deported; those who appeared reasonably well fed were accused of hoarding or stealing, with the same outcome. Estimates of the death-toll attributable to the resulting man-made famine, which also affected the Northern Caucasus and Lower Volga regions, range from 5 to 7 million in Ukraine and as many as 11 million in the Soviet Union as a whole.⁴ The memory of Stalin’s famine remains alive in Ukraine and goes some way towards explaining the great political sensitivity of agricultural policy issues in general, and grain policy in particular.

Following the Second World War, Soviet agricultural production recovered and continued to grow through the 1960s. In the late 1960s, the Soviet leadership launched an initiative to boost the production and consumption of livestock products. Measured in tons of meat and litres of milk, this initiative was successful; however it was also very costly. As reflected in the data for Ukraine in Table 1, Soviet agricultural production largely stagnated in the 1970s. Food imports had to increase

³ Conquest (1986) is a standard source on this period.

⁴ See, for example, the list of estimates and sources compiled by White (2005).

significantly to keep total availability in line with the demand of a growing population. All manner of programs, laws, decrees and regulations were implemented in an attempt to boost production. For example, over some phases collective farms were fused into larger units; over others they were divided up once more. Private agricultural production on household plots was sometimes given more leeway, sometimes less. However, at no time were the basic tenets of socialist agriculture called into question (Penkaitis 1995, pp. 73-74).

Mikhail Gorbachov, an agricultural economist, assumed responsibility for agriculture in the Central Committee in 1978. He introduced a new 'Food Program' in 1982 that aimed at increasing production via so-called 'agricultural collective contracts' that were designed to strengthen the links between performance and remuneration on collective farms (Swinnen and Rozelle 2006, p. 107), and provided for administrative reform to improve coordination between the many different ministries and state committees responsible for agriculture in the Soviet Union. This program failed to have any significant effect, and when Gorbachov became General Secretary of the Communist Party in early 1985, he began to design further changes as part of his 'perestroika' or 'restructuring' reforms (Wädekin 1990a). In late 1985 the Central Committee approved a reform that provided for the creation of new State Committees for the Agro-Industrial Complex (Gosagroprom) at the Union and Republic levels, into which the previously existing multitude of Ministries and State Committees⁵ were dissolved. This was accompanied by a reorganisation of the planning and administrative structures at the oblast and rajon levels, and some fitful attempts at decentralisation.

Reforms that marked a true departure from central planning were added in April 1989. The Council of Ministers Decision "On the fundamental restructuring of economic relations and administration in the nations agro-industrial complex" called for new forms of decentralised, voluntary cooperation in and administration of agriculture. At the same time, a limited right to private production that had been established in 1987 was broadened considerably to include land leased not only from the collective farm in which one was a member, but also land leased from other collective farms or individuals (Penkaitis 1994, p. 34). These reforms, reminiscent of

⁵ Penkaitis (1995, pp. 76-77) lists separate Ministries of Agriculture, of Milk and Meat Production, of Fruit and Vegetable Production, of Food Industry, of Agricultural Construction, and of Purchasing and Procurement, as well as the State Committee for Agricultural Machinery Production and Supply.

Lenin's NEP of some 65 years earlier, made it possible to establish private family farms.

We can only speculate what impact these reforms might have had and how they might have evolved. They indicate that there was growing awareness in the final years of the Soviet Union that central planning and socialist agriculture had reached an impasse.⁶ As it happened, the fall of the Berlin Wall in late 1989 and the final dissolution of the Soviet Union in 1991 interrupted these reforms, which were too little and too late to significantly improve the situation of Soviet agriculture, and which to the end remained highly dependent on support in the form of direct budget transfers and subsidised input prices. The total budgetary cost of agricultural subsidies in the final years of the Soviet Union is generally estimated at around 10 percent of total GDP, a crushing burden on the rest of the economy. As an indication of the extent of input subsidies, the ratio of international urea prices to domestic urea prices in Ukraine was 43 in January 1991; similar ratios for triple phosphate were 6.7, for potassium 20.1, for diesel fuel 34.5, for formula feed 7.1 and for grain combines 193.8 (World Bank 1995, p. 14). Technically outdated, lacking modern management methods, and addicted to highly distortionary state support, Ukrainian agriculture was in no condition to face the challenges of transition.

The extent of distortions to incentives in agriculture since Independence

Methods and data

In this section, the methodology outlined in Anderson et al. (2006) is used to quantify the extent of direct and indirect distortions faced by domestic producers and consumers of agricultural products between 1992 and 2005.

An important point of departure for this analysis are the OECD's PSE tables for Ukraine and the data on domestic and border prices, marketing margins and fiscal support for agriculture that they contain (OECD 2006). We have checked the data and assumptions in the OECD tables and have found, with very few exceptions, that they

⁶ Swinnen and Rozelle (2006) contrast agricultural reform experiences in the Soviet Union and China. They conclude that a confluence of grassroots and top leadership support is needed for reforms to succeed under Communist rule. If true, this suggests that grassroots resistance to Gorbachov's reforms would have continued to hamstring them, even if they had been given more time.

are accurate and plausible. Where we have found discrepancies, discussions with OECD experts have invariably shown that these are due to open questions of interpretation.⁷

Data quality is an important issue in Ukraine. The official institutions that are entrusted with collecting data are often under-funded and under-staffed; they are required to collect new types of data which were not important in the past or are inherently difficult to measure (e.g., transactions in the shadow economy); and in some cases there is reason to suspect that they are subject to political pressure.⁸ Private institutions have developed only slowly. Hence, important information is often of dubious quality or, with increasing frequency as one goes back in history, is not available at all.

We have made several modifications to the OECD data. First, we have updated the estimates of fiscal support to agriculture since 2000. Second, we account for the fact that Ukraine was a net importer of wheat in 2000 and 2003. The OECD uses fob border prices for wheat in these years, although producers were receiving the equivalent of import parity prices (distorted by import tariffs and inflated marketing margins). As a result, we suspect that the OECD overestimates the extent of support for wheat in these years. Third, we have updated OECD tables to include 2004 and 2005. Finally, we have attempted to include potatoes in our calculations. Potatoes are produced almost exclusively on household plots, and are not subject to significant direct policy intervention. However, they represent an important staple food in Ukraine and an important source of income for many rural households. Potatoes are grown on roughly 1.5 to 1.6 mha in Ukraine (approximately 5 percent of the country's arable land), and production has averaged some 17.7 mmt per year since 1992 (Table 1). However, as potatoes are not widely traded and qualities vary widely, finding suitable border prices is difficult and the results must be interpreted with caution.

As outlined by Shick (2005), PSE calculations and measuring distortions to agricultural incentives in general are difficult in transition countries. Three issues are of particular concern in the present context. First, as Ukraine is a net exporter of many important agricultural products (grains and oilseeds), export parity prices prevail and border measures do not play an important role (except when there is an export tax as

⁷ We are extremely grateful to Olga Melyukhina for her expert and patient assistance.

⁸ For example, in the past the Ministry of Agriculture has almost invariably released higher forecasts of upcoming grain harvests than private experts.

in the case of sunflower seed). Hence, it is imperative to measure fiscal support (budget transfers, payments based on input use, tax exemptions, etc.) accurately. Second, border prices must be appropriately adjusted for quality and marketing margins so that they are directly comparable with domestic prices, otherwise measures of support will be biased. This is made difficult by the fact that Ukraine maintains some Soviet era product standards (e.g., grain grades) that differ from international standards. Third, domestic prices must be measured correctly as well.

Regarding fiscal support, the volumes of spending that we use (see Table 3) are larger than those recently produced by the World Bank (Zorya 2006), because we consider not only spending by the Ministry of Agriculture but also spending by other ministries that benefits agriculture. We do not include spending by regional authorities, but this is probably not an important omission in Ukraine where regional authorities have limited fiscal resources.⁹ The treatment of different types of tax expenditures is an important issue. Unlike Zorya (2006), we include estimated benefits from the Fixed Agricultural Tax (FAT) in our estimates of tax expenditures.

Regarding border prices, inflated marketing costs in Ukraine increase import parity prices and depress export parity prices.¹⁰ For most grains and oilseeds in most years, Ukraine has been in a net export position, so inflated marketing costs have been passed on to farmers in the form of depressed farm gate prices. Inflated marketing costs have also increased price volatility for wheat which has alternated between net export and net import positions in recent years. It is debatable, however, whether inflated marketing costs should be considered a distortion. To the extent that they are due to inflated risk premiums charged by traders who are worried (justifiably) that they may be subject to harassment by policy makers (e.g., regional bans on the movement of grain, difficulties in securing export VAT refunds, or recent grain export quotas), these inflated costs are clearly policy distortions that could be eliminated at a stroke of the legislators' pen.¹¹ However, a portion of these inflated marketing costs is

⁹ The situation is different in Russia, where some resource-rich oblasts subsidize agriculture heavily.

¹⁰ Some estimates of grain marketing costs in Ukraine are considerably higher than those used by the OECD. These estimates are provided for recent years by the Ukrainian Grain Association (UGA), an association of traders and processors who would have an interest in reporting high marketing costs to justify paying low farm gate prices to producers. To avoid this possible bias we employ the marketing costs provided by the OECD. However, we use the rates of growth in marketing costs reported by the UGA to extrapolate the OECD estimates to 2004 and 2005.

¹¹ The failure of the government to refund export VAT was a particular problem in 2003-05 and has reemerged recently. In 2004, grain traders reported that refunds could be secured against a bribe of about one-third of the refund due. In 2005, traders were apparently adding roughly \$6/t to their margins

due to outdated and inefficient infrastructure (transportation, poor port facilities, etc.) – a “systemic legacy” of the Soviet period (Liefert et al. 1996). This infrastructure would be in much better condition today if policy makers had created a better investment climate and not insisted in propping up inefficient state and parastatal marketing monopolies in the years since Independence (Harley 1996). Hence, part of the “legacy” effect might reasonably be considered a distortion. However, determining which part would require an appropriate counterfactual (how low could marketing costs be if policy had not distorted in the past).

Regarding domestic prices, we are concerned that the producer prices reported in official Ukrainian statistics could be biased. The authorities might inflate these prices in an attempt to paint a better picture of the situation in agriculture for political reasons; they might also attempt to correct for suspected (and likely) under-reporting by farm managers in order to improve tax collection. We have compared official producer prices with detailed sets of prices reported by a large sample of individual farms (over 5000 observations), and found that official prices typically over-estimate. A case in point are wheat prices in 2003. According to official statistics, the average producer price for wheat was 635 UAH/t in 2003. However, the average of the individual producer prices in our sample is 605 UAH/t.¹² To the degree that this is a systematic problem, the estimates presented below will tend to overestimate the support provided to farmers in Ukraine.

Finally, it is important to note that aggregate measures will average away what might be significant differences in the support and distortions felt by individual farmers. Zorya (2006, Table 4) shows that almost 75 percent of the production subsidies provided to livestock producers in Ukraine in 2004 accrued to only 7.2 percent of the livestock producing agricultural enterprises in the country. Nivjevskiy and von Cramon-Taubadel (2007, p. 6) demonstrate that in 2005, 14.7 percent of the dairy farms in Ukraine accounting for 56.2 percent of the country’s milk production received 64.7 percent of the subsidies provided to milk producers. Moreover, different types of producer receive different average prices for agricultural commodities. For

to compensate for the costs associated with securing export VAT refunds. Estimating the resulting distortions is difficult because traders were not treated equally. The Ukrainian government claims that it is simply attempting to combat fraudulent applications for export VAT refunds (simulated transactions, etc.).

¹² The variability of the prices in this sample is high, and the distribution includes many implausibly low and high prices. There is no definitive information available on how official average prices are determined, what raw data is used as a basis, how this data is filtered to account for outliers, etc.

example, according to official statistics, large farm enterprises received on average 535 UAH/t for grains, 140 UAH/t for sugar beet and 3481 UAH/t for beef in 2003; corresponding prices for household plots were 495, 157 and 2394 UAH/t. Finally, there are significant differences in prices received by farmers in different regions. For example, according to official data, average producer prices for grain varied from as low as 330 UAH/t in Eastern and Southern oblasts to over 480 UAH/t in Northern and Western oblasts in each of the 2001/02 and 2002/03 marketing years. While regional differences in the types and qualities of grains produced may explain some of this variation, the evidence suggests that in both of these years, while Ukraine as a whole was a net exporter of grain, parts of Western Ukraine were importing grain from neighbours with grain surpluses such as Hungary or Romania. Hence, a given positive support estimate could mask the fact that some producers receive assistance while others are taxed.

In summary, it bears repeating that much data on agriculture in Ukraine is of dubious quality, especially data from the early years of transition when exchange rates and inflation were very volatile (see Table 1). Estimates of support produced using this data must therefore be interpreted with caution. While we are confident that the estimates reported below capture key trends and patterns, it would be dangerous to depend heavily on year to year point estimates.

Two further issues deserve mention. First, we make no attempt to account for exchange rate distortions because it proved difficult to find a consistent methodology for doing so that could be applied to all countries and especially the transition countries with their short and sometimes questionable times series data (see Anderson et al., 2006, p. 16 and Appendices 1 and 2). In the early years of transition in Ukraine, traders were subject to some restrictions on the use of foreign currency. However, these were applied in a very uneven and opaque manner. In a thorough analysis of real exchange rate distortions in Ukraine between 1996 and 2001, Zorya (2003) estimates that the real exchange rate of the Hryvnia was overvalued by 15-20 percent in 1996-98, until devaluation triggered by the financial crisis in late 1998 effected a major correction. The resulting taxation of tradable goods production represents a significant

distortion of agricultural incentives that must be kept in mind when considering the results presented below.¹³

Second, to complement the support estimates presented here, detailed tariff estimates for the individual agricultural products covered in the NRA calculations and for the ‘big-5’ aggregate groups of products have been prepared using the sources and methodology described in the Appendix for the years 1993-2004.¹⁴ The results for the ‘big-5’ aggregates are presented in Table 2, and corresponding results for 26 disaggregated agricultural products are presented in Appendix Table A1. We have also calculated indices of the intensity of non-tariff measures (NTMs) as outlined in Movchan (2004b) for individual agricultural products and the ‘big-5’ aggregates over the period 1993 to 2004. The calculations, described in the Appendix, are based on an inventory of 17 different types of NTM. The results are also presented in Table 2 for the ‘big-5’ aggregates, and detailed results for individual agricultural products are presented in Appendix Table A2. Of course, not all NTMs represent distortions; some – for example sanitary and phyto-sanitary controls – can be seen as attempts to address legitimate producer and consumer safety concerns.

Results

Estimates of the nominal rate of assistance (NRA) for agriculture and non-agriculture from 1992 to 2005 are presented in Tables 3 and 4, and the corresponding Figures 2 and 3 present NRAs for major agricultural and non-agricultural aggregates. Again, estimates of support in the early 1990s must be treated with special caution as hyperinflation in these years make price and exchange rates difficult to grasp and compare.

Over the period between 1992 and 2005, nominal rates of assistance for agricultural products have tended to climb, although there is considerable variation across products and time. After the collapse of the Soviet system in the early 1990s,

¹³ Anderson et al. (2006, p. 61) question whether such misalignment should be considered a distortion, or merely as something that changes incentives. However, the mid-1990s overvaluation of the Hryvnia was the subject of heated debate at the time in Ukraine. While inflation was running in the double digits, the IMF insisted that a stable nominal exchange rate be maintained, arguing that this would not have any significant impact on the real economy. Others, such as the German Advisory Group, disagreed and called for gradual nominal devaluation in line with inflation differentials (see Möllers and Siedenberg 1999, and the references therein). The financial crisis in 1998, and the growth recorded by agriculture and other tradable goods producing sectors in the years thereafter appear to bear out the latter position.

¹⁴ The ‘big-5’ are: primary agriculture; processed food; non-agricultural food; other primary; and manufactures.

Ukraine's nominal rate of assistance (NRA) to agricultural producers fell to almost -50 percent in 1992. It fluctuated about an increasing trend through the 1990s before settling at roughly -10 to -15 percent in the first years of the new century. Fiscal support has risen in recent years, and a positive NRA, the first since 1998, was estimated for 2005.

Comparing products, exported agricultural products tend to be taxed, while imports tend to receive support. Important exceptions to the latter pattern can be observed in 2000 and 2003, when importables were taxed as well. This can largely be attributed to the impact of net import situations for wheat in those years which led to various measures to depress wheat prices and, by extension, bread prices, which are politically highly sensitive in Ukraine. Overall, since export products play a considerably larger role in Ukrainian agricultural production than import products, the net taxation of exports dominates and the weighted average NRA for agriculture is negative.

