November 2007

Using Energy Resources to Diversify the Economy: Agricultural Price Distortions in Kazakhstan

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ABSTRACT The agricultural sector in Kazakhstan experienced declining output throughout the 1990s, partly because relative prices shifted from being distorted in favor of farmers to being distorted against them. After the end of the decade public policy shifted towards support for (or less discrimination against) agriculture, boosted by a billion-dollar Agriculture and Food Program for 2003-5, which was made possible by booming oil revenues. This paper provides estimates of producer support for the main agricultural products in Kazakhstan, and analyses the consequences of shifts in farm support policy. Methodologically, the paper's primary concerns are how to capture the direction and magnitude of price distortions, how to interpret the measures, and what are the policy implications.

Paper to be presented at the Center for Social and Economic Research (CASE) in Warsaw on 4th. December 2007. This paper draws upon research undertaken as part of a World Bank project on agricultural distortions coordinated by Kym Anderson and Jo Swinnen; more details of the data and calculations are in the working paper posted at www.worldbank.org/agdistortions. An earlier version of the paper was presented at a seminar at the University of Trento on 23rd. October 2007, and a later version will be presented at the American Economic Association meetings in New Orleans on January 4 2008.

Measuring the extent to which an economic activity is protected from import competition or favoured by subsidies has a long history. The nominal tariff is only one part of the story and since the early 1960s trade economists have used the effective rate of protection, i.e. the impact of tariffs on inputs as well as on the output of an activity to capture overall protection. In the project evaluation literature, since at least the influential work of Little and Mirrlees (1969), world prices have been recognized to be the appropriate opportunity cost measures which should generally be used in assessing social costs and benefits. In the contentious area of agricultural trade, the OECD has pioneered the use of producer support estimates - differences between farmgate and border price plus budget transfers - to capture the all-of-government distortions facing farmers.

In this paper the direction and magnitude of price distortions facing farmers are estimated to assess the actual impact of what appear to be large swings in policies towards agriculture in a tumultuous economic period for Kazakhstan. Border measures such as tariffs are not of great importance in this case, and the paper attempts to separate the impact of behind the border trade costs (Anderson and van Wincoop, 2004) and direct support such as input or other subsidies.

The economic history of Kazakhstan since the country became independent at the end of 1991 divides sharply into two eras. From 1991 until 1998 the economy went through a severe recession, which was prolonged by the 1998 Russian Crisis and only turned around in 1999 (Appendix Table A2). The post-1999 growth was in part recovery and in part stimulated by a large currency depreciation, but most of all it has been driven by oil exports. New discoveries, new pipelines which reduced transport costs, and soaring oil prices combined to increase Kazakhstan's oil exports from $1.6 billion in 1998 to $7.3 billion in 2003, and fuel double-digit GDP growth in the early years of the twenty-first century (Pomfret, 2005).

The agricultural sector is a major part of Kazakhstan's economy, with between a quarter and a half of the population depending upon it.[1] Following the Virgin Lands program of the late 1950s and 1960s, Kazakhstan became a major grain producer, on top of the traditional pastoral economy and a cotton sector concentrated in the south. After independence the agricultural sector experienced a severe decline; the annual growth rate of agricultural value-added 1990-2001 was -3.22%. The decline was reversed around the turn of the century, and from 1999 to 2004 agricultural output grew at over 5% a year, mostly due to increased crop production while livestock growth was more modest.[2] One reason for the decline was a policy vacuum, which saw the rapid switch in the early 1990s from support for farmers to a market situation where prices of inputs rose much faster than output prices. The policy situation was reversed in the early 2000s as the government responded to the oilboom by the

[1] The number of people involved in agriculture is difficult to define, because many people who lost their jobs during the transition from central planning reverted to growing their own food, although they may not have been officially recorded as employed in agriculture. Even though it accounts for less than ten percent of GDP, the farm sector involves perhaps a third of the population. According to FAO data for 2001, out of a population of 15.5 million, 6.9 million was rural and 3.0 million agricultural, but of the economically active population of 7.6 million only 1.3 million was recorded as being in agriculture. According to World Bank data, agricultural value-added as a share of GDP in 2001 was 9.37%, but the World Bank's 2006 Agricultural Policy Assessment stated that about 43% of the population rely on agriculture for their livelihood.

[2] The growth rate is from the World Bank's 2006 Agricultural Policy Assessment. It is largely driven by the increased wheat harvest - from 4.7 million tons in 1998 to 11.5 million tons in 2003 - which may reflect year-on-year fluctuations rather than an increase in the average harvest (Table 1).

establishment of an oil fund and promotion of economic diversification. One aspect of the diversification strategy was generous support for agriculture.

The first two sections of this paper examine the historical background and the evolution of policies since independence. The third section presents estimates of the distortions, with emphasis on three principal and different sectors of the farm economy: the grains which dominate agricultural exports, the livestock sector, and the regionally concentrated cotton sector. The fourth section draws conclusions

1. Historical Background

Agriculture in the territory of Kazakhstan was traditionally pastoral and nomadic. From the mid-1800s, as Russia exercised greater control over the territory, public policy encouraged sedentarisation, and a growing proportion of nomads, as well as Russian settlers, were planting winter grain by the end of the century. The most dramatic change after the 1917 revolution was the enforced collectivization of 1928-9, which resulted in huge loss of livestock and a great famine. In the 1950s the Virgin Lands program brought about 25 million hectares into cultivation (ie. over 60% of the current arable land). Northern Kazakhstan became a major producer of wheat and barley, although a substantial portion of the land could not sustain long-term agriculture and due to the variable climate harvests were highly volatile (Pomfret, 1995, 82). Agricultural production was carried out on large state or collective farms, whose size averaged 35-40,000 hectares in Kazakhstan, and on over 3 million small private plots which produced over a third of total output (Green and Vokes, 1997, 262-3).

In 1991, just over a quarter of the workforce was employed in agriculture, but agricultural output accounted for less than 15% of GDP. Grazing and rangeland occupied 140 million hectares, and the livestock sector comprised mainly cattle and sheep. Of 39 million hectares of cultivated land, 65% was devoted to cereals and 33% to fodder crops. In the 1980s Kazakhstan exported up to 10 million tons of wheat, and around 300,000 tons of meat, 250,000 tons of milk and 150 million eggs a year to other Soviet republics (de Broeck and Kostial, 1998, 39-49). Other crops, while minor in terms of overall acreage, were regionally significant. In the south, rice and cotton were important crops, and in 1991 cotton was Kazakhstan's third-largest export to non-USSR markets, after mineral fertilizers and coal. Oil crops (sunflower, soy, rape, etc), mainly grown in East Kazakhstan and Pavlodar oblasts, satisfied about two-fifths of domestic demand.

In the Soviet economy agriculture received net support as key inputs such as fuel and fertilizers were provided at below world prices, and some inputs would not have been used had they been fully costed (eg. fodder transported over large distances by rail or cotton-harvesting machines). Under the state order system there was considerable variation in the profitability of different agricultural activities. In 1991, the purchase price of wheat was more than triple production costs; the corresponding ratios were 156% for sunflower, 98% for raw cotton and 75% for potatoes, but less than 20% for sugar beets, poultry or pigs. Comparative advantage is reflected in lower production costs, but these numbers also suggest that there were positive incentives for Kazakhstan's major crops while import-competing items like sugar beet and poultry were less favored. This incentive structure based on artificial prices would, of course, change during the transition to a market-based economy.