Fluctuations in NRAs over time can be attributed to a number of sources besides measurement error and 'noise'. One, to be discussed below, is policy, which has been highly variable. Another is the unstable macroeconomic environment within which Ukrainian agriculture has operated. Hyperinflation in 1993-94, for example, meant that farms could repay budget loans received early in the year to finance seeding at extremely low rates at the end of the year; in effect, the loans were grants. Fluctuations in production – e.g., the poor grain harvests in 2000 and 2003 mentioned above – are a further source of instability.

Consumer tax equivalents to agricultural producers in Ukraine are presented in Table 5 and Figure 4. For the most part these have been positive, reflecting taxation of agriculture for example due to import tariffs on key inputs such as seed and agro-chemicals. CTEs have fluctuated less than the corresponding NRAs. The sharp dip in 1994 is likely related to hyperinflation in that year which makes it difficult to match cost and revenue streams that are staggered in time. Furthermore, CTEs have followed a clear downward trend, reaching an aggregate level of effectively zero in 2005 as growing input subsidies in recent years increasingly offset tariffs on inputs, tariffs that themselves declined significantly in 2005 as WTO-related legislation was adopted. As with NRAs, there is a clear distinction between import and export products. High CTEs for sugarbeet and potato producers reflect high tariffs on sugarbeet and potato seed and special machinery (Niviyevskiy and Strubenhoff 2006, p. 14).

Overall, tariffs for agricultural and processed food products have increased since the early 1990s, and are significantly higher than tariffs for other primary products and manufactures (Table 2). Agricultural tariffs are especially high for livestock products, sugar and processed oilseed products, and comparatively low for the main export crops (wheat, barley and sunflower seed). As discussed below, some tariff reductions were introduced in 2005 to prepare the way for WTO accession. The intensity of NTM use has increased for all aggregates and most individual products over time. Of the ‘big-5’ aggregates, manufactures have the lowest NTM index values. There are no striking differences between the NTM indices for the individual agricultural products.

Figure 5 breaks down aggregate support for agricultural producers in Ukraine between 1992 and 2005 into the components ‘market price support’, ‘input subsidies’, ‘output subsidies’, and ‘other’ based on OECD PSE calculations of support in millions of US dollars. Since the underlying data are very similar, net support in Figure 5 follows the same 1992-2005 trend as the aggregate NRAs for agriculture in Figures 2 and 3. Market price support has been negative in most years, and other forms of support have generally not been sufficient to compensate. The reduction in input and output subsidies and other transfers in the early 1990s is clearly visible, as is the recent re-emergence of budget support in the form of output and input subsidies. The high value of ‘other subsidies’ reported for 2000 results primarily from significant debt write-offs that occurred in this year. Market price support has fluctuated considerably, reflecting unstable policies, fluctuations in world market prices that are not being transmitted fully onto domestic markets, and terms of trade effects as Ukraine has alternated between net import to net export positions for key agricultural commodities such as wheat. The general trend towards more support for agriculture since economic (and agricultural) growth resumed in 2000 is confirmed, as input (mainly credit) and output subsidies have increased steadily. Data for 2006 and 2007, which is not yet available, would presumably reveal a jump in negative market price support due to the impact of grain export quotas (discussed below), and a further increase in various forms of fiscal support.

In closing, note that in the above calculations of assistance and taxation, energy subsidies (primarily on the use of diesel fuel) provided to farm enterprises have been accounted for. However, an additional indirect subsidy can be seen in the fact that over the years Ukraine has been able to import energy primarily from Russia

at prices often considerably below corresponding world market levels.¹⁵ Much of Russia's natural gas exports to Western Europe flow through pipelines in Ukraine, and gas pricing between Russia and Ukraine is a complicated mix of negotiated prices, compensation for gas transit, and tolerated non-payment and/or siphoning off of gas by Ukraine. In early 2006, energy relations between Ukraine and Russia came to a head over the issue of non-payment and siphoning, and a new (equally opaque) pricing arrangement was reached whereby prices are increasing but remain low by world market standards (Pavel and Poltavets 2006). However, natural gas is not a significant direct input into agricultural production in Ukraine. It is used in particular for electricity generation, and it can influence agriculture especially via nitrogen fertilizer prices. Since fertilizer use in Ukraine is low, this effect is likely to be small. Hence, we are confident that cheap energy imports from Russia do not have a major impact on agricultural distortions in Ukraine.¹⁶

The evolution since 1992 of policies and distortions affecting agricultural incentives

Four main phases of agricultural policy in Ukraine since Independence can be identified. These phases divide the years since Independence into the following periods: 1991 to 1994; 1995 to 1998; 1999-2000; and 2001 to date.

Phase I: 1991-1994

In the years between Independence and 1994, few market reforms were undertaken. Most key elements of the Soviet system (state procurement of key agricultural products, state provision of inputs, administrative control of product flows, prices and margins) were maintained. Senior agricultural policy makers, whose terms in office rarely lasted over 1-2 years, tended to be members of a conservative 'old guard' with backgrounds in agricultural production (e.g., zootechnicians and veterinarians) or bookkeeping. In 1992, the kolkhozes and sovkhozes were transformed into so-called

¹⁵ Specifically, Russia has provided Ukraine with energy at below opportunity costs – measured by the prices it could have received for the same energy by shipping it further to Western Europe.

¹⁶ Moreover, note that Russia has been 'paying' for this cheap energy in Ukraine, presumably for strategic reasons. Any resulting distortion is difficult to measure in the framework used here because it takes the form of a border price that is below other border prices in the world by more or less explicit agreement between the exporter and the importer, and is not due to border or other measures of Ukrainian provenance.

collective agricultural enterprises (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 made private farming possible. By 1994, 32,000 private farms had emerged. This number increased to roughly 43,000 by 2002. However, the private farms remained small (with an average size of under 30 ha in the 1990s, increasing to 66 ha in 2002), and have proven much less potent as a force shaping agricultural policy than the roughly 12,000 CAEs and their successor enterprises.

In the 'Gold Rush' years following Independence, some individuals and enterprises made very large profits by purchasing agricultural products such as grain and livestock at very low prices, and selling them on world markets for considerably more. According to Åslund (1999), in 1992 roughly 40 percent of Ukraine's exports was composed of commodities, the prices of which were, due to the ongoing regulation of domestic markets, on average roughly 10 percent of corresponding world market prices. Hence, rents of roughly US\$4.1 billion, or 20 percent of Ukrainian GDP in 1992, accrued to a handful of individuals who had access to goods and export opportunities. Policy makers responded with a flurry of administrative measures designed to stem such exports (or redirect the proceeds) including, in 1993, export quotas and licensing. Significant rents were also distributed in the form of budget subsidies, including those to agriculture, and subsidised credits to enterprises. In 1993, when inflation exceeded 4,700 percent, state credits were granted at 20 percent rates of interest and, thus, essentially represented gifts to those who could quickly convert them in to currency or tradable commodities. Here, too, the lines between private and public enterprise were often blurred.

Altogether, policy followed a very conservative course in this first phase, largely maintaining Soviet-style ownership structures, budget transfers and state regulation of markets. Farms continued to receive Soviet-level support in the form of direct budget transfers, low interest loans that were often rolled over or forgiven, and subsidised inputs. This slow pace of reform was not unique to agriculture but rather common to all sectors. Furthermore, it was accompanied by (and as Zorya (2003) demonstrates, contributed to) misguided macroeconomic policies, in particular the use of the printing press to finance burgeoning fiscal deficits. Coupled with a collapse of inter-republican Soviet trade, the result was significant macroeconomic destabilisation as outlined above.

As displayed in Figure 1 and Table 1, agricultural production and especially livestock production also declined dramatically in this first phase of agricultural development following Independence, albeit at a slower rate than production in the rest of the economy. The reduction of subsidies led to a rapid increase in input prices and a corresponding deterioration in agriculture's terms of trade. As a result, input use and yields fell dramatically; between 1990 and 1996, mineral fertilizer applications fell from an average of 102.5 to 12.5 kg nitrogen equivalent/hectare, while average grain yields fell from 3.2 t/ha in 1988/90 to 2.3 t/ha in 1994/96 (Spaar and Schuhmann 2000, p. 258-9; see also World Bank and OECD 2004, p. 5). As the economy imploded, agriculture absorbed labour shed by contracting industrial production, and subsistence production of food on household plots became the only feasible survival strategy for many Ukrainians. Household production therefore remained more or less constant through 1994.

Phase II: 1995-1998

Following Leonid Kuchma's first election as President in late 1994, several promising reforms were implemented. These were mainly directed at achieving macroeconomic stabilisation by reducing fiscal deficits and their financing via monetary expansion. As a result of these efforts, budgetary transfers to agriculture in Ukraine contracted sharply after 1994, from as much as 11 percent to roughly 2 percent of GDP (Table 3). A number of policy reforms specific to agriculture were also undertaken early in this phase; in late 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 1996 to 1998 can accurately be described as wasted. The CAEs proved to be little more than the old kolkhozes and sovkhoses under new names. While members theoretically had rights to their individual land shares, they had few practical means of exercising these rights, as land sale and rental were forbidden and individual land parcels were not demarcated.

In the food processing industry, a privatisation mechanism that gave supplying farms and the state 51 percent and 25 percent shares, respectively, with the rest going to employees and open sales, was introduced in 1996. In so-called 'strategic' areas (for example grain marketing), however, the state's share was often larger, and key

enterprises were often exempted from privatisation. As a result, much of the food processing and marketing sector remained monopolistic and inefficient. For key agricultural export products (e.g., grain and oilseeds), inefficient processing and marketing (i.e., transportation and storage) translated directly into depressed farm-gate prices. In 1999, it was estimated that inefficient grain marketing structures were leaving Ukrainian farmers with only roughly 40 percent of the f.o.b. export price, compared with 70 percent in the case of Germany (von Cramon-Taubadel 2005).

In the area of trade policy, the elimination of quotas and licensing restrictions led to little effective liberalisation (von Cramon-Taubadel and Koester 1998). Trade controls are valves that make it possible to channel trade flows and any associated rents. While export quotas and licences were eliminated to comply with IMF and World Bank conditionality 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. Even if these were not officially binding, local customs officials could, depending on who was asking, insist on their 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 Kiev who could 'facilitate' transactions.

Beginning with the 1996 harvest, a further valve was installed. Some regional (oblast) authorities declared bans on grain exports, ostensibly to secure payment for inputs that had been delivered in the spring and for tax debts. While the regional authorities had no right to impose such bans, the response of the central government in Kiev was ambiguous; repeated statements that such bans were illegal were coupled with references to the need to keep the state reserves supplied and to collect taxes and debts. 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 same excuses were used to justify them.

Under these conditions, private input suppliers found themselves unable to secure payment for their deliveries (foreign agricultural chemical firms had accumulated receivables of roughly US\$200 million by late 1999), and private input supply stagnated at very low levels (World Bank and OECD 2004, p. 5). Together with the government's inability to supply the right inputs at the right time to the right farms, and the low farm-gate prices mentioned above, this caused a rapid decline in

crop production in Ukraine in the second half of the 1990s. Livestock production also continued to contract, and by 1999 agricultural output had fallen to 50 percent of its pre-Independence level. Household production (which accounted for 99 percent of the potato, 89 percent of the vegetable and fruit, 82 percent of the milk and 69 percent of the meat production in Ukraine in 2004) remained more or less constant, but production on the CAEs (which accounted for over three-quarters of the grain, oilseed and sugar beet production in 2004) fell by more than 70 percent in the 1990s (Table 1 and Figure 1).¹⁷

Altogether, this second phase of agricultural policy developments was characterised by an imbalance between macroeconomic and sectoral reforms. While a semblance of macroeconomic stability was regained in the mid-1990s as inflation rates dropped and economic contraction decelerated (Table 1), macroeconomic reforms were not supported by structural reforms in agriculture and other sectors. Hence, macroeconomic stability formed a thin crust over a rotten core. The state attempted to prop up standards of living in the face of falling GDP, running foreign debt-financed budget deficits of 8.0, 4.6 and 7.1 percent of GDP in 1995, 1996 and 1997, respectively. A new currency, the Hryvnia (UAH), was introduced in 1996, and maintaining a stable nominal exchange rate vis-à-vis the US dollar was considered a policy priority. Against a background of continued double-digit inflation, however, this led to revaluation of the real exchange rate, and a corresponding burden on the real economy (see footnote 13).

These imbalances culminated in a financial crisis in September 1998. This crisis was triggered by international developments (Southeast Asia, Russia, Latin America), but the extreme vulnerability of the Ukrainian economy was home-made and some correction was inevitable. The Hryvnia devalued by roughly 45 percent vis-à-vis the US dollar between the third and fourth quarters of 1998, and by roughly 100 percent by the fourth quarter of 1999. This provided agriculture with an important impetus, setting the stage for the next phase in the evolution of agricultural policy in Ukraine.

Phase III: 1999-2000

¹⁷ Note that statistics on agricultural production by CAEs and household plots are biased in favor of the latter, as much household production is based on inputs provided by or stolen from the CAEs.

The third phase in independent Ukrainian agricultural policy was brief but crucial. In the aftermath of the 1998 financial crisis and following his re-election in late 1999, President Kuchma recognised the need to speed up the reform process, including in agriculture. On 3 December 1999 he signed a Presidential Decree (No. 1529/99 “On Urgent Measures for Accelerating Reformation of the Agrarian Sector of the Economy”) that stipulated that all CAEs distribute land shares and restructure to form new entities by no later than 30 April 2000. He entrusted Victor Yushchenko, a reform-oriented former Chairman of the National Bank of Ukraine, with the formation of a new government. One of Prime Minister Yushchenko’s first measures was the 17 January 2000 Cabinet of Ministers Resolution “On New Approaches to Supply Inputs to Farms” which stipulated that the government would henceforth supply inputs to farms only on a cash payment basis and which essentially put an end to the state order for grain and other agricultural products.

In March 2000 a further law wrote off the debts of farm enterprises that had fulfilled the terms of Decree No. 1529/99. Most former CAEs had done so, and in the process the number of collective farms fell as they adopted new legal forms, primarily partnerships and cooperatives. The distribution of land shares stipulated in Decree No. 1529/99 shifted the ownership structure of agricultural land in Ukraine in favour of private owners. By January 2002, only 4 percent of the arable land in the country remained in state hands; roughly 30 percent was privately owned and used by rural residents (private farms and household plots), and over 65 percent was owned by the members of the former CAEs.¹⁸ Altogether, almost 7 million Ukrainians became owners of land, with average land shares of 4.2 hectares. Accompanying measures to promote the development of a rental market for agricultural land (land rent had been formally legalised by a law passed in October 1998) led to the emergence of a rental market, providing land owners with a new source of income.

Finally, in July 2000, a new Land Code that abolished collective land ownership and provided for sale of agricultural land and its use as collateral passed first reading in the Ukrainian Parliament (Rada). Although the Land Code was not finally adopted by the Rada until October 2001, its consideration was a further indication that Ukraine’s agricultural policy makers were finally addressing important

¹⁸ See World Bank and OECD (2004, chapter 6). For more information on farm restructuring and land market reforms in Ukraine see Lerman and Csaki (1999), Lerman, Csaki and Feder (2002) and Puhachov and Puhachova (2001).

market-oriented reforms. A measure of constancy in policy leadership was also established at this time with the appointment of Ivan Kyrylenko as Minister of Agriculture in January 2000. Kyrylenko remained Minister for over two years and shortly thereafter became Vice Prime Minister responsible for agriculture for two further years until December 2004. This is a remarkable degree of continuity given that there had previously been eight different Ministers of Agriculture between Independence in August 1991 and Kyrylenko's appointment just over eight years later.

Together, these decisions generated considerable optimism in Ukrainian agriculture, and in 2000 much more capital flowed into farming than in earlier years. In 2000 and 2001, for the first time since 1995, Ukraine's agricultural enterprises generated an aggregate profit (World Bank and OECD 2004, p. 90). Agricultural output increased in these years, for the first time since Independence (Figure 1 and Table 6). As Table 6 demonstrates, the food processing industry also began to grow at this time. In both agriculture and food processing, employment began to fall and wages began to increase. The development of food processing – supported by significant inflows of foreign direct investment and with exports doubling in 5 years – is especially impressive. While it is difficult to distinguish between the contributions of the post-financial crisis exchange rate devaluation on the one hand, and reform measures on the other, it is clear that the latter contributed significantly to the turning point in Ukraine's post-Independence agricultural development at the beginning of the new Millennium (Åslund 2001).

Phase IV: 2001-today

The third phase of key reforms was short-lived and gave way to an ongoing fourth phase of stop-and-go reforms. Yushchenko's was replaced as Prime Minister after less than two years, and even as the reforms described above were being implemented, dirigistic measures were being introduced as well. These measures mainly represented attempts to regulate individual products markets such as those for grains, sugar and oilseeds. Decree No. 832 (June 2000) and Law No. 2238-14 (January 2001), for example, required the certification of grain exports, provided for mandatory crop insurance for grain producers, and enhanced the role of the state holding Khliv Ukrainy (Bread of Ukraine), which had been founded in 1996 and continued to control a strategic chunk of Ukraine's grain marketing infrastructure (e.g., elevators at

key locations, harbour facilities). These measures were taken against the background of a poor wheat harvest in 2000, which led to a rapid jump in wheat prices from export parity to import parity levels (see Figure 6 and the discussion in German Advisory Group, 2000). Due to the political sensitivity of wheat and bread prices, policy makers reverted to their planning ways and attempted to regulate prices and product flows (von Cramon-Taubadel 2001). This pattern of market instability, dirigistic over-reaction and amplified instability was repeated following the very poor grain harvest in 2003, in response to increasing meat and sugar prices in 2005, and again on grain markets as world market prices increased in late 2006.

Other measures taken in or after 2001 included minimum prices for sugar, and a pledge price system for grains modelled along the lines of the US loan rate system (that has been underfunded and therefore largely ineffective so far). In September 1999, the decision had been taken to introduce a 23 percent tax on sunflower seed exports, and neither the reform government under Yushchenko nor later governments showed any intention of eliminating this tax. A July 2001 amendment did reduce this export tax from 23 percent to 17 percent, but it also closed loopholes that had provided exemptions, thus increasing the effective export tax burden (Kuhn and Nivyevskiy 2004).

The Orange Revolution, which followed controversial presidential elections in late 2004, led to a change of government, but to no major changes in the stop-and-go, generally non-market orientation of agricultural policy since 2000. Victor Yushchenko, who had implemented key reforms in 1999/2000 (see above), emerged from the Revolution as President in early 2005. But the coalition government that he installed under Prime Minister Juliya Timoshenko was built on compromises that, *inter alia*, included a socialist Minister of Agriculture. Furthermore, Timoshenko herself responded to price hikes on meat, sugar and gasoline markets in early-mid 2005 with price controls or threats thereof. And in the summer of 2005 her solution to the problem of inflated marketing costs for grain (and the resulting low export parity prices at the farm gate)¹⁹ was to regulate the prices that Khliv Ukrainy and other state agents pay for transport, processing and handling services, granting them privileges not shared by their commercial grain trading competitors. On the positive side, a

¹⁹ The problem of inflated marketing costs mentioned above had not diminished: In 2005 as in 1999 Ukrainian grain farmers were receiving only roughly 40 percent of the f.o.b. export price, compared with 70 percent in Germany (von Cramon-Taubadel 2005).

number of steps towards Ukraine's WTO accession were taken in 2005. In particular, important changes in tariff schedules were introduced in mid-2005, reducing tariffs for non-sensitive food and agricultural products, unifying MFN and full tariff rates, increasing the uniformity of tariffs and dropping a number of mixed and specific tariffs.²⁰

The government that emerged from the Orange Revolution under Juliya Timoshenko was replaced in late 2005 by a caretaker government under Juri Jechanurov pending parliamentary elections in March 2006. These led in August 2006, after lengthy and controversial coalition negotiations, to a new government under Viktor Janukovitch, the beneficiary of the election fraud that had precipitated the Orange Revolution in 2004. Shortly after this government was formed, Janukovitch's Minister of Agriculture announced the introduction of a new system of licenses for grain exporters. This system was subsequently replaced with a quota system. The argument made to support these measures was that they were needed to guarantee food security and protect domestic consumers from rising international wheat prices; many observers attributed them to rent seeking and in particular an attempt to recoup the costs of election campaigns and coalition agreements. The impact on international grain traders who were suddenly unable to fill ships and orders was catastrophic (von Cramon-Taubadel and Raiser 2006).

In April 2007, President Yushchenko dissolved Parliament and called for new elections, a move that was challenged as unconstitutional and sparked a power struggle in Kiev. In late May, a compromise that will lead to parliamentary elections in September 2007 was reached between Yushchenko and his rival Janukovitch. In retrospect, the period since the presidential elections and Orange Revolution in late 2004 has added up to almost 3 years of political turbulence during which policy makers have had little time and even less inclination to deal with fundamental reform issues in agriculture.

Explanations for the evolution of agricultural policy since Independence

²⁰ According to estimates by the Ministry of Economy, the following reductions in average MFN rates were implemented: HS 01/05 – from 35 to 21.9 percent; HS 06/14 – from 31.7 to 19.7 percent; HS 15 – from 26 to 10.8 percent; and HS 16/24 – from 63 to 14.2 percent. However, these numbers clearly overestimate the actual tariff reduction because they only account for *ad valorem* tariffs or the *ad valorem* component of mixed tariffs, and exclude specific tariffs that typically produce the highest rates.

Agricultural policy is driven by the political/ideological orientations of those who make it, by the institutional, administrative and analytical capacities available to them, and by the external constraints, domestic and international, that they face. In the following we review these factors and conclude that in particular rent seeking has driven the evolution of agricultural policy in Ukraine since Independence.

Following Independence, the political establishment in Ukraine was preoccupied with nation building. Åslund (1999, p. 5) contrasts Ukraine with Estonia and Latvia, where economic reforms were seen as being an integral part of nation building. In Ukraine, the first president, Leonid Kravchuk, was a former Second Secretary of the Communist Party responsible for ideology, with little interest in economics. Under the Kravchuk administration, transforming what had been provincial institutions into national institutions in Kiev (i.e. creating a National Bank etc.) received the 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). Furthermore, due in part 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-oriented economic journal, and there was neither an elite with training in (agricultural) economics, nor much appreciation of basic economic issues in the general population.

Finally, in Soviet times, policy was made in Moscow and merely implemented in regional capitals such as Kiev. While many Ukrainians attained positions of responsibility in Moscow in Soviet times, the other side of this coin is that for decades, individuals with a talent for creative, strategic policy formulation were drawn away from Kiev, while the requirements of local plan administration and enforcement tended to select for individuals with a technocratic approach to 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 cohort 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 dominated by the perceived need to reduce political dependence on Russia. In the ensuing euphoria of nation building, all of the trappings of an inflated bureaucracy and stifling regulation emerged. By 1996, Ukraine had approximately 70 Ministries and State Committees (Sundakov 1996, p. 5).²¹ Combined with a lack of economic expertise and the fact that the old pre-Independence establishment (*nomenklatura*) in Ukraine had remained more or less intact, this created a very fertile environment for rent seeking.

Ministers of Agriculture in Ukraine have changed frequently since Independence, with 13 different Ministers serving over a period of 16 years. Furthermore, at various times, but not continuously, a Vice Prime Minister specifically responsible for agricultural policy has served parallel to the Minister of Agriculture. Certain individuals have come and gone several times, rotating between different posts. The Presidential Administration has traditionally also included a senior advisor responsible for agricultural issues, and under the old constitution up to 1 January 2006, the President was equipped with far-reaching powers to promulgate decrees. The result has been a multi-polar, fragmented and often competitive agricultural policy making system, with unclear and frequently contradictory delineation of responsibility.²² Parliament, the Cabinet of Ministers (CMU) and the President promulgate laws, resolutions and decrees, respectively. Added to this, the Ministry of Agriculture, oblast authorities, customs authorities, various State Committees and state enterprises such as Khlib Ukrainy can exercise considerable control over the interpretation and practical implementation of these legislative acts. It is not clear how responsibility for different tasks is divided between these various bodies, and the lack of personal continuity has not allowed a stable working relationship to develop.

²¹ State Committees have a somewhat lower status than Ministries, but their chairmen generally have Ministerial powers.

²² For example, it is reported that Presidential Decree 832, which called for the implementation of a price support system and export certification for grain in June 2000 (see previous section above) was prepared by the Presidential office without the knowledge of either the Vice Prime Minister responsible for agriculture or the Minister of Agriculture at the time.

Weak analytical and administrative capacities exacerbate this problem. Ministers and Vice-Prime Ministers responsible for Agriculture have been primarily drawn from practical agriculture and have tended to have production-oriented backgrounds (as tractorists, agronomists, etc.). This type of background is common in the lower echelons of the Ministry as well, so there is little appreciation of macroeconomic issues and general equilibrium linkages to the rest of the Ukrainian economy and world markets. A major deficit is that the system of agricultural education and research in Ukraine has remained firmly in the hands of an old guard of individuals who do not understand open-economy agricultural economics. Corruption in the education system is widespread, and there is much anecdotal evidence that degrees are more bought and sold than earned. Young agricultural economics who have gone abroad to receive an education have generally found that the academic and research community in Ukraine is not willing to provide them with opportunities commensurate with their abilities when they return. The result is a scarcity of capable analysts and incisive economic analysis to inform the policy making process.

This lack of analytical capacity and appreciation of what agricultural policy can and cannot achieve given domestic and international constraints has, until now, hindered the development of a clear vision of what key goals agricultural policy in Ukraine should pursue and what instruments are needed to pursue them. The fundamental tension that exists between farmers' interest in higher farm product prices on the one hand, and consumers' interest in inexpensive food on the other, has never been confronted squarely. Ministers have mainly engaged in fire-fighting, dealing with periodic crises on individual product markets as prices either fall or climb too much, and success still tends to be measured in tons of output.

A further theme is that of policy complacency. As illustrated in Tables 1 and 6, the overall trend in Ukrainian agriculture and food processing since 1999/2000 has been positive, as production, value added and exports have increased. Reforms have been slow and uneven, but they have sufficed to generate positive results. Indeed, it could be argued that Ukrainian agriculture has managed to succeed despite policy, thanks to Ukraine's natural comparative advantages and a positive overall economic environment (stability and growth) over the last six years. In this sense, Ukrainian agriculture suffers from the 'curse' of natural resource wealth that has been documented elsewhere (e.g., Gylfason 2002, Gylfason and Zoega 2001).

This curse can work via a variety of pathways besides policy complacency (for example, Dutch Disease mechanisms in certain contexts), and perhaps the most important pathway in the context of Ukrainian agriculture is that of rent-seeking. Endemic corruption and rent-seeking have both benefited from and contributed to the maintenance of a disoriented policy. As described above, in the years following Independence 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.²³ Rent seeking takes place at a national level, when oligarchs (many of whom are members of Parliament) manipulate the size and distribution of tariff rate quotas to their own advantage.²⁴ It also takes place at the local and individual farm level, when farm managers make side-deals with local authorities to deliver to local processing enterprises instead of higher-paying enterprises elsewhere, or when they under-invoice sales of produce to traders, pocketing the difference and reporting a loss to the tax authorities and their employees. The agricultural growth recorded in recent years has provided an enticing stream of proceeds to be divided and distributed. More ambitious reforms could transform this stream of proceeds into a torrent, but one that would wash away the elaborate system of channels and sluice gates maintained by today's beneficiaries.

A final political economic theme in agricultural policy making in Ukraine concerns land markets. The Socialists and Communists have staunchly opposed the development of a land market in Ukraine, and although they have not been able to hinder the emergence of a lease market and the adoption of a land code, they have succeeded in implementing and periodically extending a moratorium on land sale. It is reasonable to conclude that the Socialists' paternalistic rhetoric about the need to protect Ukraine's land and peasantry from rapacious capitalists is masking more pragmatic motives. Land reform would lead to competition for land and lead to rising land prices. The beneficiaries of the current system have little interest in a mechanism that channels agricultural profits into land rents, their ultimate destination under market conditions.

²³ For a discussion of this problem in transition economies, see EBRD (1999, p. 102-14). On rent seeking and trade in Ukraine, see also Havrylyshyn (1994).

²⁴ Striwe (2001) estimates the values of the rents associated with tariff rate quotas for sugar and wheat in Ukraine in 2000.

Implications for desirable versus likely/politically feasible future policy reform paths

The defining characteristic of Ukrainian agriculture today is its heterogeneity. As numerous studies have demonstrated²⁵, the distributions of efficiency and competitiveness across farms in Ukraine are very broad. Some farms have managed to restructure and invest in physical and human capital. They have taken advantage of the opportunities provided by the brief phases of policy reform, and they have dynamic, capable managers who cultivate the necessary ‘roof’ or network of contacts at the local administrative level. These perhaps 20-30 percent of Ukraine’s farms are relatively efficient and internationally competitive, especially at current high world market price levels, and they are responsible for most of the growth in Ukrainian agriculture in recent years.

The remaining 70-80 percent of the farms in Ukraine, and especially the lowest 40-50 percent of the efficiency and competitiveness distributions, are in much worse condition. They are highly inefficient, and many could double or triple production with the same input set, if managed properly.²⁶ These farms essentially act as anchors for their employees’ household production, providing machinery services, limited employment income (often in kind) and basic infrastructure. They have managed to survive despite their lack of profitability because of the tax exemptions provided to agriculture in Ukraine, and because market mechanisms that would otherwise lead to their exit (land markets and, at the limit, bankruptcy) have not yet been permitted to function in Ukrainian agriculture.

Hence, the speed with which Ukrainian agriculture grows in the future depends on whether policy makers will create an environment of incentives and pressures that accelerates the hitherto sluggish ‘rightward shift’ of the efficiency distribution of Ukrainian farms.

There is little reason to expect major changes in the nature of the agricultural policy making process or of the actors involved in this process in the immediate future. The Orange Revolution has entrenched democracy in Ukraine; unlike several other CIS countries, Ukraine has a vibrant, perhaps somewhat chaotic multi-party

²⁵ See Nivyeviski and Strubenhoff (2006) and von Cramon-Taubadel and Nivyeviskiy (2007).

²⁶ For a detailed comparison of farm types and efficiencies in Ukraine from a farm management perspective, see Lischka (2004).

system, and a lively media landscape. While Western media tend to cast ongoing political turmoil as a clash between pro-Western and pro-Russian forces, it is safe to assume that the latter are not interested in the loss of power and freedom to operate that absorption into a much larger and centralised Russia would entail. A new constitution as of 1 January 2006 has increased the powers of the Parliament and reduce those of the President. However, as the recent crisis over the dissolution of Parliament by President Yushchenko demonstrates, the new constitution is subject to interpretation and it will take years to establish stabilising precedents.

As has been the case repeatedly in the recent past, the Ministry of Agriculture will likely remain a bargaining chip in coalition negotiations, hampering the development of a long term strategic policy focus. There is no recognisable new generation of market oriented, open economy agricultural policy makers and analysts waiting in the wings in Ukraine; the domestic agricultural education and research establishment is not producing such individuals and there is no procedure/niche for absorbing and reintegrating individuals with foreign training. It thus appears likely that agricultural policy will continue to be designed and implemented by individuals who take a dirigistic and partial or sectoral view.

With its sizeable agricultural lobby and enhanced powers under the new constitution, the Parliament will likely attempt to increase its influence on agricultural policy making. A common demand in the past has been that a minimum level of agricultural support spending be defined and fixed by law (e.g., 10 percent of total budget spending). However, the fiscal space that Ukrainian policy makers have enjoyed in recent years could shrink if the external economic environment (significant jumps in energy prices following the conflict over gas prices with Russia in early 2006, and increasing competition on world market for metals, which have been the dominant source of export revenue) and internal conditions (rapid increases in budget outlays due to massive pension and minimum wage hikes granted in 2005 and 2006) were to worsen. According to simulations prepared by Movchan (2006), the gas price increase²⁷ will, *ceteris paribus*, lead to a cumulative medium-term reduction in Ukraine's real GDP of roughly 5.5 percent. Interestingly, the same general

²⁷ Natural gas accounts for almost one-half of total energy supply in Ukraine, and as a result of a new energy agreement with Russia its price increased from 60 to 95 US\$/tcm in 2006 and will further increase to 130 US\$/t in 2007 (Movchan 2006, Pavel and Chukai 2006). However, the new agreement with Russia is controversial, and many observers believe that it is not sustainable, so that gas prices will continue to increase in the coming years (Pavel and Chukai 2006).

equilibrium simulations suggest that agriculture in Ukraine will benefit (a cumulative increase in real output of 16 percent over the medium term), as highly energy intensive sectors (metallurgy, chemicals) contract strongly, releasing resources to less energy intensive sectors. These results, a sort of reverse Dutch Disease phenomenon, indicate that the general equilibrium impact of low energy prices on agriculture in Ukraine are not as straightforward as it may seem at first glance.