During the 1990s output of all major agricultural products declined substantially (Table 1). Recovery started around 1999, although the pattern is

complicated by huge annual variations in the wheat harvest. In southern Kazakhstan, the turnaround started slightly earlier. Cotton output almost tripled between 1998 and 2003, as the area sown with cotton, which was more or less constant in the first half of the 1990s at 107-111 thousand hectares, increased from 115 thousand hectares in 1998 to 182 thousand hectares in 2003.[3]

The level of agricultural trade as well as the relative importance of food exports declined substantially after independence. In 1988 agriculture accounted for 17% of exports and the food industry for 7%, but by 2000 these shares had fallen to 6% and 1% (Freinkman et al., 2004, Table 1.4). In this period the share of oil and gas rose from 10% of exports to 50% and that of metals from 19% to 32%. Oil accounted for an ever-increasing share after 2000 as both output and the world price increased.

The post-independence pattern of agricultural trade was of primary products being exported and processed food products of higher perceived quality being imported.[4] Kazakhstan continued to be a substantial food exporter, selling grains, and fruit and vegetables primarily to Russia and other CIS markets, and a minor cotton exporter (Table 2). Exports of livestock products declined substantially; dairy exports were negligible by the late 1990s and meat exports continued to fall, from $16 million in 1998 to $5 million in 2001. In the early 2000s, meat, milk and eggs – all important exports in the Soviet era – had almost become non-traded items. Kazakhstan was a net importer of sugar (from outside the CIS) and of chicken and dairy products (from Russia). Between 1998 and 2001 imports of dairy products rose substantially (from $12.3 to $27.0 million for milk and cream, and from $6.6 to $8.4 million for butter), while meat imports fell (from $32.1 to $18.2 million), suggesting some import substitution in the latter but not in the former.[5]

Table 3 presents data on the value of Kazakhstan's agricultural trade in 2003, the latest year available from the UN-COM trade database. The twenty-seven 2-digit agricultural and agri-processing sectors sold $998 million worth of exports (7.7% of total exports), while imports of these goods amounted to $694 million. This was a record year for wheat exports and a good year for cotton exports (Table 2), so the total may be unrepresentative, but panel (a) indicates the high level of concentration of farm exports. Wheat and wheat flour (58%), cotton (14%), and hides and leather (5%) account for over three-quarters of agricultural exports. Imports are more

[3] In part, this reflected an earlier reform of farms in southern Kazakhstan and the decision of farmers, especially in the Kzylorda region to shift from rice to cotton production. Cotton output figures need to be treated with caution due to the extensive smuggling from Uzbekistan and to a lesser extent Turkmenistan as farmgate prices in those countries were increasingly repressed by state marketing agencies. Sadler (2006, 104) reports estimates that smuggled cotton from Uzbekistan accounted for 25-50% of Kazakhstan's reported output in the early 2000s, but it is hard to evaluate such ballpark figures. The volatility of the cotton sector, as reported in the official data (Table 1), is reflected in the 42% decline in the value of the crop in 2004 and in the 25% drop in output in 2005.

[4] There were some idiosyncratic short-term developments. Food aid in the early 1990s included low-cost chicken parts whose importation exacerbated the problems faced by domestic poultry producers, who were among the most-affected by increased prices for fuel and concentrate feed. As livestock were slaughtered during the transitional recession, the oversupply of low quality hides and skins provided an opportunity for itinerant traders to arrange international export of these less-perishable products during the mid-1990s. For an analysis of Kazakhstan's agricultural trade in 1997, see Weber (2003, 395).

[5] The import dominance of Russia reflects an earlier start to investment in agro-processing after the end of central planning. There are anecdotal reports of dairy farmers in northern Kazakhstan beginning to improve quality after the 1999 devaluation of the tenge in order to reclaim milk markets in Russia that they had lost during the 1990s, but this had had little impact on export sales by 2003 (Table 3). The recent situation in milk appears to be one of intra-industry trade with northern Kazakhstan exporting to Russia and south-east Kazakhstan importing from the Kyrgyz Republic.

diverse, with only raw sugar accounting for over 10% of agricultural imports. Other substantial import categories tend to be semi-processed items, such as tea and coffee, alcoholic beverages, dairy products and ice cream, edible oils, tobacco products, chocolate and confectionary and bakery products.

2. Evolution of Policies since 1991

The general policy stance towards agriculture was one of neglect in the 1990s, followed by more positive attention in the early 2000s. The effect was that relative prices shifted against farmers as agriculture went from being a relatively favored economic activity in the late Soviet era to one suffering from net discrimination (or at best neutrality) by the late 1990s. The large currency depreciation in 1999 helped the traded goods sector, including producers of the main farm exports (wheat and cotton). As government revenues were boosted from the oilboom, budgetary assistance to the agricultural sector increased, especially in the billion-dollar Agriculture and Food Program for 2003-5 (AFP), which had a variety of objectives including consolidation of farms and improving infrastructure and provision of public goods.

(a) Prices and subsidies

Following the dissolution of the USSR in December 1991, Kazakhstan attempted to maintain traditional trade ties through bilateral agreements for interstate deliveries. The modified state order system underpinning these arrangements covered about three-quarters of 1992 output, including most primary products. Delivery targets were, however, not met and in 1993 the government replaced state orders by a more flexible state needs system, covering about a fifth of output, mainly agricultural products. Compliance was poor, and in 1994 the state needs system was downsized and by 1995 it only applied to grains. After state orders were abolished the government continued to purchase grain for the strategic reserves - 700,000 tonnes in 1997 (Csaki and Nash 1998, 91) - and this price was often used as a reference price.

The general price liberalization process was completed at the end of 1994 with the abolition of fixed prices for bread and for oil products. Foreign exchange surrender requirements were abolished in July 1995, and most export restrictions had been lifted by 1996. Export taxes on grain were abolished in April 1996 and minimum export prices for farm products were ended in December 1996. Some agricultural exports (wheat, rice and cotton) still had to be registered, but this was abolished at the end of 1997.

The farm sector was in deep crisis throughout the 1990s (Gray, 2000). Between 1992 and 1995, as prices were liberalized, input prices rose rapidly but important output prices remained controlled or rose slowly because of monopsonistic markets (eg. many farmers sold their output to the single grain elevator or cotton gin in their district), leading to farm losses and resort to barter.[6] Subsidies for agriculture

[6] De Broeck and Kostial (1998, 41) estimate that in 1993 the price of inputs used in agriculture increased 18.8 times while output prices rose 8.8 times. Green and Vokes (1997, 266) report ADB estimates that a tractor cost 76 tons of wheat in 1990 and 310 tons in 1995, while the cost of a combine harvester went from 50 to 580 tons of wheat, and the relative price of fuel tripled over the same period. Livestock farmers were hit by increased prices for fuel, feed ingredients and animal medicines in 1992-4, while domestic consumption of livestock products was hurt by declining incomes (between 1990 and 1998 domestic consumption of livestock products fell by about two-fifths) and meat and dairy exports almost disappeared amidst the disruption following the dissolution of the USSR (particularly important

were substantially reduced from 10-12% of GDP before 1991, to 2-3% in 1993.[7] The profit squeeze was accentuated in 1994 as directed credits dried up (subsidized credits to agriculture, which amounted to 5% of GDP in 1993, were abolished in February 1995), and as input subsidy programs were terminated (de Broeck and Kostial, 1998, 40). Fertilizer application rates in the wheat sector collapsed; 150,000 tons of nitrogen, 315,000 tons of phosphates and 10,000 tons of potash were used in 1992, while in 1994 the corresponding numbers were 65,000, 50,000 and 6,000 (Meng, Longmire, and Moldashev, 2000, 710). Baydildina et al. (2000, 185) and de Broeck and Kostial (1998, 49) report official statistics that the only profitable crops in 1995 were potatoes and sunflowers; grains, vegetables and eggs made small losses, while sugar beet losses were 19% and the average loss for all animal products was 40%.[8]

The second half of the 1990s was characterized by an increasing debt crisis. Direction by local authorities led to farms concentrating on activities which they knew to be loss-making, while the continued extension of (non-subsidized) loans to loss-making farmers sunk them ever deeper into debt. Imposition of heavy penalties for tax arrears distorted farmers' incentives to repay their creditors.[9] The problem was exacerbated by drought conditions in much of the country during the 1996-8 seasons. Grain production in 1998 was 6.5 million tons compared to 30 million tons in 1992, and the number of cattle fell from nine million to less than four million over the same period.[10] At the macroeconomic level, 1998 was the nadir of Kazakhstan's transitional recession, as an incipient recovery in 1996-7 was obliterated by fallout from the 1998 Russian Crisis. In 1998 inflation was brought down to single digits, and in 1999 growth resumed, accelerating in the early twenty-first century (Pomfret, 2006, chapter 3).