Perhaps the most important factor disciplining agricultural policy makers in Ukraine in the future will be WTO membership. Ukraine first applied for membership in the WTO in 1994, but it was not until the early years of the new century that negotiations entered a serious phase and Ukraine began to take steps to adjust its domestic policies accordingly. Ukraine has reached agreement with almost all of the members of its working party, and the outlines of an accession deal for Ukraine have taken shape (Zorya 2005).²⁸ In the area of market access, Ukraine will reduce its average tariffs in agriculture from roughly 30 percent to 13 percent.²⁹ To protect its sugar regime, an import tariff of 50 percent will likely be maintained. The Ukrainian government is confident that this will provide a sufficient margin of protection for the domestic sugar industry, but other calculations suggest that if world market prices for sugar fall from their current highs back to the \$200/t range, imported sugar priced accordingly at roughly \$300/t in Ukraine could undercut domestic Ukrainian production (Niviyevskiy and Strubenhoff 2006).

In the area of domestic support, Ukraine appears to have secured an AMS allowance of US\$1.7 billion based on the 2004-06 period. Zorya (2005, p. 33) estimates that Ukraine used roughly 40 percent of an AMS allowance of US\$1.14 billion that was being discussed in 2005. This would leave some scope for expansion of support measures for agriculture in Ukraine, subject to fiscal constraints. Disciplines on the use of export subsidies will likely have the most important and binding implications for future agricultural policy in Ukraine. As Ukraine has made no use of export subsidies in the past, the likely outcome of its WTO accession negotiations is a bound ceiling of zero. This implies that Ukraine will not be in a

²⁸ For impact of WTO accession on the economy as a whole and sectors other than agriculture, see Burakovskiy et al. (2004), Copenhagen Economics (2005), and Pavel et al. (2004).

²⁹ According to Copenhagen Economics (2005), simple average aggregate tariffs in agriculture and hunting can be expected to fall from 32 to 7 percent, and in food processing from 53 to 10 percent.

position to engage in any form of price support for agricultural products that it exports. It appears that some agricultural policy makers have yet to grasp this point.³⁰

On the negative side, although membership has been ‘just around the corner’ and ‘likely to happen by the end of this year’ for at least 3 years now, it is not clear at the moment when Ukraine actually will join the WTO. Here too, political turmoil since the Orange Revolution has made it difficult to sustain focus on substantive economic reform. Hence, the most likely path for Ukrainian agriculture appears to be one of continued muddling through, with WTO membership and fiscal constraints disciplining policy makers to some extent, and Ukraine’s agricultural potential, enterprising farmers and agribusiness entrepreneurs ensuring continued progress, albeit at a slower rate than could be attained with an appropriate policy mix.

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³⁰ In a discussion with one of the authors in Kiev in 2006, a Deputy Minister of Agriculture confidently predicted that Ukraine’s quota and price support system for sugar will lead to an increase in Ukrainian sugar production and perhaps even a return to a net export position.

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Table 1: Major economic indicators and production of major agricultural products in Ukraine, 1960 to 2005

	1960	1970	1971-75*	1976-80*	1981-85*	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Major economic indicators																							
Population (million)	42.9	47.4	48.4	49.7	50.6	51.0	51.9	52.1	52.2	52.1	51.7	51.3	50.8	50.4	49.9	49.4	48.9	48.5	48.0	47.6	47.3	46.9	
Rural population (mill.)	22.8	21.5	20.9	19.7	18.5	18.0	16.9	16.8	16.8	16.7	16.6	16.5	16.4	16.3	16.2	16.1	16.0	15.9	15.7	15.5	15.3	15.1	
Nominal GDP (bnUS\$)	na	na	na	na	na	na	81.5	77.5	73.9	65.6	52.2	48.2	44.6	50.2	41.9	31.6	31.2	37.8	42.6	49.5	65.1	83.1	
Real GDP growth (%)	na	na	na	na	na	na	-6.4	-8.4	-9.7	-14.2	-22.9	-12.2	-10.0	-3.0	-1.9	-0.4	6.0	9.2	5.2	9.6	12.1	2.6	
PPP/capita GDP**	na	na	na	na	na	na	7.8	7.2	6.6	5.8	4.4	3.9	3.6	3.5	3.5	3.5	3.8	4.1	4.3	4.8	5.3	5.5	
Inflation***	na	na	na	na	na	na	na	na	na	4735	891.2	376.7	80.3	15.9	10.6	22.7	28.2	12.0	0.8	5.2	9.0	13.5	
GDP shares (%): Agric.	na	na	na	na	na	na	25.2	22.7	20.2	21.5	16.2	14.5	11.8	11.8	11.9	11.7	14.4	14.4	13.0	10.9	10.8	10.8	
Industry	na	na	na	na	na	na	na	na	na	na	na	30.9	29.4	24.7	25.2	26.5	26.6	26.1	27.4	27.2	28.3	29.6	
Construction	na	na	na	na	na	na	na	na	na	na	na	7.3	5.5	5.4	4.8	4.1	3.6	3.6	3.4	3.9	4.3	3.9	
Trade & transport	na	na	na	na	na	na	na	na	na	na	na	14.5	19.6	20.4	20.6	19.7	21.3	23.0	23.1	25.0	24.7	26.8	
Other services	na	na	na	na	na	na	na	na	na	na	na	25.5	26.8	25.8	23.3	21.2	19.9	21.2	23.6	24.6	22.6	28.9	
Crop products (million tons)																							
Grains and pulses	21.8	36.4	40.0	43.1	39.3	37.5	51.0	38.7	38.5	45.6	35.5	33.9	24.6	35.5	26.5	24.6	24.4	39.7	38.8	20.2	41.8	38.0	
of which:																							
Wheat	6.5	15.5	19.7	21.9	18.8	18.1	30.4	21.2	19.5	21.8	13.9	16.3	13.5	18.4	14.9	13.6	10.2	21.3	20.6	3.6	17.5	17.9	
Corn	5.5	6.3	5.9	4.4	6.5	6.5	4.7	4.7	2.9	3.8	1.5	3.4	1.8	5.3	2.3	1.7	3.8	3.6	4.2	6.9	8.9	6.6	
Rye	1.4	1.2	1.3	1.3	1.2	na	1.3	1.0	1.2	1.2	0.9	1.2	1.1	1.3	1.1	0.9	1.0	1.8	1.5	0.6	1.6	1.3	
Oats	1.2	1.7	1.5	1.5	1.2	na	1.3	0.9	1.2	1.5	1.4	18.4	18.1	16.5	15.3	13.4	13.5	13.0	12.0	12.0	13.0	13.0	
Barley	4.3	8.0	8.2	10.6	7.9	7.7	9.2	8.0	10.1	13.6	14.5	9.6	5.7	7.4	5.9	6.4	6.9	10.2	10.4	6.8	11.1	8.8	
Sugarbeet	31.8	46.3	46	53.9	43.9	39	44.3	36.2	28.8	33.7	28.1	29.7	23	17.7	15.5	14.1	13.2	15.6	14.5	13.4	16.6	15.6	
Sunflower	1.7	2.7	2.7	2.4	2.3	2.3	2.6	2.3	2.1	2.1	1.6	2.9	2.1	2.3	2.3	2.8	3.5	2.3	3.3	4.3	3.1	4.3	
Potatoes	19.5	19.7	21	20.5	20	20	16.7	15.6	20.3	21	16.1	14.7	18.4	16.7	15.3	12.7	20.2	17.3	16.6	18.5	20.8	19.5	
Vegetables	4.9	5.8	6.6	7.6	7.4	7.4	6.7	5.9	5.3	6.1	5.1	5.9	5	5.2	5.5	5.3	5.7	5.9	5.8	6.5	7.0	7.3	
Fruits and Berries	1.1	2.4	2.6	3.1	3.2	2.6	2.9	1.5	2.1	2.8	1.2	1.9	1.9	2.8	1.1	0.8	1.5	1.1	1.2	1.7	1.6	1.7	
Animal products (million tons, except eggs)																							
Meat	2.1	2.8	3.3	3.5	3.7	3.7	4.4	4.0	3.4	2.8	2.7	2.3	2.1	1.9	1.7	1.7	1.7	1.5	1.6	1.7	1.6	1.7	
of which:																							
Beef and veal	0.7	1.2	1.3	1.5	1.6	1.6	1.5	1.5	1.3	1.1	1.1	0.9	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.5
Pork	1.0	1.3	1.6	1.3	1.4	na	1.3	1.1	0.9	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	
Poultry	0.2	0.2	0.3	0.5	0.6	na	0.7	0.7	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.7	
Milk	14	18.7	20.4	21.8	21.9	na	24.5	22.4	19.1	18.4	18.1	17.3	15.8	13.8	13.8	13.4	12.7	13.4	14.1	13.7	13.8	13.8	
Eggs (billion)	7.2	9.2	11.2	13.5	16.0	16.6	16.3	15.2	13.5	11.8	10.2	9.4	8.8	8.2	8.3	8.7	8.7	9.7	11.3	11.5	12.0	13.0	

Notes: * Five year averages; ** In thousand constant 1995 PPP US\$; *** % change in CPI, average over period.

Source: State Statistics Committee of Ukraine; Penkaitis (1994, pages 48 and 87-88); IMF (various issues); Université de Sherbrooke (2006).

Table 2: Tariffs and non-tariff measure intensity indices for the 5 big aggregates in Ukraine, 1993 to 2004

(percent)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Simple average MFN tariffs												
PrmAgr	7.8	7.3	7.2	9.7	22.9	24.2	28.7	24.8	29.3	30.6	49.8	51.2
ProFoo	8.8	12.7	12.7	22.8	39.0	47.1	56.7	55.5	66.0	65.0	88.4	90.6
NonAgFoo	8.5	10.8	10.7	18.1	33.2	38.8	46.6	44.4	52.8	52.6	74.5	76.4
OthPrm	5.7	5.4	5.4	6.7	15.6	17.3	19.3	16.1	19.8	20.1	27.1	28.4
Manufa	6.9	5.9	5.8	6.1	7.2	7.7	9.9	9.4	7.6	7.5	8.4	8.5
Weighted average MFN tariffs												
PrmAgr	15.9	4.2	3.7	4.3	13.0	10.6	8.0	10.2	22.1	25.5	15.4	13.0
ProFoo	10.4	16.2	16.2	27.0	49.5	46.7	55.3	45.9	51.4	57.9	73.8	62.5
NonAgFoo	12.1	12.4	12.2	19.9	38.0	35.3	40.4	34.7	42.2	47.7	55.4	46.9
OthPrm	2.8	0.4	0.4	7.8	8.6	8.4	1.1	0.9	1.5	1.6	1.2	1.1
Manufa	6.4	4.1	4.1	4.0	5.9	6.1	8.4	8.0	7.3	7.3	7.6	7.5
Simple average full tariffs												
PrmAgr	13.1	15.2	15.6	17.8	24.8	46.3	54.9	46.1	53.2	56.9	96.8	99.9
ProFoo	16.8	36.0	36.0	48.5	42.8	91.3	96.0	97.9	115.1	113.2	147.2	150.0
NonAgFoo	15.5	28.5	28.6	37.4	36.3	75.1	81.1	79.2	92.8	92.9	129.0	132.0
OthPrm	10.4	11.7	11.8	13.2	18.4	31.4	34.8	27.6	36.2	37.3	51.2	53.4
Manufa	12.5	14.0	13.9	15.0	14.4	15.0	16.6	16.7	17.3	17.2	18.2	18.3
Weighted average full tariffs												
PrmAgr	26.6	28.5	29.1	29.5	32.4	39.2	11.1	14.0	26.5	29.6	21.7	20.4
ProFoo	19.5	48.8	48.8	60.4	60.5	94.3	78.5	63.0	70.2	78.0	96.9	84.8
NonAgFoo	21.8	42.4	42.6	50.6	51.6	76.9	57.2	47.6	56.4	62.8	73.2	64.5
OthPrm	6.3	4.7	2.3	9.7	10.1	10.6	4.6	4.1	4.9	5.1	4.6	4.6
Manufa	11.9	12.6	12.6	13.6	13.7	13.6	15.7	15.9	15.6	15.6	16.0	15.9
Simple average aggregate tariffs												
PrmAgr	8.5	8.6	8.6	10.9	21.8	27.6	32.7	28.0	32.8	34.5	57.1	58.9
ProFoo	7.4	12.4	12.4	20.0	28.4	39.9	46.0	45.6	54.1	53.2	71.4	73.1
NonAgFoo	7.8	11.4	11.4	17.4	26.5	36.5	42.3	40.6	48.1	47.9	67.5	69.2
OthPrm	0.8	0.8	0.8	1.0	1.7	2.4	2.6	2.1	2.7	2.8	3.8	4.0
Manufa	5.2	4.6	4.5	4.7	5.5	5.8	7.3	7.0	5.9	5.8	6.4	6.5
Weighted average aggregate tariffs												
PrmAgr	17.2	9.5	9.2	9.8	16.6	16.4	8.2	10.4	21.6	24.7	15.7	13.8
ProFoo	8.7	16.2	16.2	24.0	36.8	40.1	42.7	35.1	39.3	44.1	55.9	47.7
NonAgFoo	11.1	14.8	14.7	20.8	32.0	34.7	34.4	29.3	35.4	39.8	46.3	39.6
OthPrm	0.4	0.2	0.0	0.9	1.0	1.0	0.3	0.2	0.3	0.3	0.3	0.3
Manufa	4.8	3.4	2.7	3.3	4.6	4.7	6.3	6.1	5.6	5.6	5.8	5.8
Index of non-tariff measures intensity (NTMI)												
PrmAgr	12.0	17.1	17.1	23.7	23.7	23.7	24.0	24.5	18.4	18.1	19.6	28.2
ProFoo	9.8	15.7	15.7	23.5	24.2	25.8	30.0	30.0	23.7	23.8	25.9	32.2
NonAgfoo	10.4	16.1	16.1	23.6	24.0	25.2	28.4	28.5	22.3	22.5	24.4	31.3
OthPrm	10.7	14.9	14.9	22.2	22.2	22.1	24.3	24.7	18.7	18.8	20.8	26.0
Manufa	6.2	7.0	7.5	14.7	14.8	15.3	16.2	16.3	10.6	11.0	12.4	12.9

Source: See Appendix for estimation of tariffs and calculation of NTMI.

Table 3: Nominal rates of assistance to agricultural industries and fiscal support for agriculture in Ukraine, 1992 to 2005

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
NRAs for importables (%)														
Sugar	11.5	4.3	3.4	-48.5	181.4	21.0	-0.9	-0.1	14.9	27.7	42.8	63.2	28.6	73.9
Poultry	-48.4	6.0	14.6	-14.9	-1.4	45.4	69.9	0.2	53.1	43.9	93.8	66.2	58.9	95.3
NRAs for exportables (%)														
Wheat	-68.3	-34.1	75.2	-34.0	-45.2	103.8	16.1	-16.4	-43.1	-1.7	-9.3	-38.1	-21.4	-17.3
Maize	-19.4	76.0	44.6	-23.6	-8.6	-23.3	-15.8	9.1	-20.2	-5.6	-5.9	14.4	-25.0	-2.9
Rye	-40.0	8.5	161.3	49.3	30.4	8.4	17.7	40.8	11.5	37.2	-4.1	16.9	2.3	23.4
Barley	-59.3	27.9	16.7	-26.6	-8.2	-5.2	13.9	-21.4	-14.3	-18.0	-20.4	9.1	-9.9	-13.2
Oats	-61.1	-6.3	415.6	154.5	34.0	27.2	-23.2	43.1	39.8	11.6	3.1	83.9	11.9	69.4
Oilseeds	-46.7	15.4	12.7	-27.9	-21.4	-22.3	-31.5	-32.7	-28.9	4.8	-34.0	-24.6	-9.5	-19.4
Milk	-48.8	8.5	-33.8	-47.9	-35.9	-7.2	-3.5	-30.0	-35.1	-30.4	-31.8	-19.1	-17.2	3.5
BeefandVeal	-18.9	40.8	-18.6	-48.8	-15.3	11.2	-14.4	-13.4	6.8	6.3	-7.5	10.1	-16.6	20.7
Pigmeat	-63.4	-42.5	-36.0	-50.9	1.1	-9.4	36.9	16.5	1.0	38.7	12.8	-29.7	-5.6	48.2
Eggs	-40.1	-9.0	11.7	9.3	92.0	75.2	88.4	42.1	-8.7	-7.1	-30.2	-47.2	-38.0	-20.9
NRAs for nontradables (%)														
Potatoes	0.0	0.0	0.0	0.0	-3.4	-57.1	-75.5	-65.1	-56.8	-46.1	20.7	10.0	-20.0	-19.9
Aggregate NRAs (%)														
Importables	-22.1	4.8	6.1	-42.4	81.9	29.4	21.1	0.1	-27.3	34.6	64.1	4.0	43.4	86.6
Exportables	-49.8	-0.7	-6.7	-38.8	-23.1	8.9	5.3	-15.1	-17.2	-6.7	-18.2	-13.9	-17.9	-2.4
Nontradables	0.0	0.0	0.0	0.0	-3.4	-57.1	-75.5	-65.1	-56.8	-46.1	20.7	10.0	-20.0	-19.9
Weighted average	-47.5	0.1	-4.9	-39.4	-16.2	10.9	6.7	-13.8	-20.0	-3.8	-13.8	-11.4	-14.3	3.8
Standard deviation	25.5	30.3	129.3	62.7	66.5	42.4	42.5	33.8	33.6	27.7	37.9	44.9	26.4	42.3
Share of above products in gross value of agric. production* (%)	64.4	74.0	66.3	57.3	82.4	84.4	82.4	82.2	77.5	74.1	67.4	74.6	67.9	71.7
Fiscal support for agriculture (million UAH)														
Budget expenditure	5.4	81.4	1086.5	8999.7	1269.1	872.5	943.2	935.1	1035.7	1741.5	1473.1	2827.8	3250.5	4379.1
Tax expenditure	0.01	0.06	232.6	696.5	501.6	774.3	1261.8	2768.0	1771.0	1941.0	3349.7	3424.6	3563.7	5677.7
Total fiscal support**	5.4	81.5	1319.2	1596.3	1770.0	1646.8	2205.0	3703.1	2806.7	3682.5	4835.9	6570.3	6999.0	10271.3
Fiscal support/GDP (%)	10.7	5.5	11.0	2.9	2.2	1.8	2.1	2.8	1.6	1.8	2.1	2.5	2.0	2.3

Note: * Calculated at undistorted prices. ** Includes expenditure on intervention measures (mainly grain) as well as expenditure on the agricultural machinery leasing program by the state enterprise Ukragroleasing in 2002-2004.

Source: NRAs – authors' calculations using Anderson et al. (2006); Fiscal support for agriculture 1992-2001 – World Bank and OECD (2004, Table 3.6); Fiscal support for agriculture 2002-2005 – own calculations using Ministry of Finance of Ukraine and Laws on Budget.

Table 4: Nominal rates of assistance for agricultural and non-agricultural products in Ukraine, 1992 to 2005
(percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Covered products	-47.5	0.1	-4.9	-39.4	-16.2	10.9	6.7	-13.8	-20.0	-3.8	-13.8	-11.4	-14.3	3.8
Non-covered products	-47.5	0.1	-4.9	-39.4	-16.2	10.9	6.7	-13.8	-20.0	-3.8	-13.8	-11.4	-14.3	3.8
All agric. products	-47.5	0.1	-4.9	-39.4	-16.2	10.9	6.7	-13.8	-20.0	-3.8	-13.8	-11.4	-14.3	3.8
Non-product specific input assistance (NPS)	2.42	0.95	2.83	1.72	2.98	2.58	2.67	2.11	0.85	1.01	1.18	1.21	1.69	2.49
Total agriculture incl. NPS*	-45.5	1.0	-2.2	-38.0	-13.3	13.5	9.4	-11.8	-19.2	-2.8	-12.7	-10.2	-12.7	6.3
Importables*	-22.1	4.8	6.1	-42.4	81.9	29.4	21.1	0.1	-27.3	34.6	64.1	4.0	43.4	86.6
Exportables*	-49.8	-0.7	-6.7	-38.8	-23.1	8.9	5.3	-15.1	-17.2	-6.7	-18.2	-13.9	-17.9	-2.4
Nontradables*	0.0	0.0	0.0	0.0	-3.4	-57.1	-75.5	-65.1	-56.8	-46.1	20.7	10.0	-20.0	-19.9
All agric. tradables*	-45.5	1.0	-2.2	-38.0	-13.3	13.5	9.5	-11.7	-19.1	-2.8	-12.7	-10.2	-12.7	6.3
All non-agric. tradables	3.2	2.5	2.1	1.6	1.9	2.5	2.7	3.8	3.6	3.4	3.4	3.4	3.5	3.3
Relative rate of assistance (RRA)**	-47.2	-1.4	-4.2	-39.0	-14.9	10.7	6.7	-14.9	-22.0	-6.1	-15.6	-13.2	-15.6	2.9

Notes: * NRA including product-specific, decoupled and non-product-specific subsidies; ** RRA = [the ratio of (1 + NRA) for agricultural tradables to (1 + NRA) for non-agricultural tradables] - 1, in percentage terms.

Source: Authors' calculations using methodology in Anderson et al. (2006).

Table 5: Consumer tax equivalents to agricultural producers in Ukraine, 1992 to 2005

(percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CTEs for importables														
Sugar	12.9	15.1	12.5	15.1	8.9	15.2	15.2	7.7	11.6	8.4	5.3	4.0	7.2	1.3
Poultry	5.9	6.3	3.5	5.3	4.6	5.4	5.0	2.3	2.1	3.0	-0.1	0.8	1.2	-3.1
CTEs for exportables														
Wheat	5.0	5.5	-32.1	0.2	2.6	0.4	2.9	-1.3	3.9	0.6	-0.6	-2.7	0.9	-0.2
Maize	3.6	4.4	-8.3	3.6	2.8	5.1	3.7	-3.4	3.1	0.8	-0.8	-9.1	1.4	-1.8
Rye	4.2	5.0	-44.3	-6.8	-1.8	1.9	2.8	-6.1	1.9	-1.2	-0.9	-9.4	-1.5	-5.0
Barley	5.5	5.6	-11.5	3.5	3.2	5.5	3.6	-0.2	3.6	2.0	0.8	-7.8	0.1	0.3
Oats	5.2	5.6	-55.8	-2.9	1.8	4.5	4.3	-5.8	1.3	0.4	-0.9	-17.2	-2.3	-7.6
Oilseeds	5.1	5.4	-6.7	5.1	4.3	5.8	4.6	0.5	3.8	0.7	1.4	0.8	1.7	0.7
Milk	5.9	6.5	5.2	6.0	5.5	6.0	6.0	3.8	5.0	5.4	4.5	3.6	3.6	0.4
Beef and Veal	5.5	6.3	4.7	6.1	4.9	5.8	6.2	3.1	3.7	4.3	3.7	2.7	3.9	-0.1
Pigmeat	6.2	6.8	5.1	6.1	4.5	6.1	5.5	1.6	3.8	3.1	2.8	4.0	3.3	-1.2
Eggs	5.2	6.3	3.5	4.8	2.1	5.0	4.8	-3.8	4.1	4.5	4.3	4.5	4.3	1.3
CTEs for nontradables														
Potatoes	0.0	0.0	0.0	0.0	13.3	13.3	13.3	13.3	5.3	8.5	3.6	4.5	8.6	3.3
Aggregate CTEs														
Importables	10.2	12.8	10.0	12.3	7.6	11.2	10.6	5.1	5.0	5.8	2.6	0.4	3.9	-1.5
Exportables	5.4	6.0	-7.5	4.5	4.0	4.5	5.0	1.2	4.0	2.8	2.1	-0.2	2.3	0.0
Nontradables	0.0	0.0	0.0	0.0	13.3	13.3	13.3	13.3	5.3	8.5	3.6	4.5	8.6	3.3
Weighted average	5.9	6.9	-5.2	5.5	4.5	5.2	5.6	1.6	4.2	3.1	2.2	-0.1	2.4	-0.2
Standard deviation	2.7	3.2	20.9	5.4	3.5	3.9	3.7	5.3	2.4	3.0	2.3	6.9	3.0	2.9
Share of above products in gross value of agric. production*	64.4	74.0	66.3	57.3	82.4	84.4	82.4	82.2	77.5	74.1	67.4	74.6	67.9	71.7

Note: * Calculated at undistorted prices.

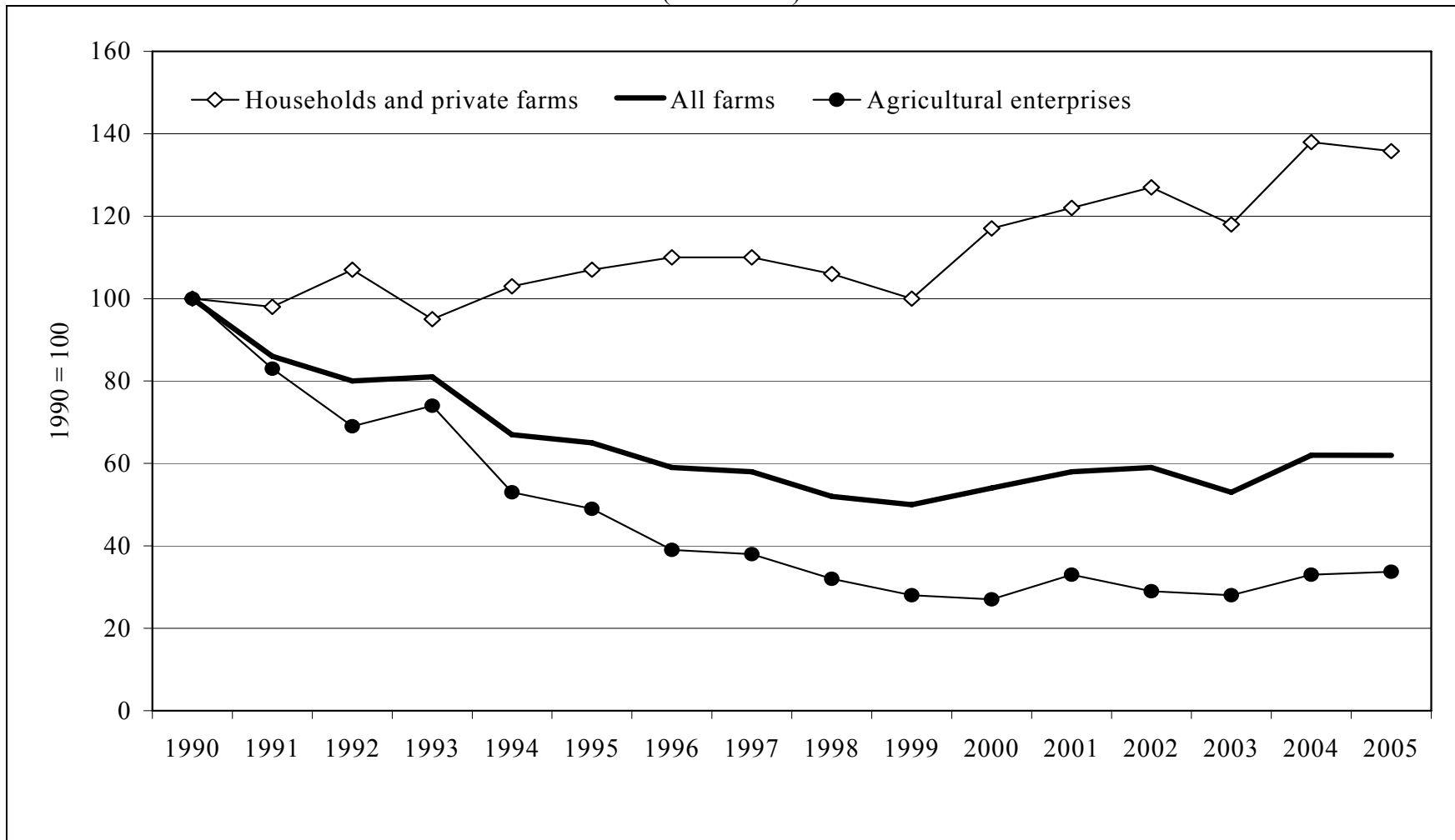
Source: Authors' calculations using methodology in Anderson et al. (2006).

Table 6: Economic indicators of agriculture and the food processing industry in Ukraine, 2000 to 2005

		2000	2001	2002	2003	2004	2005
Agriculture							
Gross agricultural output	UAH m	58,475	69,690	70,049	71,151	92,543	106,641
	% total output	13.5	13.3	12.2	10.3	10.1	9.6
Value added	% GDP	14.4	14.4	13.0	10.9	10.8	10.8
Value added / output	%	42.7	43.3	42.0	41.4	40.4	40.1
Structure of value added:							
Compensation to employees	% sector value added	18.2	18.1	15.9	14.4	14.0	16.1
Profit, mixed income	% sector value added	75.4	76.7	80.6	81.9	84.7	80.1
Net taxes on production & imports	% sector value added	6.4	5.2	3.4	3.6	4.8	5.5
Employment	thousand people	2,549	2,206	1,877	1,537	1,174	1,038
	% total employed	18.6	17.1	15.3	13.1	10.4	9.1
Average wage	UAH	114	154	183	219	295	415
Exports	UAH m	4,963	5,758	7,361	4,052	8,262	9,441
	% total exports	4.7	5.1	5.9	2.6	3.9	4.1
	% sector output	8.5	8.3	10.5	5.7	8.9	8.9
Imports	UAH m	921	862	801	5,024	3,338	3,804
	% total imports	0.9	0.8	0.7	3.4	1.8	1.7
	% sector output	1.6	1.2	1.1	7.1	3.6	3.6
Exports/imports	Index	5.4	6.7	9.2	0.8	2.5	2.5
Food processing industry							
Gross output	UAH m	48,892	64,810	68,973	84,470	103,221	116,639
	% total output	11.3	12.4	12.0	12.3	11.3	10.5
Value added	% GDP	7.8	7.7	7.9	8.2	4.2	7.8
Value added / output	%	27.3	24.2	25.8	25.8	24.1	26.0
Structure of value added:							
Compensation to employees	% sector value added	30.9	26.3	24.7	25.5	34.1	39.5
Profit, mixed income	% sector value added	15.0	24.8	27.6	28.6	15.6	17.7
Net taxes on production & imports	% sector value added	54.1	48.9	47.6	45.9	50.4	42.8
Employment	thousand people	518	485	464	445	452	465
	% total employed	3.8	3.8	3.8	3.8	3.9	4.0
Average wage	UAH	281	364	423	496	597	779
Exports	UAH m	7,775	7,780	8,961	12,246	16,725	16,135
	% total exports	7.3	6.9	7.2	7.9	7.9	7.1
	% sector output	15.9	12.0	13.0	14.5	16.2	12.1
Imports	UAH m	3,456	5,005	4,903	6,701	6,648	9,700
	% total imports	3.5	4.6	4.3	4.5	3.6	4.3
	% sector output	7.1	7.7	7.1	7.9	6.4	7.3
Exports/imports	Index	2.2	1.6	1.8	1.8	3.9	1.7

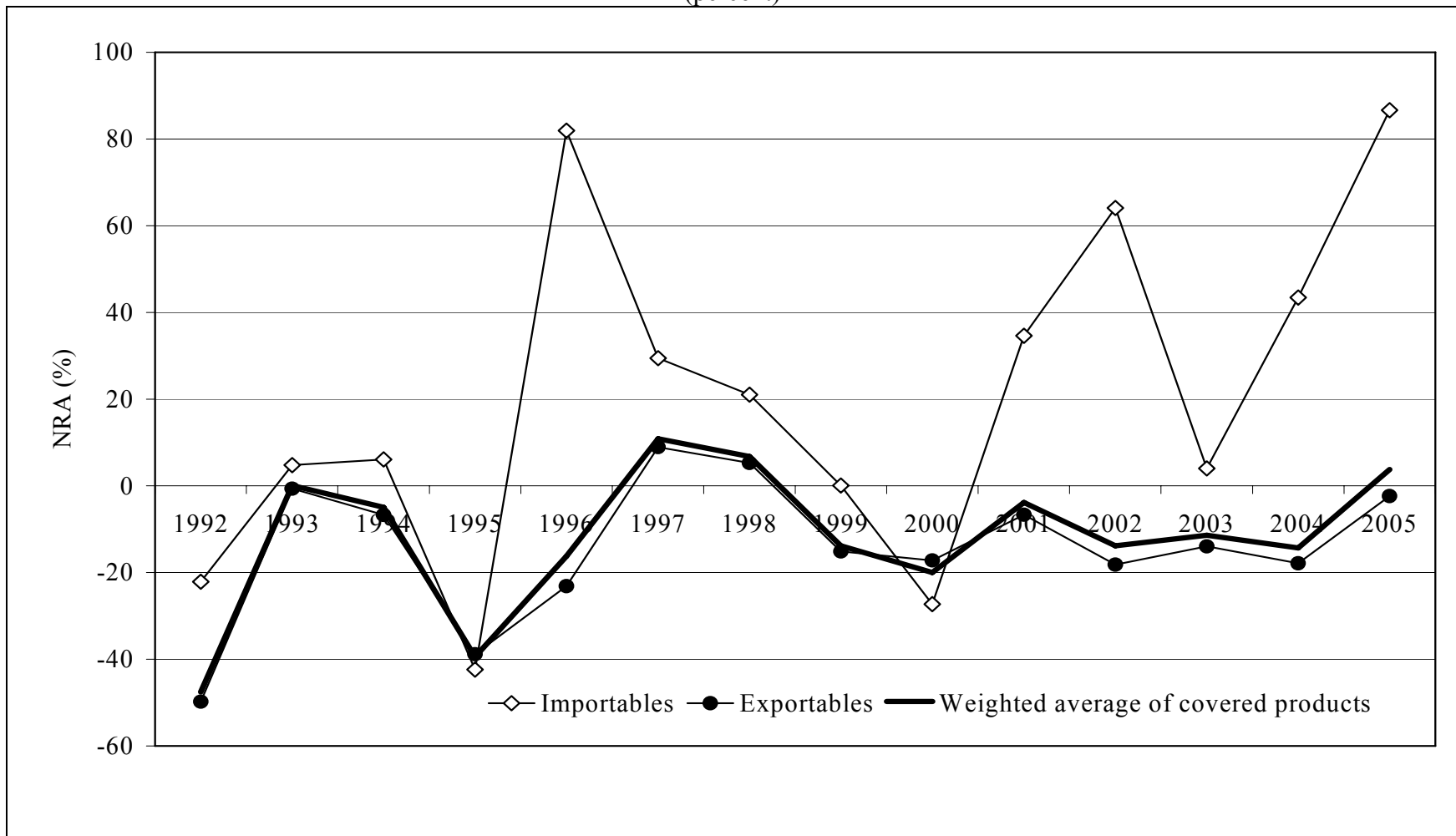
Source: State Statistic Committee of Ukraine.