For agriculture, reversal of the price squeeze began in 1999, when the government introduced a price support system for wheat and then extended it to other goods. This was followed by a dramatic increase in the numbers employed in agriculture, from 1.3 million in 1999 to 2.4 million in 2001, although some of this is due to statistical reclassification of the shadow economy. The Food Contract Corporation (FCC) currently purchases about 10-17% of national production with the

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for livestock farmers in eastern and northern Kazakhstan had been supplies of meat, wool and other animal products to the Soviet Ministry of Defence).

[7] Measuring subsidies in the early 1990s is complicated because of payment delays. Delayed payment of budgetary subsidies to farmers is an implicit tax. On the other hand, many loans were not repaid on time, so that calculating the difference between the subsidised interest rate and a commercial interest rate understates the credit subsidy. Arrears and repayment problems were only really brought under control by 1996-7. By the 1998 budget, only $80 million was directed to agriculture, of which the largest subsidy was a $33 million credit scheme whereby interest rates were half the commercial rate.

[8] A World Bank report on Kzylorda oblast (Kzyl Orda, Regional Development Priorities, *Report No. 16248 KZ*, World Bank, Washington DC, April 1997, 27) presented a similarly dismal picture in 1995 but with differing patterns: small profits on grains and wool, but losses of over 100% on milk, vegetables, potatoes and beef.

[9] The situation was further distorted by arrears in the payment of pensions and other social benefits. To a substantial extent in the years up to 1998 cash constraints distorted decision-making, and in part explain the huge decline in livestock numbers on the large farms (Table 4), as farm managers used livestock to pay for inputs or paid workers with sheep in lieu of money wages.

[10] Figures from the United Nations Common Country Assessment – *Kazakhstan: Achievements, Issues and Prospects*, Almaty 2003, 9. The World Bank (*Kazakhstan, Governance and Service Delivery*, Report No. 23257-KZ, May 2002) estimated the decline in agricultural production following the dissolution of the USSR at 55% from 1991 to 1998. Because of the volatility of grain harvests such estimates are sensitive to the choice of dates, but 1991 had already seen a massive decline over 1990 (Table 1). In 1999 agricultural output increased by 28%, then fell by 4% in 2000, and increased by 17% in 2001 (EBRD *Transition Reports*).

goal of maintaining grain reserves and alleviating short-term price fluctuations, but as a large net exporter the FCC cannot deviate far from world prices without risking large losses.

Public expenditure on agriculture, forestry, fisheries and environmental protection increased by an average forty percent per year between 2000 and 2005, as the budget of the Ministry of Agriculture increased from 11,345 million tenge (less than $80 million) to 80,090 million tenge ($600 million) and its share of the total central budget went from 2.5% to 6.5%. Much of this allocation was under the billion-dollar Agriculture and Food Program for 2003-5 (AFP), which provided general services support to agriculture aimed at improving infrastructure and product quality (Table 5).[11]

The AFP's stated objectives were to ensure food security, establish an efficient agro-industrial system, increase sales of farm products and processed farm products in domestic and foreign markets, and optimize state support for agriculture. The specifics focused on efficiency and competitiveness, recognizing that technical support is an important public service to agriculture. On the other hand, the AFP could be used to justify interventionist policies, eg. mention is made of "reasonable protectionism" to reduce import dependency. Many incentives are provided by subsidies to reduce the cost of inputs (eg. fertilizers, fuel and seeds) and through price support schemes, which may work against the aim of increasing efficiency and competitiveness.[12]

(b) Privatization and organizational structure

In 1994 farms were in principle privatized, as shares were distributed to employees, but most farms were simply reorganized into cooperatives under the same management as previously. When land share certificates were issued, most were turned over to the collective farm's management who could use them to purchase equipment.[13] By 1995 there had been zero decollectivization in the sense of breaking up Soviet farms (a unique extreme, according to Mathijs and Swinnen, 1998, 5), but use rights on private plots (of less than one hectare) were more secure in Kazakhstan than in neighboring Uzbekistan or Turkmenistan.

The 1995 Farm Reform established the principle of state ownership of land, with private use-rights under long-term (99-year) leases. The government adopted a fresh approach to restructuring in 1998, based on acceptance of the need for bankruptcies that would lead to changes in ownership and management. In 2003 the government announced several new agriculture initiatives, most of which reflected

[11] The initial AFP proposal envisaged expenditures of $271 million in 2003, $330 million in 2004, and $368 million in 2004. Actual expenditures in the last two years were higher, probably due to the burgeoning public receipts from the oilboom.

[12] Price support was provided through increased funds for the Food Contract Corporation, which had been established in 1997 and purchased 1.5 million tons or 20% of the grain harvest in 2002, and Mal Onimdery Corporation which had been created in 2001 to provide producer support and market regulation for the livestock sector. The fuel subsidies encouraged corruption as farmers requested more gasoline than they needed and sold the surplus for profit. The fertilizer subsides were paid only to domestic suppliers, acting in a similar trade-distorting way to local-content requirements. The price support and subsidies were justified by reference to EU and US farm policies, but they may be less sustainable in Kazakhstan given the state's dependence on the volatile oil sector for revenue.

[13] Deininger (2002, 993-4 and 1000) and Lerman et al. (2002, 154) ascribe this renunciation of claims to land ownership to lack of asset management experience among the rural population. Behnke (2003) reports field research from 1998-9 which showed how state farm managers retained control of sampled farms in south-eastern Kazakhstan.

statist attempts to modernize infrastructure, relocate farmers and publicize output targets (Nursenkova, 2004). Despite these announced reforms, the overall impression is that the government has still not resolved the issue of how the farm sector should be organized in the market-based economy.

The continued large farm size may reflect scale economies in grain farming on the Virgin Lands. The small total of farmland that has been purchased and is cultivated independently (146,642 ha. by 2005) is almost exclusively in the south, where most of the farming is done on individual farms which concentrate on cotton production. Livestock farming, apart from chickens, had almost disappeared from large farms by the end of the 1990s; the numbers of cattle, sheep and goats, pigs and horses in agricultural enterprises had by 2002 all fallen to 5% or less of the number in 1990, while the number of animals on individual peasant farms has increased by huge percentages but remained small in absolute numbers (Table 4). By contrast, livestock inventories on household plots remained fairly stable during the transitional recession and have substantially increased since 1997; the overwhelming share of animals is now on the over two million household plots (average size 0.2 hectares), and these backyard farms produced 87% of meat, 91% of milk, 49% of wool and 49% of eggs in 2003.

Land tenure arrangements posed particular problems for the pastoral sector, where seasonal migration patterns which had already been eroded over decades of deliberate sedentarization were further disrupted by changes in access rights (Swinnen and Heinegg, 2002, 1027). Restoring the traditional (pre-Soviet) transhumance grazing system could ameliorate the current situation of overgrazing on open access lands close to settlements and under-utilization of the country's abundant rangelands, but no legal framework exists to define routes along which animals can be moved at low cost to summer pastures and back.