Figure 1: Development of gross agricultural output in Ukraine by type of farm, 1990 to 2005
(1990 = 100)



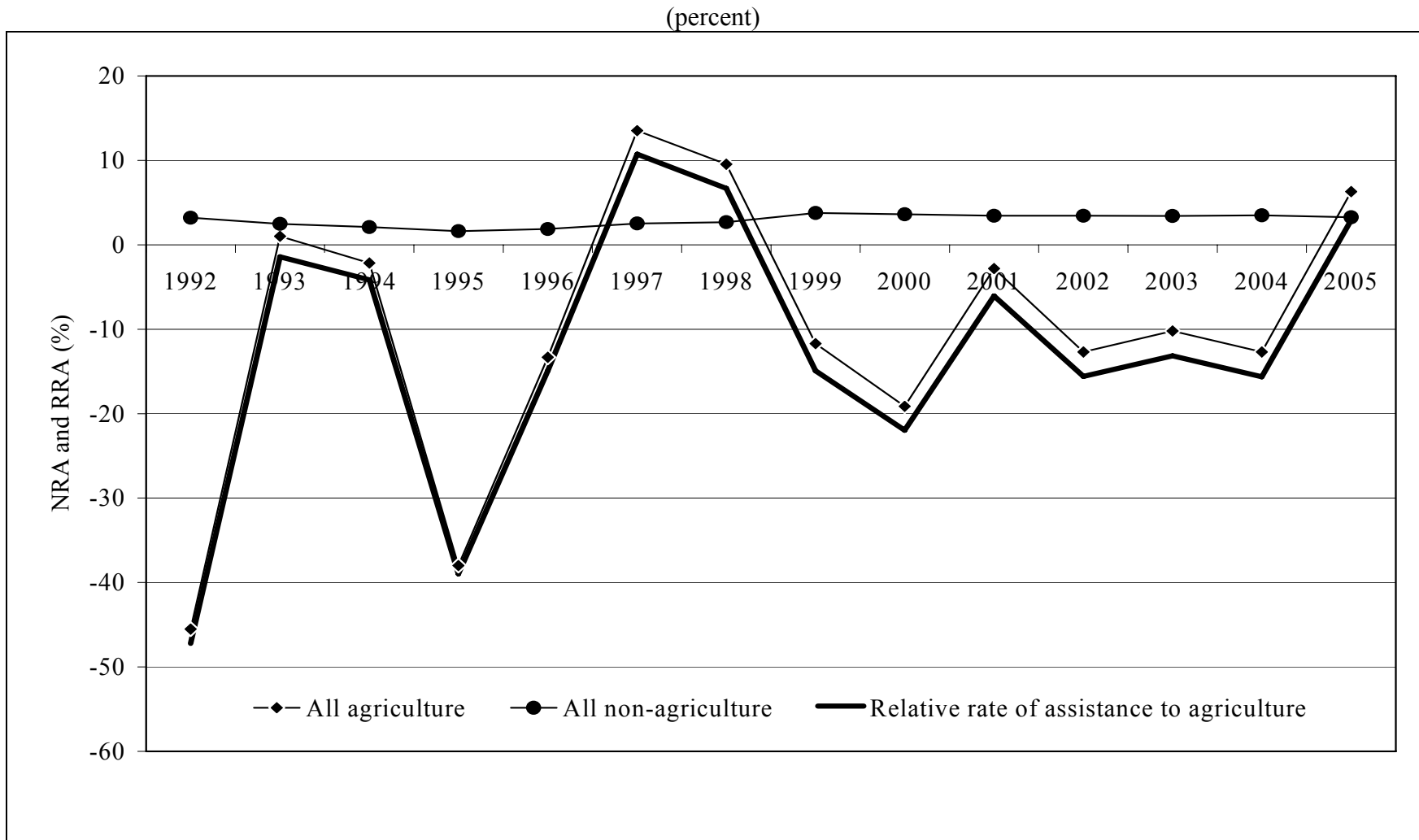
Source: State Statistics Committee of Ukraine.

Figure 2: Nominal rates of assistance to agriculture in Ukraine, 1992 to 2005
(percent)



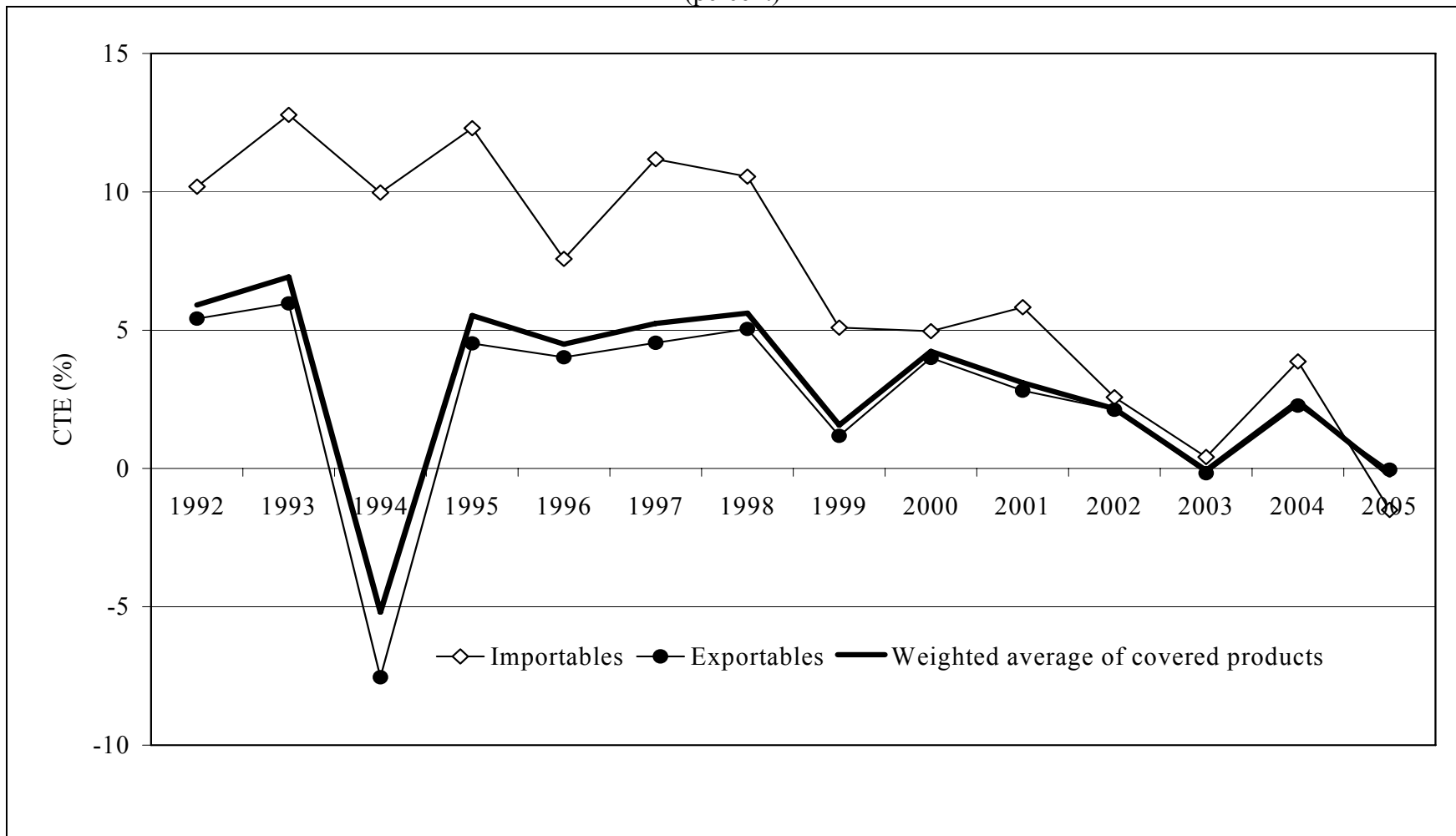
Source: Table 3.

Figure 3: Nominal rates of assistance to agriculture and non-agriculture, and the relative rate of assistance to agriculture in Ukraine, 1992 to 2005



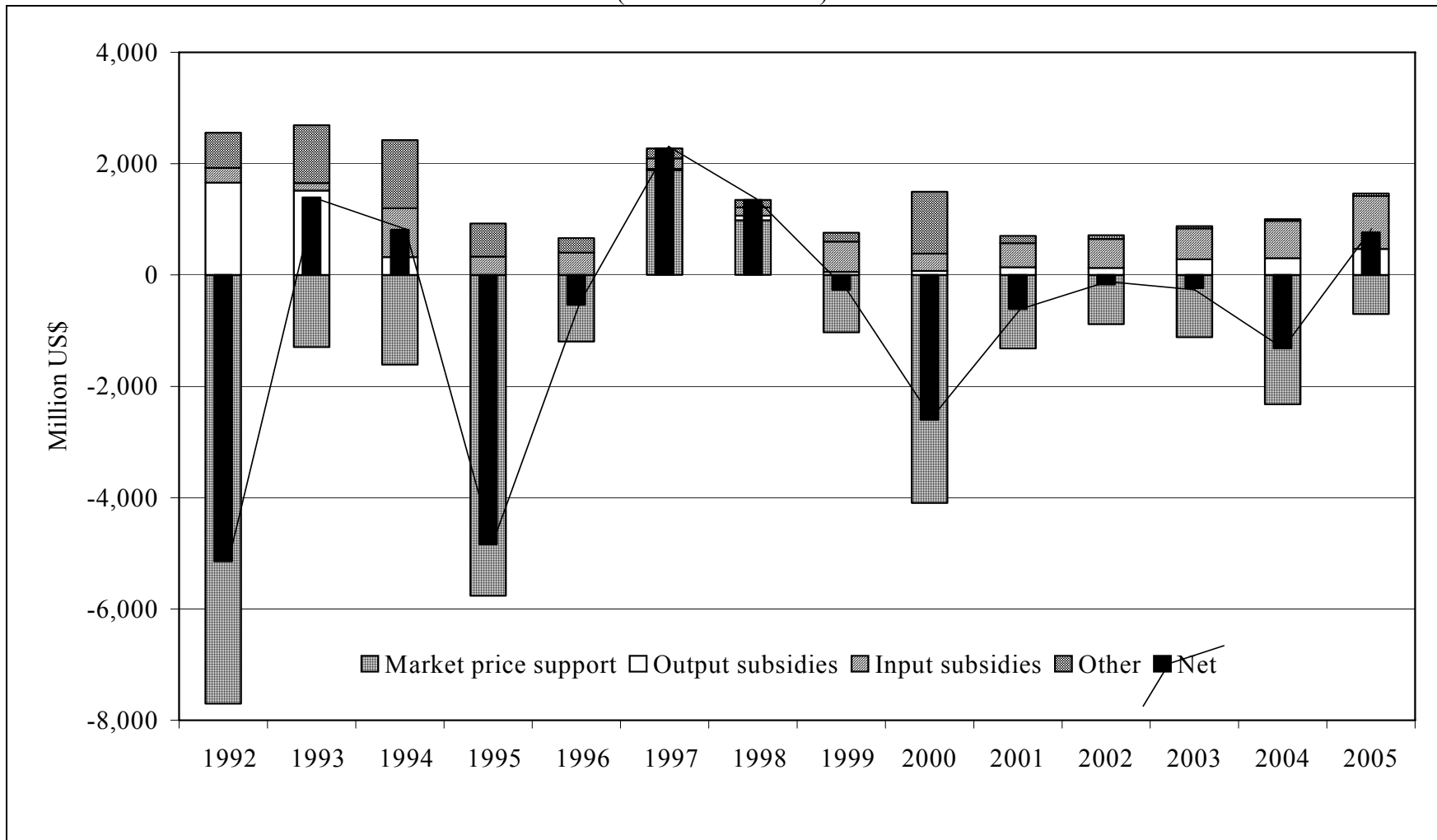
Source: Table 4.

Figure 4: Consumer tax equivalents to agricultural producers in Ukraine, 1992 to 2005
(percent)



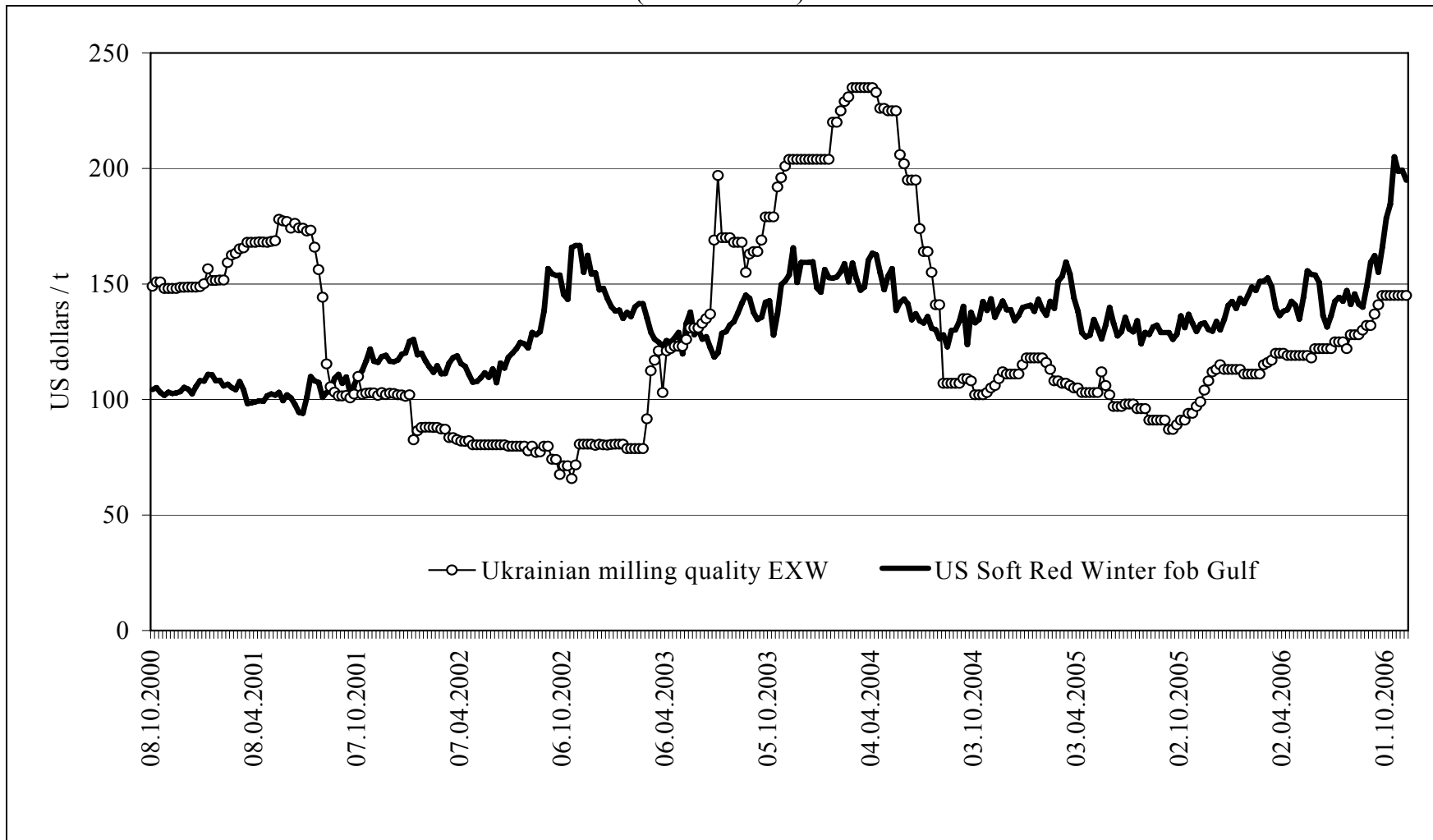
Source: Table 5.