One problem facing the farm sector has been lack of investment to improve the infrastructure and permit quality upgrading. The capital-output ratio, labor productivity and total factor productivity all continued to decline in the second half of the 1990s and early 2000s, when productivity growth had become positive in other sectors.[14] Much of the farm produce was spoilt or had become overpriced before reaching its primary market. The fruit and vegetables and processed food products often became uncompetitive with imported goods because of poor storage, processing or packaging. In microcosm and with its own specific problems, the agricultural sector typifies the failure of Kazakhstan's non-oil economy to adapt to and flourish in a market-based environment. The government's three-year program (the 2003-5 AFP) for restoration and development of the agriculture sector began to address some of these problems.

The cotton ginning sector is an exception to this negative picture. By 1998 the existing gins had been fully privatized, and several new gins have been constructed since then. This is partly explained by the participation of Russian investors wishing to access cotton for export directly to textile mills in Russia, and also by the increased demand for ginning services in southern Kazakhstan due to large-scale smuggling of seed cotton from Uzbekistan (Sadler, 2006, 105).

[14] According to IMF estimates TFP in agriculture declined by an annual average of 1.8% during the period 1996-2001, when TFP growth averaged 5.8% in industry, 9.5% in construction and 4.0% in services, and labor productivity fell by 8.2% per year in agriculture while it was increasing by more than TFP in the other sectors. See International Monetary Fund, "Republic of Kazakhstan: Selected Issues and Statistical Appendix", *IMF Country Report No. 03/211*, July 2003, p.23.

(c) Trade policies

Kazakhstan's trade policies are difficult to track in the early post-independence years because borders were extremely porous.[15] Different practices applied to trade with CIS countries and external trade, although the two may not have been easy to distinguish at the Russian or Kyrgyz border. Since 1995 Kazakhstan has pursued a trade policy based on moderate most-favored nation (MFN) tariffs, although with some variability of implementation. Kazakhstan is a member of several regional organizations, although the only one to have a significant influence is the Eurasian Economic Community. The external environment is also affected by the exchange rate regime, which changed in the wake of the 1998 Russian Crisis.

Following the Russian price reform of January 1992, an immediate concern in Kazakhstan was the fear of losing goods in return for rapidly depreciating Soviet rubles, and export restrictions were imposed. The export controls were also aimed at supporting the interstate delivery system, although, as mentioned above, this disintegrated rapidly in 1992-4 as exporters found more favorable prices outside the system. Export duties were simplified in 1995 and abolished in 1996. The government itself showed some predilection for non-CIS markets as the value-added tax was initially refunded only on exports to non-CIS markets; this disincentive to supply CIS markets was removed in the 1997 budget, and all exports are now zero-rated for VAT.[16]

The initially *ad hoc* tariff schedule was simplified during 1995 and 1996 to form 12 bands, ranging from 1-100%. In January 1997, a new tariff schedule reverted to 13 bands, but with a maximum of 50% and a lower weighted average tariff (12%). Table 6 provides tariff rates on selected agricultural products in 1996-7. Tariffs were further reduced in July 1998, with fewer tariffs over 20% and a weighted average tariff of slightly less than 9%. After the Russian crisis and appreciation of the tenge, several temporary tariffs of up to 200% and bans on some imports, mainly food products from Russia, the Kyrgyz Republic and Uzbekistan, were introduced in the first half of 1999, although these were rescinded fairly quickly. Apart from these temporary spikes, the only major peak at the 6-digit level is the 100% duty on ethyl alcohol (220700); no other category in Table 5 had an individual tariff line peak over 30%.

The final column of Table 3(b) matches tariff rates with twenty-two major disaggregated import categories (those with over one percent of all agricultural imports). Some of the largest import categories enjoyed duty-free status, notably raw sugar. Products enjoying the highest tariff protection include manufactured products (cigarettes 30%) or processed products (frozen chicken pieces 23.75%, sausages 20%, sugar confectionary 19%, bread, pastries, ice cream 15%). Dairy products (butter

[15] A large part of international trade in the 1990s was conducted by individual shuttle traders (*chelnoki*) operating between Central Asia and cities in the Gulf, China, India or southeast Asia, and often bypassing or bribing the customs officials. The Kazakh authorities estimated that over a quarter of total imports in 1995 and a third in 1996 were shuttle imports (reported in the International Monetary Fund IMF Staff Country Report No. 97/67 *Republic of Kazakstan - Recent Economic Developments*, August 1997, p. 114-50), but by their nature such estimates are gross approximations. The shuttle trade phenomenon has become relatively less important in the twenty-first century as the retail sector, especially in the principal cities has become better organized.

[16] There is no general VAT exemption for the agricultural or agri-processing sectors, but small farmers do not pay VAT. This exemption may not help small farmers if agro-processors offer a lower price to farmers which are not maintaining VAT accounting in order to compensate for the inflated VAT that the processors will have to pay.

20%, milk 12%) and sunflower seeds (15%) are the only primary farm products which Kazakhstan imports in significant amounts with tariffs over 5%

In January 1996 Kazakhstan lodged its application for WTO membership. The process lagged in the late 1990s, associated with slowing reform and economic crisis, but resumed in the early 2000s. Key issues in Working Party meetings in 2003-4 concerned high tariffs on some industrial and agricultural goods, Kazakhstan's desire to maintain some export subsidies and to have 'developing country' status, inadequate coverage of areas for liberalization under GATS, and weak legislation on TRIMS and inadequate institutions to meet SPS, TBT or TRIPS requirements. The Draft Report of the Working Party, which is the basis for the final negotiations phase of WTO accession, was completed in May 2005 and revised in September 2006.

Kazakhstan has aimed to keep special ties with other former Soviet republics, variously described as a free trade area, customs union or unified economic space, although the practical implementation has often been difficult to document. In May 1993, when the CIS was clearly failing to establish itself as an economic organization, ten CIS members, including Kazakhstan, reached an agreement to form an economic union, and a formal treaty to that effect was signed in September 1993. This treaty had little or no effect, although much bilateral trade among CIS members (including Kazakhstan's trade with Russia, Kyrgyz Republic, Uzbekistan and Turkmenistan) was unmonitored and hence treated differently to extra-CIS trade.

In January 1995 Kazakhstan signed a customs union agreement with Belarus and Russia. Tariffs on trade between members were eliminated in March, and there were moves towards harmonizing external tariffs in 1995-6, although this seemed to halt with Kazakhstan's January 1997 tariff revision. The union was extended to include the Kyrgyz Republic in 1996 and Tajikistan in 1999. In February 2000, reflecting the lack of progress towards a customs union, a new agreement was signed, which envisaged tariff harmonization within five years. In October 2000 the union was renamed the Eurasian Economic Community (EurAsEc) and the institutional structure was strengthened, and in October 2005 Uzbekistan acceded to EurAsEc. Despite the higher profile progress towards a customs union was limited, and by 2005 the common external tariff covered only 6,156 of the 11,086 tariff lines identified in the union's classification system (and these were largely ones where the members' pre-existing tariffs had been similar).[17]

(d) Exchange rate regimes

Kazakhstan's exchange rate history since independence can be divided into four phases. Kazakhstan continued to use the ruble until November 1993. From the introduction of the national currency until early 1999 the central bank adopted an almost-fixed crawling peg regime, which was successful in ending hyperinflation and resulted in substantial real exchange rate appreciation during 1994-6. In April 1999, driven by a large appreciation of the tenge relative to the ruble following the 1998

[17] The main reason why a EurAsEc common external tariff is unacceptable to Kazakhstan is that Russia's tariffs are higher than those of Kazakhstan, both on average and with peaks on individual items. Although the Kazakh authorities have indicated that Russia's tariff is used as an informal benchmark for Kazakhstan's offers of bound tariff levels in its WTO negotiations, it is unlikely that Kazakhstan would want to raise tariffs which would hurt the country's consumers to the benefit of Russian producers, when Russia's own tariffs would remain unchanged providing no new preferential advantage to Kazakh exporters. Tumbarello (2005, Table 4) estimates the net welfare costs to Kazakhstan from tariff harmonization at Russian levels to be $32 million; the trade diversion and trade destruction impose large costs on consumers, which are only partially offset by higher tariff revenue.