Figure 5: The composition of producer support in Ukrainian agriculture, 1992 to 2005
(million US dollars)



Source: Authors' calculations using OECD (2005) and fiscal support data from Table 3.

Figure 6: The evolution of wheat prices in Ukraine and on the world market, 2000 to 2006
(US dollars/ton)



Source: UkrAgroConsult (various issues).

Appendix: Methodology for estimating tariffs and the non-tariff measures intensity index (NTMI)

Tariffs

Information on import tariffs was taken from Ukraine's legislation, namely the Unified Custom Tariff of Ukraine for rates before 2001, and the Custom Tariff of Ukraine for 2001 onwards.

There are three types of tariff rates applied in Ukraine: *ad valorem*, specific and mixed. All three were used for the estimation of the applied level of tariff protection in Ukraine. While nominal *ad valorem* tariffs were used directly, we have also estimated *ad valorem* equivalents of specific and mixed rates, wherever possible. The *ad valorem* equivalents are estimated for each year on the basis of annual average import unit values at the 6-digit level of the HS. Since Ukraine's Custom Tariff has higher level of tariff rates' disaggregation (up to 10 digits), tariff rates were taken as simple averages wherever necessary.

The formula used to calculate *ad valorem* equivalents of specific tariffs, in percent, is the following: (specific rate/unit value)*100.

Ad valorem equivalents for mixed rates were estimated in a similar fashion, the only exception being that of the *ad valorem* and specific parts of the mixed tariff, the larger is chosen: $\max\{(\text{specific rate/unit value}) * 100, \text{ad valorem rate}\}$.

There are some missing values in the resulting tariff rates dataset due to:

- Absence of imports under the code, thus no *ad valorem* equivalent was estimated.
- In some cases the specific or mixed rate is expressed in units other than kilograms or litres.
- Differences between the trade nomenclature in the Unified Custom Tariff applied before 2001, and the Custom Tariff adopted in 2001.

To deal with these problems, the following corrections were carried out:

- a) If a tariff rate was not estimated due to absence of imports, an *ad valorem* equivalent for another year or for a related code was used, or *ad valorem* equivalents were estimated on the basis of unit values for a related code.
- b) If mixed or specific rates were expressed in units other than kilograms or litres, the *ad valorem* part of the rate was used, or the *ad valorem* tariff for another year or a related code was used.
- c) If tariffs were missing due to difference in nomenclature, tariff rates for related codes were used.
- d) It was assumed that goods falling under HS code 9999AA (goods not elsewhere classified) were subject to zero tariff rates.

The resulting dataset includes 5230 tariff lines at the 6-digit level of the HS. Aggregated tariff rates were estimated using constant 2002 import weights to ensure that changes in aggregate tariffs reflect changes in the level of tariff protection only, and not changes in the composition of imports. The same weights based on total 2002 imports for each code were applied to both the MFN and full tariffs. The aggregate tariff is estimated as: $(0\% * \text{free trade share}) + (\text{MFN rate} * \text{MFN trade share}) + (\text{full rate} * \text{full rate trade share})$.

Non-tariff measures intensity index (NTMI)

Laird and Yeats (1990) developed a frequency index (F) that measures the percentage of tariff lines covered by at least one of a set of pre-selected group of non-tariff measures (NTMs). Formally:

$$F = \left(\frac{\sum_{i=1}^N D_i}{N} \right) \cdot 100,$$

where D_i is a dummy variable that takes a value of unity if one or more NTMs is applied to the tariff line i and zero otherwise, N is a total number of considered tariff lines, and $i = 1, \dots, N$.

The NTM intensity index (NTMI) developed by Movchan (2004a) is calculated as the percentage share of a number of pre-selected NTMs that is applied to the given number of tariff lines that describe a specific product or category. Formally:

$$NTMI = \left(\frac{\sum_{i=1}^N \sum_{j=1}^J NTM_{ij}}{J \cdot N} \right) \cdot 100,$$

where NTM_{ij} is a dummy variable that equals one if the j -th type of NTM is applied to tariff line i , and zero otherwise. N is the total number of tariff lines considered ($i = 1, 2, \dots, N$), and J is the total number of considered types of NTM ($j = 1, 2, \dots, J$).

Here, we consider 17 types of NTM. Thus, if only one NTM is applied, the NTMI = 5.9%, and the maximum possible NTMI of 100% is attained if all 17 types of NTM are applied to the product in question. The NTMI can be interpreted as a level of capacity utilisation, in which the full capacity means that all available NTM are applied to specific product.

The NTM categories considered and the information sources used to record them over time are as follows:

Licensing: Foreign trade related licensing is regulated by annual decrees of the Cabinet of Ministers concerning the list of commodities the exports and imports of which are subject to quotas and licensing.

Minimum custom value requirements: Minimum custom values requirements have been regulated by several legislative acts including “On introduction of minimal custom value for selected types of goods” (Decree of the Cabinet of Ministers, No. 1215, November 3, 1997, with subsequent amendments), “On introduction of minimal custom value for selected types of imported goods” (Decree of the Cabinet of Ministers, No. 1164, July 27, 1998, with subsequent amendments), “On introduction of minimal custom value for selected types of goods subject to excise” (Decree of the Cabinet of Ministers, No. 502, May 26, 1997, with subsequent amendments), and “On introduction of minimal

custom value for imported alcoholic beverages and beer” (Decree of the Cabinet of Ministers, No. 1433, December 2, 1996, with subsequent amendments).

Custom value calculation inquiry: The lists of commodities for which the custom value calculation inquiry is required are included in State Custom Service Orders No. 485, August 10, 1998; No. 782, December 2, 1999; and No. 433, June 6, 2001.

Technical regulations: Technical regulations include several categories. First is the compulsory certification of selected commodities, the list of which was introduced in the State Custom Service Order “On List of Commodities Subject to Mandatory Certification in Ukraine” (No. 95, June 30, 1993, with subsequent amendments). Second is the energy-saving control regulated by Cabinet of Ministries Decree No.1094, 1998. Third are the attestation requirements for imports of measuring equipment regulated by Cabinet of Ministries Decree No. 1300, 1998 and No.1501, 2001.

Weapon controls: Control over flows of commodities that could be used for creation of various types of weapon are regulated by Decrees of the Cabinet of Ministers No. 1005, August 22, 1996; No. 563, July 27, 1995; No. 302, March 12, 1996; No. 384, April 22, 1997; No. 1358, December 8, 1997, No. 482, April 10, 1008.

Sanitary controls: Sanitary controls were introduced in 1994 by the Law on securing of sanitary and epidemiologic well-being of the population, No. 4004, February 24, 1994.

Veterinary controls: Veterinary controls were introduced in 1992 with the adoption of the Law on veterinary medicine (No. 2498, June 25, 1992).

Phytosanitary controls: Phytosanitary controls were introduced in 1993 by the Law on plants quarantine (No. 3348, June 30, 1993).

Preliminary declaration: Preliminary customs declaration was first introduced in 1997 by the Decree of the Cabinet of Ministers “On procedure of mandatory payments in case of imports of selected commodities” No.52, January 23, 1997, and was applied to goods subject to excise duty. For imports of these goods, all mandatory payments (import tariff, VAT, excise duty, custom fees) are to be paid prior to import. In 1998 the State Customs Service expanded the list of goods subject to preliminary customs declarations (Order No. 305, May 22, 1998; Order No. 436, July 27, 1998 with subsequent amendments). In 2002 the Cabinet of Ministers elaborated the procedure of customs declarations (Decree No. 390, March 29, 2002), effectively legitimising the list of goods that are subject to preliminary custom declaration. The respective list of goods can be found in the Order of the State Customs Service No. 129, February 28, 2003 with subsequent amendments.

Ecological controls: Ecological controls are regulated by the Decrees of the Cabinet of Ministers No. 113, January 22, 1996, No.1034, June 15, 1999, and No. 1569, October 24, 2002.

Permits for medical imports: The State registration of medical equipment imports was initially introduced in 1993 by the Order of Ministry of Health Care (Order No. 158, July 9, 1993). In 1995 a new Order (No. 7) was issued that stipulated the development of State registry for not only medical equipment, but medical products in general. Later in the same year the list of products was published (for the purpose of this research same list was assumed to be used also in 1993-1995). Later this list was extended.

Safeguard measures: The law regulating introduction of safeguard measures in Ukraine is the Law “On Introduction of Special Measures Against Imports in Ukraine” (No. 332, December 22, 1998).

Anti-dumping measures: The law regulating introduction of anti-dumping measures in Ukraine is the Law “On Protection of National Producers Against Dumping Import” (No. 330, December 22, 1998).

Control over ‘Risk’ commodities (price and origin verification): In 2000 the State Customs Services of Ukraine suggested to define a list of ‘risk’ commodities for which frequent misspecification of codes and non-observance of tariff and non-tariff regulation was observed (Letter of the State Customs Services of Ukraine No. 21/1-175-EII, January 20, 2000). It was suggested to introduce a special customs clearance procedure that envisages stricter monitoring of trade flows of these commodities. In 2000-2001 the list of such commodities was developed, and the special procedures were gradually introduced. In 2002 the definition of ‘risk’ commodities was elaborated via addition of origin checks.

State procurement policy: In 1993 the Cabinet of Ministers issued Decree No. 871 that established a non-discriminatory system of tenders for state purchases of import goods. However, in 1996 the state procurement of imported goods was banned (except by personal decision of the Prime-Minister) by Cabinet of Ministers Decree No. 611. This Decree was applied until 2000, although in 1997 a new system of state tenders was established by Decree No. 694. In 2000 a new law on state procurement policy was adopted by Parliament (Law on procurement of goods, services and works using state funds, No. 1490, February 22, 2000), and in 2001 the Cabinet of Ministers created a new procedure of state tenders and compiled a list of goods that can be purchased only from national producers (Decree of the Cabinet of Ministers No. 347, April 11, 2001 with amendments). This Decree was abolished in June 2003. In 2004 the Parliament amended the law on state procurement, introducing the clause that agro-food products can be purchased only from domestic producers.

Appendix Table A1: Estimated tariff rates for selected agricultural products in Ukraine, 1993 to 2004**(a) Simple average, MFN tariffs (%)**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13,1	12,4
Beef fresh, chilled or frozen	5.0	17.5	17.5	17.5	31.0	41.7	63.3	72.7	70.9	71.3	84,6	71,5
Beef fresh or chilled	5.0	15.0	15.0	15.0	25.4	32.9	58.0	58.0	58.0	58.0	58,0	24,5
Beef frozen	5.0	20.0	20.0	20.0	36.6	50.6	68.6	87.5	83.8	84.5	111,2	118,6
Butter	5.0	40.0	40.0	30.0	30.0	50.0	57.9	84.5	114.1	128.0	51,4	47,9
Cattle live	5.0	5.0	5.0	5.0	10.0	30.0	11.4	10.4	45.9	46.3	46,3	6,9
Eggs	5.0	20.0	0.1	5.0	20.0	15.0	3.7	2.4	2.1	1.7	1,8	1,8
Maize	10.0	7.0	7.0	7.0	10.0	30.0	30.0	30.0	15.0	15.0	15,0	15,0
Milk	5.0	20.0	20.0	20.0	20.0	20.0	11.3	22.5	24.2	22.3	15,9	17,5
Oats	10.0	10.0	10.0	15.0	15.0	25.0	15.1	15.1	11.8	11.8	30,3	3,1
Pork fresh, chilled or frozen	5.0	20.0	20.0	20.0	33.5	46.8	28.8	84.0	62.7	70.3	126,8	153,5
Pork fresh or chilled	5.0	20.0	20.0	20.0	37.1	51.9	20.1	55.6	56.4	48.7	100,8	84,4
Pork frozen	5.0	20.0	20.0	20.0	30.0	41.7	37.5	112.5	69.0	91.9	152,8	222,5
Potato	10.0	10.0	10.0	50.0	109.5	160.1	100.1	120.8	177.4	59.1	178,5	160,4
Poultry live	5.0	5.0	2.5	5.0	5.0	8.8	7.8	11.9	21.6	21.7	28,8	28,8
Poultry meat	5.0	20.0	20.0	30.0	30.0	30.0	30.0	30.0	30.3	30.3	244,4	165,8
Rye	10.0	10.0	10.0	42.9	10.0	30.0	30.0	15.6	20.3	19.9	35,7	15,4
Rye, oats & barley	10.0	10.0	10.0	24.3	13.3	26.7	17.6	14.5	14.2	14.6	26,4	10,3
Skim milk powder	5.0	10.0	10.0	10.0	27.5	25.0	92.8	62.0	24.9	31.8	41,0	19,4
Sugar	10.0	21.4	21.4	21.4	41.4	67.0	75.4	59.1	67.2	71.7	83,5	114,2
Sunflower meal	2.0	0.0	0.0	0.0	5.0	30.0	0.0	33.3	25.4	25.4	25,4	25,4
Sunflower oil crude	10.0	30.0	30.0	54.3	77.8	105.9	144.6	121.1	115.5	139.3	176,9	237,8
Sunflower oil refined	10.0	30.0	30.0	57.8	64.3	81.4	127.8	133.5	110.5	102.4	118,7	138,9
Sunflower seeds	2.0	2.0	2.0	2.0	20.0	50.0	10.8	12.4	31.1	12.0	10,5	28,9
Swine live	5.0	5.0	5.0	5.0	10.0	30.0	30.0	30.0	30.0	30.0	30,0	30,0
Wheat	10.0	7.5	7.5	31.9	14.1	13.9	20.1	23.3	30.1	33.0	29,9	24,9