Russian crisis, the tenge was allowed to float. Since May 1999, the central bank has pursued a dirty float; despite pressures for appreciation of the tenge, it has maintained an exchange rate anchor.

In 1992 and for most of 1993, the country continued to use the ruble. The institutional features of the ruble zone allowed each member country to create ruble credits, which set up a classic free rider situation and led to hyperinflation (Pomfret, 1995). During these first two years following the dissolution of the Soviet Union, with prices rising at over fifty percent a month, frequent currency shortages and the sudden replacement of Soviet rubles by Russian rubles in mid-1993, relative prices did not operate as efficient signaling mechanisms and it is impossible to measure price distortions in any meaningful way.

In November 1993 Kazakhstan introduced a national currency, the tenge. For the first few months of 1994, the new currency depreciated in real terms. The stabilization program introduced in 1994 used the exchange rate as an anchor – an almost-fixed crawling peg, which gave credibility to monetary policy. The shift to a non-accommodating monetary policy was accompanied by a real appreciation from mid-1994 to 1996, by which time annual inflation had been brought below 50%. In July 1996 Kazakhstan accepted IMF Article VIII, making the tenge convertible for current account transactions. This exchange rate policy was, with minor adjustments, maintained through the 1997 Asian Crisis and the 1998 Russian Crisis.

Failure to follow the large ruble devaluation in August 1998 led to loss of competitiveness vis-à-vis Russia, the country's largest trading partner. Throughout 1997 and the first half of 1998 the tenge remained at 75-77/US$, and although the tenge depreciated in the second half of 1998 it stood at 88/$ at the start of April 1999. Meanwhile, the Russian ruble, which through 1997 and up to the start of August 1998 had traded at 6/$, fell to 13/$ by the end of August and further depreciated to 26/$ by April 1999. Thus, the tenge/ruble exchange rate had appreciated from a fairly stable 12-13 before August 1998 to less than 4 tenge to the ruble eight months later. The consequence for Kazakhstan was a severe recession.

In April 1999 Kazakhstan allowed the tenge to float. After the announcement of the float, the tenge fell to 99/$ on April 4th and to 130/$ by the end of May 1999. The large depreciation of the tenge in April and May 1999 fuelled a rapid recovery. The subsequent sustained boom was driven by the expansion of oil exports as world prices soared from less than $10 a barrel in 1998 to $99 in 2007, new oil fields came into production, and new pipeline routes undermined the monopsony power of the Russian state company, Transneft.

Since May 1999, the central bank appears to have reverted to an exchange-rate anchor. Although there have been fluctuations, the exchange rate in February 2006 was 130/$, the same as at the end of May 1999, despite strong pressures for currency appreciation. In 2007 the tenge appreciated to around 120/$ in May, and remained in the 120s through the summer, but this may reflect keeping a balance between the dollar and the euro (against which the tenge depreciated from 162 to 172 between May and August 2007) rather than acceptance of a real appreciation.[18] By the end of

[18] Measurement of the real exchange rate is complicated by the need to change weights. Kazakhstan's economy remained heavily oriented towards Russia, at least with respect to trade, until 1998, but after the crisis there appears to be a more concerted effort to diversify international economic relations, so that exchange rates relative to the US dollar, the euro and the yuan have become more important since the turn of the century. Kuralbayeva et al. (2001, Figure 2) illustrate a plausible pattern of real exchange rate depreciation in early 1994, followed by sharp appreciation which flattens out in 1996 and then another sharp depreciation in 1999 followed by a plateau, but estimating the magnitude of the

2003 the economy was already exhibiting signs of overheating due to demand pressure from large FDI-financed oil investments, fiscal and public sector expansion, and a credit-fuelled private boom. All of these pressures were driven by the oilboom and expectation of its continuation, and in 2004-7 these expectations were more than justified as oil prices continued to rise.

The current exchange rate regime is unsustainable. Oil income will force appreciation of the tenge, and the key issue is the pace and manner of the appreciation and whether volatility can be minimized. The central bank has accumulated foreign exchange reserves to limit exchange rate appreciation, while issuing domestic debt to reduce prospects for recession in the non-oil sector. At the end of 2006 reserves including oil fund assets, stood at $33 billion, or over twelve months of imports. Rapid expansion of domestic credit may be dangerous given the limited experience of the banks in managing credit exposure and of the banking supervisors; temptations to lend for construction and real estate, for example, could be producing an asset bubble. From 2005 to 2006 government spending increased from 1,687 to 2,060 billion tenge, but the general government surplus still increased from 5.8 to 7.5 percent of GDP due to burgeoning revenues, and in 2006 the central bank increased interest rates and broadened reserve requirements. Inflation was edging up (Table A2), and expansionary fiscal policies (putting pressure on the price of non-tradables) and tight monetary policies (leading to nominal appreciation) could exacerbate the problem if they lead to the real appreciation overshooting.

This exchange rate history has implications for calculation of support to the agricultural sector. With perfectly functioning markets exchange rate changes will be reflected immediately in domestic prices unless public policies shield a sector from such changes, and any gap between domestic and world prices can be considered a policy distortion, but in transition economies such pass-through is far from perfect. The exchange rate volatility in 1993-4 and 1998-9 in Kazakhstan affected the gap between border and farmgate prices even in the absence of any policy distortion. In the current environment, increased fiscal spending on agriculture if accompanied by tight monetary policy will have an ambiguous effect on incentives to tradable farm goods as the real appreciation overshoots. The level of the exchange rate can also distort the interpretation of producer support based on the price gap, eg. an overvalued currency will hurt the tradables sector, and worries about "Dutch disease" effects are a genuine concern for an oilboom economy. In sum, attention should be paid to reading too much into annual variations in support estimates based on the price gap, especially at times of large shifts in the exchange rate.[19]

3. Quantifying the distortions

The expectation from the discussion in the previous section is that policy-induced price distortions should be small both within Kazakhstan's agricultural sector and for

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real exchange rate changes is difficult. The IMF (*Country Report No.07/235*, July 2007, 11) estimated that "as of end-2006, the tenge may have been up to 20 percent undervalued in real, trade-weighted terms form a medium-term perspective."

[19] Some OECD studies have used a shadow exchange rate in calculating Producer Support Estimates. Melyukhina (2003, 127) argues that the discretion in the choice of appropriate rate creates non-transparency, and that the nominal exchange rate should be used. Shick (nd.) argues that this is misleading for Russia where PSE calculations for 1999 and 2000 are dominated by exchange rate changes following the 1998 Crisis, rather than reflecting changes in agricultural support policies. Because Kazakhstan's currency is convertible the nominal rate is less obviously inappropriate for PSE estimation than it would be for, say, Uzbekistan or Turkmenistan.

agriculture relative to other sectors. Kazakhstan is a net agricultural exporter and the main export products, grains and cotton, are not characterized by significant subsidies or by taxes. For cotton this is in contrast to neighboring Uzbekistan and Turkmenistan where state marketing boards cream off a large part of the rents (inducing farmers to smuggle their crops across the border into Kazakhstan where they can receive closer to the world price).

The government drastically cut back on subsidies to the farm sector during the 1990s, although there has been some revival of support in the twenty-first century, especially since 2003 (Table 5). In general, input prices have been unregulated since the early 1990s, although a key exception is water which is not so important for the rain-watered grain lands but is crucial for the irrigated cottonfields of southern Kazakhstan. Agriculture has also benefited from credit subsidies, although as mentioned above these appear to have been minor since the early 1990s.

Agricultural activities have, apart from exceptional episodes such as in 1999, not been heavily protected by tariffs, either as a group or individually. In broad sectoral terms, the minerals and metals sector receives little tariff protection, while other sectors are treated roughly equally. The average import-weighted tariffs, using the 1996 tariff schedule and 1995 weights, are:[20]

Agricultural products	18.3%
Minerals and metals	6.3%
Textiles, clothing and footwear	20.8%
Other manufactures	18.4%

The tariff structure has not changed significantly since 1995/6 although some rates have been reduced. It should also be noted that the MFN tariff rates in Tables 3(b) and 6 overstate the applied tariffs; most of the dairy imports, for example, are from CIS countries.

There are no published producer support estimates (PSEs) for Kazakhstan. The OECD has produced estimates for transition economies, but the only CIS countries covered were Russia (Melyukhina, 2003) and Ukraine (OECD and World Bank, 2004), which indicate at the aggregate level large positive PSEs up to 1991, sharply reversed in 1992 and then increasing to positive values.[21] In broad terms, we may expect PSEs in Kazakhstan to have exhibited a similar pattern of pre-1991 positive PSEs turning sharply negative in 1992, but policy divergence among the Soviet successor states is likely to have increased as the Soviet legacy recedes further into the past.

In a report to the World Bank, Serova (2004) calculated PSE-style estimates for 1998-2002. The reference prices, unit values of exports (for grains and sunflowers) or imports (for meats, poultry and wool), were compared to farmgate

[20] The group averages are calculated from tariff data in "Republic of Kazakhstan – Recent Economic Developments", *IMF Staff Country Report No.97/67* (August 1997), 124-5, as cited in Table 6 in this paper. Agricultural products are lines 1-24, 41-6 and 51-2, minerals and metals 25-9 and 68-82, textiles, clothing and footwear 50 and 53-67, and other manufactures 30-40, 47-9 and 83-96. The average for "other manufactures" may be inflated by the use of 1995 import weights, because in that year nuclear reactors with a 20% tariff accounted for two-fifths of the imports in this group.

[21] In Russia the aggregate PSE rose to 17-30% of gross farm receipts in 1995-7, before falling to positive single-digit rates after the 1998 Crisis. In Ukraine post-1993 PSEs were lower and in some years negative for grains, oilseeds, livestock and dairy products, but higher for sugar beet; the most recent OECD estimates indicate average Ukraine PSEs of 3% in 2004 and 12% in 2005. Although Russia and Ukraine are the countries most similar to Kazakhstan in agricultural structure and history, the pattern of disprotection moving to moderate support also characterizes agricultural policy in China and Vietnam since reforms began (Orden et al., 2007).

prices adjusted by 30% for domestic handling costs. Serova's grain and sunflower estimates are plausible, with minimal support in 1998, followed by negative estimates for 1999-2002, indicating incomplete pass-through from the large currency depreciation. The estimates indicate a strong shift from negative support for meat and poultry in 1998 and 1999, to increasing positive support in 2000-2. Less convincing are the estimates for cotton, which are increasingly negative from -116% in 1998 to -232% in 2001 (no estimate for 2002), which is far out of line with the description of a competitive post-1998 cotton sector (Section 2b).

The remainder of this section reports a preliminary attempt at assessing the net distortions facing producers of the main agricultural products. The first two subsections deal with Kazakhstan's main farm exports: wheat, which together with barley and flour is produced by the farmers in the north and centre of the country, and cotton, which is produced in a small area adjacent to the border with Uzbekistan. The third subsection covers livestock farming and the fourth subsection import-competing crops. A fundamental conclusion is that the gap between farmgate prices and border prices, which is often used as a first-cut measure of price distortions to agricultural incentives and competitiveness, is an imperfect measure in Kazakhstan because all producers in the country face high trade costs. Evidence on these costs, and assessment of the extent to which they can be interpreted as distortions against particular branches of farming are discussed in the fifth subsection. The final subsection presents preliminary estimates of rates of assistance to agricultural producers in 2000-4.

(a) Wheat

Table 7 presents preliminary estimates for wheat in the early 2000s, prepared by Anara Jumabayeva of the FAO for the World Bank's Agricultural Policy Assessment. The fundamental finding is that the farmgate price received by wheat producers in Kazakhstan during the 2000-4 period was well below the world price minus the costs of getting wheat to the border. Perhaps even more striking is that the net distortion against wheat farmers, which had fallen from 14-22% in 2000-1 to 9-10% in 2002-3, rose to 28% of the producer price in 2004 despite an apparently more supportive policy stance.

Two points emerge from the estimates in Table 7: first the estimates are dominated by the price gap, and second the price gap is difficult to estimate. Despite increasing from 61 million tenge in 2000 to 2,529 million tenge in 2004, budget assistance to wheat farmers plays a minor role in determining estimates of producer support. Even in 2004, when the subsidies are at their highest, they only amount to 1.75% of the farmgate value of wheat. In sum, the estimated distortion in Table 7 is dominated by the negative price gap. The estimated magnitudes of the price gap must, however, be treated with caution. In a period when the government was not intervening in the market to any great extent, it is difficult to explain the volatility of the estimated gap between border and farmgate prices -- from 1,386 tenge per ton in 2000, to 2,565 in 2001, 1,001 in 2002, 1,513 in 2003, and 4,402 in 2004.

Obtaining a reference price which can be compared to the producer price at the farmgate involved three steps: the export unit value in US dollars was calculated from official trade data, the dollar value was converted into tenge at the current exchange rate, and the domestic currency price was adjusted for transport and handling costs between the farm and the border. The quality-adjusted border price is

the weakest link in the wheat calculations.[22] Converting the quality-adjusted dollar border price into a domestic currency reference price involves assumptions about the exchange rate and transport costs, but the overall results are not greatly sensitive to these assumptions, and the last two steps do not appear to be likely sources of misleading errors.[23]

The unit value of wheat exports fluctuates more than might be expected for the true border price. Commonly used indices of world wheat prices indicate, at most, a small increase from 2003 to 2004; for example, the FAO world price increased from 150 to 161 and the OECD world price fell from 156 to 152.[24] The unit value of Kazakhstan's wheat exports may have reflected specific marketing features in 2002-4, which make it an inappropriate reference price for distortion calculations. Most of Kazakhstan's wheat exports are to CIS markets, although sales to Central Asian neighbors have been reduced as a result of import-substitution strategies in Turkmenistan and Uzbekistan. Some part of sales to Russia and Ukraine is re-exported, but transport costs to more distant markets are high (eg. in 2003-4 when the price was about $100 per ton at the elevator in Kazakhstan it cost $16 per ton to get the wheat on the train and to the border, $30 to transport it through Russia to the Ukraine border, and $13 for transport within Ukraine). The years 2000 to 2002 saw a large increase in Russian wheat production (from 34 to 51 million tons) and 2002 saw a surge of Ukraine exports to the EU. At the wrong end of this chain, Kazakh wheat exporters may have found themselves squeezed by the price offered by Russian traders, although sales might hold up if the price were sufficiently low that it became profitable to import cheap Kazakh wheat and export Russian or Ukrainian wheat to the EU. In 2004 the quantity exported by Kazakhstan was especially low (2.5 million tons, or about half of that in the previous year), which may have reflected a decision to stockpile wheat for strategic reasons.[25] Under these conditions, because the border price is not that determined in a competitive "world market", it is difficult to conceptualize the appropriate reference price for assessing domestic distortions. From all of the evidence, a 51% increase in border price between 2003 and 2004

[22] The wheat grown in Kazakhstan includes high quality hard wheat and lesser quality wheat, which commands a far lower price. The quality composition of wheat exports varies from year to year, largely due to the volatility of wheat harvests in Kazakhstan. There is an association between harvest size and average quality of the crop, and there is also a connection between the harvest size and the quantities of various types of wheat sold in the domestic market and exported. In the poor 2004 harvest, for example, average quality was higher than in previous years and the gap between the quality of wheat exports and the quality of total wheat output was smaller. The variable output combination makes it difficult to estimate a single border price, or to have a constant quality-adjustment factor. In Table 7 a simple 10% adjustment factor is used to account for the generally larger proportion of feedstock in exported wheat, and the factor is reduced to 5% in 2004 to allow for the known higher average quality of exports in that year, but these are rough approximations.