Appendix Table A1: continued
(a) Simple average, full tariffs (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	20.0	20.0	20.0	25.0	15.0	40.0	15.6	25.8	21.0	24.2	26,2	24,7
Beef fresh, chilled or frozen	10.0	40.0	40.0	40.0	31.0	83.5	126.6	145.4	141.8	142.5	169,2	143,1
Beef fresh or chilled	10.0	30.0	30.0	30.0	25.4	65.7	116.0	116.0	116.0	116.0	116,0	49,0
Beef frozen	10.0	50.0	50.0	50.0	36.6	101.2	137.3	174.9	167.6	169.0	222,5	237,2
Butter	10.0	80.0	80.0	30.0	30.0	100.0	115.8	169.0	128.2	256.0	102,7	95,7
Cattle live	10.0	10.0	10.0	10.0	10.0	60.0	22.9	20.8	91.7	92.6	92,6	13,7
Eggs	10.0	50.0	50.0	50.0	20.0	20.0	7.4	4.9	4.2	3.3	3,6	3,6
Maize	20.0	20.0	20.0	20.0	10.0	60.0	30.0	30.0	15.0	15.0	15,0	15,0
Milk	10.0	50.0	50.0	50.0	50.0	50.0	22.5	45.1	48.4	44.6	31,7	35,0
Oats	20.0	20.0	20.0	25.0	15.0	40.0	30.3	30.3	23.7	23.7	60,7	6,2
Pork fresh, chilled or frozen	10.0	50.0	50.0	50.0	33.5	93.6	57.6	168.1	125.4	140.6	253,6	307,0
Pork fresh or chilled	10.0	50.0	50.0	50.0	37.1	103.8	40.2	111.2	112.8	97.4	201,7	168,9
Pork frozen	10.0	50.0	50.0	50.0	30.0	83.4	75.0	224.9	138.0	183.9	305,6	445,0
Potato	15.0	15.0	15.0	50.0	143.7	320.2	200.1	241.6	354.9	118.2	357,1	320,8
Poultry live	10.0	10.0	30.0	30.0	5.0	16.3	15.6	23.9	43.3	43.4	57,6	57,5
Poultry meat	10.0	50.0	50.0	30.0	30.0	60.0	60.0	60.0	60.0	60.0	473,7	324,2
Rye	20.0	20.0	20.0	42.9	10.0	60.0	60.0	31.1	40.6	39.8	71,5	30,9
Rye, oats & barley	20.0	20.0	20.0	31.0	13.3	46.7	35.3	29.1	28.4	29.2	52,8	20,6
Skim milk powder	10.0	27.5	27.5	27.5	27.5	32.5	185.5	124.0	49.8	63.6	82,0	38,8
Sugar	20.0	42.9	42.9	42.9	41.4	134.0	83.3	66.1	75.8	81.7	94,6	149,5
Sunflower meal	5.0	5.0	5.0	5.0	5.0	60.0	0.0	66.7	50.8	50.8	50,8	50,8
Sunflower oil crude	20.0	60.0	60.0	54.3	77.8	211.8	289.3	242.2	231.1	278.6	353,8	475,6
Sunflower oil refined	20.0	60.0	60.0	57.8	64.3	162.8	255.6	266.9	220.9	204.7	237,4	277,9
Sunflower seeds	5.0	5.0	5.0	5.0	20.0	100.0	21.7	24.8	62.3	24.1	21,0	57,8
Swine live	10.0	10.0	10.0	10.0	10.0	60.0	60.0	60.0	60.0	60.0	60,0	60,0
Wheat	20.0	20.0	20.0	31.9	17.5	20.7	40.1	46.6	60.2	66.0	59,9	49,8

Appendix Table A1: continued
(c) Simple average, aggregate tariffs (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13.1	12.4
Beef fresh, chilled or frozen	4.1	14.6	14.6	14.6	22.6	33.8	51.3	58.9	57.4	57.7	68.6	58.0
Beef fresh or chilled	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Beef frozen	4.1	17.0	17.0	17.0	26.7	41.0	55.6	70.9	67.9	68.5	90.1	96.1
Butter	5.1	40.9	40.9	30.0	30.0	51.1	59.2	86.4	114.4	130.9	52.5	48.9
Cattle live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Eggs	7.1	32.6	21.5	24.3	19.7	16.9	5.3	3.4	3.0	2.4	2.5	2.5
Maize	13.3	11.4	11.4	11.4	9.9	40.0	29.7	29.7	14.8	14.8	14.8	14.8
Milk	4.9	20.1	20.1	20.1	20.1	20.1	11.1	22.3	23.9	22.0	15.7	17.3
Oats	20.0	20.0	20.0	25.0	15.0	40.0	30.3	30.3	23.7	23.7	60.7	6.2
Pork fresh, chilled or frozen	5.2	21.1	21.1	21.1	33.5	48.6	29.9	87.2	65.1	73.0	131.6	159.3
Pork fresh or chilled	10.0	50.0	50.0	50.0	37.1	103.8	40.2	111.2	112.8	97.4	201.7	168.9
Pork frozen	5.2	21.1	21.1	21.1	30.0	43.3	38.9	116.7	71.6	95.4	158.6	230.9
Potato	10.0	10.0	10.0	49.8	109.1	159.6	99.8	120.4	176.9	58.9	178.0	159.9
Poultry live	6.4	6.4	10.2	13.9	4.9	14.3	13.2	20.2	36.6	36.8	36.6	36.5
Poultry meat	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Rye	20.0	20.0	20.0	42.9	10.0	60.0	60.0	31.1	40.6	39.8	71.5	30.9
Rye, oats & barley	10.0	10.0	10.0	24.3	13.3	26.7	17.7	14.6	14.2	14.6	26.4	10.3
Skim milk powder	5.0	10.0	10.0	10.0	27.5	25.0	92.8	62.0	24.9	31.8	41.0	19.4
Sugar	9.4	20.1	20.1	20.1	34.5	62.7	63.7	50.0	56.9	60.8	70.8	98.8
Sunflower meal	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Sunflower oil crude	10.0	30.0	30.0	54.3	77.8	105.9	144.6	121.1	115.5	139.3	176.9	237.8
Sunflower oil refined	10.5	31.4	31.4	57.8	64.3	85.2	133.7	139.6	115.6	107.1	124.2	145.4
Sunflower seeds	2.5	2.5	2.5	2.5	19.9	59.0	12.8	14.6	36.7	14.2	12.4	34.1
Swine live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Wheat	4.5	3.7	3.7	12.1	5.6	5.8	9.1	10.5	13.6	14.9	13.5	11.3

Appendix Tabel A1: continued
(d) Weighted average, MFN tariffs (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13,1	12,4
Beef fresh, chilled or frozen	5.0	20.0	20.0	20.0	30.0	43.9	53.9	53.8	43.1	45.2	56,1	208,1
Beef fresh or chilled	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Beef frozen	5.0	20.0	20.0	20.0	30.0	43.9	53.9	53.8	43.1	45.2	56,1	208,1
Butter	5.0	40.0	40.0	30.0	30.0	50.0	57.9	84.5	114.1	128.0	51,4	47,9
Cattle live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Eggs	5.0	20.0	0.1	5.0	20.0	15.0	3.7	2.4	2.1	1.7	1,8	1,8
Maize	10.0	4.1	4.1	4.1	10.0	30.0	30.0	30.0	0.4	0.4	0,4	0,4
Milk	5.0	20.0	20.0	20.0	20.0	20.0	7.1	12.0	14.3	14.4	8,6	8,7
Oats	10.0	10.0	10.0	15.0	15.0	25.0	15.1	15.1	11.8	11.8	30,3	3,1
Pork fresh, chilled or frozen	5.0	20.0	20.0	20.0	30.0	41.5	42.0	106.0	69.9	93.6	158,4	226,8
Pork fresh or chilled	5.0	20.0	20.0	20.0	50.8	79.5	0.0	106.5	88.6	65.5	65,5	25,0
Pork frozen	5.0	20.0	20.0	20.0	30.0	41.5	42.0	106.0	69.9	93.6	158,4	226,9
Potato	10.0	10.0	10.0	50.0	109.5	160.1	100.1	120.8	177.4	59.1	178,5	160,4
Poultry live	5.0	5.0	0.1	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0,0	0,0
Poultry meat	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Rye	10.0	10.0	10.0	42.9	10.0	30.0	30.0	15.6	20.3	19.9	35,7	15,4
Rye, oats & barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13,1	12,4
Skim milk powder	5.0	10.0	10.0	10.0	27.5	25.0	92.8	62.0	24.9	31.8	41,0	19,4
Sugar	10.0	29.9	29.9	29.9	49.9	112.4	143.1	139.2	120.2	150.0	255,4	185,9
Sunflower meal	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Sunflower oil crude	10.0	30.0	30.0	54.3	77.8	105.9	144.6	121.1	115.5	139.3	176,9	237,8
Sunflower oil refined	10.0	30.0	30.0	57.8	64.3	81.4	127.8	133.5	110.5	102.4	118,7	138,9
Sunflower seeds	2.0	2.0	2.0	2.0	20.0	50.0	10.8	12.4	31.1	12.0	10,5	28,9
Swine live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Wheat	10.0	10.0	10.0	37.5	13.2	14.0	26.4	32.8	28.6	42.8	30,6	27,0

Appendix Table A1: continued
(e) Weighted average, full tariffs (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	20.0	20.0	20.0	25.0	15.0	40.0	15.6	25.8	21.0	24.2	26,2	24,7
Beef fresh, chilled or frozen	10.0	50.0	50.0	50.0	30.0	87.7	107.8	107.6	86.2	90.5	112,2	416,1
Beef fresh or chilled	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Beef frozen	10.0	50.0	50.0	50.0	30.0	87.7	107.8	107.6	86.2	90.5	112,2	416,1
Butter	10.0	80.0	80.0	30.0	30.0	100.0	115.8	169.0	128.2	256.0	102,7	95,7
Cattle live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Eggs	10.0	50.0	50.0	50.0	20.0	20.0	7.4	4.9	4.2	3.3	3,6	3,6
Maize	20.0	20.0	20.0	20.0	10.0	60.0	30.0	30.0	0.4	0.4	0,4	0,4
Milk	10.0	50.0	50.0	50.0	50.0	50.0	14.2	24.1	28.5	28.9	17,2	17,4
Oats	20.0	20.0	20.0	25.0	15.0	40.0	30.3	30.3	23.7	23.7	60,7	6,2
Pork fresh, chilled or frozen	10.0	50.0	50.0	50.0	30.0	83.0	84.0	212.1	139.8	187.3	316,8	453,7
Pork fresh or chilled	10.0	50.0	50.0	50.0	50.8	159.0	0.0	213.0	177.2	131.1	131,1	49,9
Pork frozen	10.0	50.0	50.0	50.0	30.0	83.0	84.0	212.1	139.8	187.3	316,8	453,7
Potato	15.0	15.0	15.0	50.0	143.7	320.2	200.1	241.6	354.9	118.2	357,1	320,8
Poultry live	10.0	10.0	49.5	49.5	5.0	0.0	0.0	0.0	0.0	0.0	0,0	0,0
Poultry meat	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Rye	20.0	20.0	20.0	42.9	10.0	60.0	60.0	31.1	40.6	39.8	71,5	30,9
Rye, oats & barley	20.0	20.0	20.0	25.0	15.0	40.0	15.6	25.8	21.0	24.2	26,2	24,7
Skim milk powder	10.0	27.5	27.5	27.5	27.5	32.5	185.5	124.0	49.8	63.6	82,0	38,8
Sugar	20.0	59.8	59.8	59.8	49.9	224.8	143.2	139.3	120.3	150.1	255,6	186,7
Sunflower meal	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Sunflower oil crude	20.0	60.0	60.0	54.3	77.8	211.8	289.3	242.2	231.1	278.6	353,8	475,6
Sunflower oil refined	20.0	60.0	60.0	57.8	64.3	162.8	255.6	266.9	220.9	204.7	237,4	277,9
Sunflower seeds	5.0	5.0	5.0	5.0	20.0	100.0	21.7	24.8	62.3	24.1	21,0	57,8
Swine live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Wheat	20.0	20.0	20.0	37.5	20.0	14.0	52.7	65.6	57.1	85.6	61,2	54,1

Appendix Table A1: continued
(f) Weighted average, aggregate tariffs (%)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13,1	12,4
Beef fresh, chilled or frozen	4.1	17.0	17.0	17.0	21.9	35.5	43.7	43.6	34.9	36.7	45,4	168,6
Beef fresh or chilled	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Beef frozen	4.1	17.0	17.0	17.0	21.9	35.5	43.7	43.6	34.9	36.7	45,4	168,6
Butter	5.1	40.9	40.9	30.0	30.0	51.1	59.2	86.4	114.4	130.9	52,5	48,9
Cattle live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Eggs	7.1	32.6	21.5	24.3	19.7	16.9	5.3	3.4	3.0	2.4	2,5	2,5
Maize	13.3	9.5	9.5	9.5	9.9	40.0	29.7	29.7	0.4	0.4	0,4	0,4
Milk	4.9	20.1	20.1	20.1	20.1	20.1	7.0	11.9	14.1	14.3	8,5	8,6
Oats	20.0	20.0	20.0	25.0	15.0	40.0	30.3	30.3	23.7	23.7	60,7	6,2
Pork fresh, chilled or frozen	5.2	21.1	21.1	21.1	30.0	43.1	43.6	110.1	72.6	97.2	164,4	235,5
Pork fresh or chilled	10.0	50.0	50.0	50.0	50.8	159.0	0.0	213.0	177.2	131.1	131,1	49,9
Pork frozen	5.2	21.1	21.1	21.1	30.0	43.1	43.6	110.1	72.5	97.2	164,4	235,5
Potato	10.0	10.0	10.0	49.8	109.1	159.6	99.8	120.4	176.9	58.9	178,0	159,9
Poultry live	6.4	6.4	14.0	17.5	4.9	0.0	0.0	0.0	0.0	0.0	0,0	0,0
Poultry meat	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Rye	20.0	20.0	20.0	42.9	10.0	60.0	60.0	31.1	40.6	39.8	71,5	30,9
Rye, oats & barley	10.0	10.0	10.0	15.0	15.0	25.0	7.8	12.9	10.5	12.1	13,1	12,4
Skim milk powder	5.0	10.0	10.0	10.0	27.5	25.0	92.8	62.0	24.9	31.8	41,0	19,4
Sugar	9.4	28.0	28.0	28.0	41.6	105.2	119.3	116.0	100.2	125.0	212,9	155,0
Sunflower meal	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Sunflower oil crude	10.0	30.0	30.0	54.3	77.8	105.9	144.6	121.1	115.5	139.3	176,9	237,8
Sunflower oil refined	10.5	31.4	31.4	57.8	64.3	85.2	133.7	139.6	115.6	107.1	124,2	145,4
Sunflower seeds	2.5	2.5	2.5	2.5	19.9	59.0	12.8	14.6	36.7	14.2	12,4	34,1
Swine live	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.	n.i.
Wheat	4.5	4.5	4.5	14.3	5.5	5.3	11.9	14.8	12.9	19.4	13,8	12,2

Note: n.i. signifies no imports in 2002, the year used to determine import weights.

Source: See Methodology description above.

Appendix Table A2: Non-tariff measure intensity indices (NTMI) for selected agricultural products in Ukraine, 1993 to 2004
(percent)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Barley	11.8	17.6	17.6	23.5	23.5	29.4	29.4	29.4	17.6	17.6	17.6	23.5
Beef	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Beef fresh	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Beef frozen	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Butter	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	23.5	35.3
Cattle	11.8	11.8	11.8	17.6	17.6	17.6	17.6	17.6	11.8	11.8	11.8	17.6
Eggs	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Maize	11.8	17.6	17.6	23.5	23.5	29.4	29.4	29.4	17.6	17.6	17.6	23.5
Milk	11.8	17.6	17.6	23.5	23.5	29.4	29.4	23.5	17.6	17.6	17.6	29.4
Oats	11.8	17.6	17.6	23.5	23.5	23.5	23.5	29.4	17.6	17.6	17.6	23.5
Pork	11.8	17.6	17.6	23.5	23.5	29.4	29.4	23.5	17.6	17.6	17.6	29.4
Pork fresh	11.8	17.6	17.6	23.5	23.5	29.4	29.4	23.5	17.6	17.6	17.6	29.4
Pork frozen	11.8	17.6	17.6	23.5	23.5	29.4	29.4	23.5	17.6	17.6	17.6	29.4
Potato	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Poultry	11.8	11.8	11.8	17.6	17.6	17.6	17.6	17.6	11.8	11.8	11.8	17.6
Poultry meat	11.8	17.6	17.6	23.5	23.5	23.5	35.3	35.3	29.4	29.4	35.3	35.3
Rye	11.8	17.6	17.6	23.5	23.5	23.5	23.5	29.4	17.6	17.6	17.6	23.5
SMP	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	35.3
Sugar	7.0	12.8	12.8	22.5	21.9	21.9	22.5	29.4	24.1	24.1	24.1	32.1
Sunmeal	11.8	17.6	17.6	23.5	23.5	29.4	29.4	23.5	17.6	17.6	17.6	29.4
Sunoil crude	5.9	11.8	11.8	19.6	19.6	21.6	27.5	27.5	21.6	21.6	23.5	29.4
Sunoil refined	5.9	11.8	11.8	19.6	19.6	21.6	27.5	27.5	21.6	21.6	23.5	29.4
Sun	11.8	17.6	17.6	23.5	23.5	23.5	23.5	23.5	17.6	17.6	17.6	29.4
Swine	11.8	11.8	11.8	17.6	17.6	17.6	17.6	17.6	11.8	11.8	11.8	17.6
Wheat	11.8	17.6	17.6	23.5	23.5	25.9	25.9	29.4	17.6	17.6	17.6	23.5

Source: See Methodology description above.