[23] The method of calculating transport, handling and other costs assumed a substantial fixed-cost component, so that the annual variation of this line in Table 8 shows less variation than might be expected from the volatility of the crop. In the smallest harvest year, 2000, transport costs account for a surprisingly large share (over 20%) of the border price, but, if transport costs are overestimated, then it is even more striking that the bottom line is negative. As described in section 2d, the periods of large real exchange rate changes, mid-1994 to early 1996 and mid-1998 to May 1999 (see also Figure 2 in Kuralbayeva et al., 2001), are outside the time period covered by Table 7.

[24] The IFS commodity database gives an almost flat world wheat price in 2002-4 ($149, $146 and $157; see Table A3), whereas Table 7 has border prices of $83, $100 and $151 in these years. The US Gulf price used in the IFS is not the right benchmark for Kazakhstan's wheat, which is mainly shipped across the Russian border, but the differences in price patterns is startling.

[25] Wheat output was lower in 2004 than in 2003, but only by about 15% (Table 1), while the volume exported fell by half.

appears misleading, and a more plausible reference price would not show the dramatic decline in support for wheat between 2003 and 2004 that appears in Table 8.

In sum, from the OECD's PSE estimates for Russia and Ukraine it is likely that Kazakhstan's situation switched from substantial distortions in favor of wheat farmers at the time of independence to negative support in 1992. The estimates in Table 7, suggest that the negative support persisted into the twenty-first century, although the increasingly negative support in 2004 may be a false indicator based on an inappropriate reference price. A sensitivity analysis of the support estimates is carried out in section 3f.

The picture of wheat growers in Kazakhstan facing negative net incentives driven by negative "market price support" appears to contradict the description of farm polices in the previous section, which found little evidence of policy-induced distortions against wheat farmers by the late 1990s, and a positive policy stance towards them in more recent years. The paradox can be resolved in two complementary ways. In Section 3e an interpretation of the negative signs in Table 7 is presented in terms of the inefficiency of internal trade in Kazakhstan; behind-the-border inefficiencies create a wedge between the world price and the farmgate price. The sensitivity analysis in section 3f shows that allowing for the potential bias in the 2004 wheat estimate due to using an inappropriate border price is sufficient to reverse the finding that the situation for wheat farmers deteriorated in 2004 and the support could plausibly have been positive in that year.

(b) Cotton

After the end of government controls in the mid-1990s, cotton farmers in Kazakhstan faced slightly unfavorable relative prices. Relative to both wheat and rice, the producer price of cotton declined in 1996 (Table 8). For the 1997 harvest season, Goletti and Chabot (2000, 55) estimated the average border parity price for raw cotton in Central Asia at $404 per ton. The local currency price of raw cotton received by farmers in Kazakhstan was 25,500 tenge, or $349, which was less than the price received by farmers in the Kyrgyz Republic ($394) or Tajikistan ($388), but substantially above the prices which farmers received in Turkmenistan ($240) or Uzbekistan ($242). The gap in Kazakhstan reflected a mixture of monopsony power of the cotton gin owners, quality differences and transport and other costs of getting the cotton to the border, rather than policy-induced distortions against farmers.

The situation changed significantly around 1997-8 as producer prices for cotton improved relative to those for other crops (Table 8).[26] Between 2000 and 2002, as world cotton prices fell by 20% domestic producer prices were stable. This reduction in the price gap reflected changes in the organization of the domestic market rather than any public policy changes. The key relationship is between cotton farmers and cotton gins, and the farmers' market position improved as the number of cotton gins increased in the early 2000s.

Land reform led to the creation of a large number of independent small-scale cotton producers in southern Kazakhstan. Producers enter into a contract to supply a gin with a fixed amount of cotton, for which they will receive a price linked to a world price index at the time of delivery. They do so in order to obtain pre-finance, which is provided 30% on signing an agreement to deliver a certain amount of cotton,

[26] Between 1996 and 1999 cotton prices increased by over 35% relative to the price of both wheat and rice. The cotton/rice price ratio, which is more relevant in southern Kazakhstan, continued to increase during 2000 and 2001

40% at harvest and 30% upon delivery. Some of the finance is provided in kind as gins organize supply of seeds, fertilizer, fuel and water. The formal fee structure is $150 per ton for ginning and 18% per annum interest on financing, although it is suspected that inputs obtained through gins are overpriced and that the gins are not scrupulous in assessing and rewarding quality. There is also a market for free seed cotton, ie. cotton production in excess of original agreements, which can pay a significant premium over contract prices (eg. in 2003 free seed cotton prices were on average $500 or 21% above prices paid for contracted cotton).[27]

The extent of distortions facing cotton farmers in Kazakhstan in the early 2000s is unclear. The price differential for free seed cotton might suggest that supplies under contract are underpriced as the gins exploit the farmers' lack of access to financing. On the other hand, the increase in number of gins, with a variety of owners, suggests that the gin sector is competitive and cotton farmers do not face distorted net output prices. Sadler (2006) reporting on the results of a survey of cotton producers during the 2003 crop season states that, although many farmers showed ignorance on their part and complained of dubious practices on the gins' part, 97% of respondents said they could change their ginners if they wished to do so and 92% had actually done so. Competition among gins appeared to be intensifying in the early 2000s, as gins increasingly provided collection points outside of their own immediate area. Unlike the situation for wheat exporting farmers who face high trade costs, the cotton ginners reduce trade transactions costs for agricultural exporters by managing efficient transport of the baled cotton to foreign buyers. After strong competition among gins in 2004, however, the gins established an informal cartel in 2005, which has reduced farmers' bargaining power.

In sum, cotton farmers in Kazakhstan have been operating since the late 1990s under largely undistorted market–driven incentives. Apart from seed and fertilizers the main input is labor, especially at harvest time. Mechanized cotton-harvesting, which was vigorously promoted in the Soviet era, is not economic at Central Asian factor prices (Pomfret, 2002), and in addition hand-picking gives a higher quality harvest. Labor markets are highly competitive in Kazakhstan's cotton-growing regions, which have access to cheap migrant labor from neighboring Uzbekistan. Despite the frequent reports of harassment of migrants and the lack of basic employment rights, there is an almost unlimited supply of skilled Uzbek cotton-pickers willing to migrate to Kazakhstan during the harvest season because a good picker can clear $200 in a month, compared to average wages in Uzbekistan of around $20. Farmers in Kazakhstan are keen to employ the migrants because illegal workers will pick for 3-5 tenge per kilogram, while Kazakh cotton-pickers demand at least 10 tenge. In the absence of policy-driven distortions to incentives, year-to-year variations in cotton farmers' situation reflect changes in industrial organization in the ginning sector and, to a lesser extent, changes in labor market conditions depending upon the openness of the border with Uzbekistan.[28]

(c) Livestock

The livestock sector followed a different path to the commercial grain and cotton sectors. The large agricultural enterprises (successors to the collective and state

[27] There is an incentive to renege on contracts, but penalties for breach of contract were sufficiently high and credible that the price differential did not undermine the contract system (Sadler, 2006, 107).

[28] Fertilizers and seed, which are subsidized in Uzbekistan and Turkmenistan, are smuggled across the border.

farms), which dominate the agricultural sector in terms of acreage, dramatically reduced their livestock numbers, and this explains the poor aggregate performance of the livestock sector during the 1990s (Table 1). The new individual peasant farms have increased their animal numbers, but the total head of livestock on these farms remains small (Table 4). Today, livestock farming is concentrated on the small household plots which survived from the Soviet era (see section 2b), although the aggregate numbers remain well below 1991 levels (Table 4).

The elimination of large-scale livestock farming was due to unfavorable initial conditions combined with rapid economic restructuring. During the 1950s and 1960s the fodder base had increased rapidly in order to sustain growth in the sedentarized livestock sector. Livestock farms relied on fodder which was often transported over a substantial distance via the Soviet transportation system at no cost to the farm. The long-range mobility of livestock, which had characterized traditional herding practices, was effectively eliminated and any property rights to re-establish transhumance were impossible to negotiate during the fairly rapid privatization process. With the end of Soviet central planning and the decline in available fodder, the large-scale livestock-farming sector collapsed in half a decade after independence.[29] The large agricultural enterprises traded animals to settle their debts, or slaughtered them to obtain working capital and cut costs.

In the early 1990s, as relative prices turned against farmers and a tight monetary policy followed introduction of the national currency in late 1993, barter became the main trading tool to pay for essential supplies. Livestock became the most commonly used means for settling farm debts, and a crucial buffer against the belated payment of wages and salaries, pensions and other social security payments. During this period many families relied on the cow or pig or a few sheep on their household plot as a coping measure against the deprivation of the transitional recession. The animals were a means of subsistence, and also a source of insurance in case the family should need to provide for culturally important events like weddings. Although families used their animals to weather the economic uncertainties of the 1990s, they were careful to husband their stock and maintain their capital. At the trough of the recession in 1997, the number of cows, pigs, sheep and goats on household plots was almost the same as it had been at the start of the decade; only the chicken population declined on household plots (Table 4).

Since the late 1990s barter has given way to monetary transactions, and much of the household plot production of meat, milk and eggs is sold in local markets to cover household consumption of non-self-produced items.[30] Over half of rural households sell livestock products, with meat showing the highest sales-to-production ratio (0.36) of any major home-produced good, followed by eggs (0.15) and milk

[29] The situation in Kazakhstan was exacerbated, relative to that in the southern Central Asian countries, by the harsher winters which precluded leaving animals outdoors in winter and required more fodder and heating, both of which became dramatically more expensive after independence (see Suleimenov et al., 2000, and Kerven, 2003).

[30] Farmers may sell directly to consumers or use local traders. The traders are typically self-financed and without access to storage or refrigeration facilities, so that their sales are overwhelmingly at bazaars within the district (*rayon*) of production. The rise of supermarkets, with their impact on agricultural marketing channels in Central and Eastern Europe (Dries, Reardon and Swinnen, 2004), is not yet a major feature in Kazakhstan. Supermarkets have opened in the large cities, especially since the oilboom began, but they focus on middle and upper class customers and account for a small part of the market available to domestic producers of livestock products.

(0.12).[31] Although farmgate prices are reported to have risen substantially in tenge since 1993, they vary substantially by season and location, and it is difficult to isolate a real price index or to establish a reference price for most farmers' livestock products which are sold locally. Export of livestock products, except for wool and skins, is limited to local cross-border trade with Russia, China, the Kyrgyz Republic and Uzbekistan.

The livestock sector has no major price distortions, but it faces the high infrastructure costs shared by all dispersed producers in Kazakhstan and it receives three sets of subsidies. First, the purchase of stock-breeding materials and livestock is subsidized, although budget allocations are small and disbursements less.[32] Second, larger subsidies (3,298 million tenge in 2003) are provided for veterinary control of contagious diseases. Third, Mal Onimderi Korporatsiyasi (MOK), established in 2001 as a government-owned joint stock company aimed at stimulating the livestock sector and developing new export markets, received an initial loan of two billion tenge at an interest rate about ten percent lower than it would have paid for a commercial line of credit. Commercial banks also receive from the government partial reimbursement of interest on loans to agricultural processing companies, which allows them to offer discounted credit to such companies.

It is difficult to evaluate the impact of this recent assistance to livestock producers, but it coincided with a turnaround in the livestock sector. Data on animal stocks from the FAO, which are not always consistent with the National Statistical Agency numbers in Tables 1 and 4, show a substantial recovery in livestock numbers since the turn of the century. Between 2000 and 2005, according to the FAO data, the number of cattle increased from 4.0 to 5.2 million, the number of sheep from 8.7 to 11.3 million, goats from 0.9 to 2.0 million, pigs from 1.0 to 1.3 million and chickens from 17.9 to 25.5 million.

(d) Other Agricultural Products

Other crops followed the overall pattern of declining output until 1997 followed by varying degree of recovery, epitomized by potatoes and by sunflower seed in Table 1 and by sugar beet. Valued at domestic producer prices potatoes are a more important crop than cotton, although the trade data show that they are grown overwhelmingly for domestic consumption. Rice production in southern Kazakhstan has declined as farmers have shifted land from rice to cotton production, especially in Kzylorda, which agronomists would consider climatically marginal for cotton-growing. This may reflect distortions against rice, but more likely reflects the profitability of cotton in the relatively undistorted post-1998 environment described in Section 3(b). The relative price of rice to cotton lint, which had been stable at 0.16 in the first half of the

[31] These ratios, drawn from Kazakhstan's high quality (since 2001) household survey data, are cited in the report *Kazakhstan's Livestock Sector – Supporting its Revival* written in June 2004 under the Joint Economic Research Program of the Government of Kazakhstan and the World Bank. Annex II of the report describes marketing channels in Kazakhstan; Table 2 of the Annex reports that over twice as much farm households' income comes from selling own-produced meat, cheese, butter, etc. as from sale of live animals.

[32] Concerns about breeding arose from the sharp decline in the herds during the 1990s, which included loss of many purebred animals, and the fragmentation of livestock production units. The budget allocation for bovine artificial insemination was 947 million tenge for 2001-5. There is also provision for subsidizing the purchase of breeding livestock, set at 416 million tenge in 2002 and 2003, and increased to 478 million in 2005, but in 2002 actual disbursement was only 131 million tenge.

1990s, jumped to 0.23 in 1996 but then fell dramatically in the rest of the decade to 0.13 in 2000 (Table 8).

(e) Trade Costs

The gap between farmgate prices and a border reference price, adjusted for normal transport costs, is not just a measure of policy distortions. It also includes transactions costs which may be defined as "transport costs", but whose magnitude is heightened by poor soft infrastructure as well as by inadequate hard infrastructure (eg. poor roads and railways). This is not just an issue in transition economies. Reduction of barriers to trade such as tariffs and quantitative restrictions in rounds of multilateral trade negotiations has raised the profile of the remaining behind and at the border trade costs, and trade facilitation has become a major concern of policymakers wishing to increase the gains from trade. Such costs are especially high in transition economies, and amenable to change by policymakers if they are willing and able to strengthen the rule of law.

The most obvious trade costs are internal and can be addressed by national governments.[33] In Kazakhstan bureaucratic and other obstacles to trading and exporting became a striking feature of the economy during the 1990s, when provincial and district governments created their own policies and local policemen and other officials relied on arbitrary fees to supplement their meager or unpaid salaries. When each individual with the power to levy a fee along the road from the farm to the market or the border thinks only of maximizing their own returns and ignores potential externalities of their actions, too little trade takes place and in extreme cases trade may be eliminated altogether. The solution in well-functioning market economies is for the government to exert its influence to prevent a tragedy of the anti-commons by protecting producers and traders from arbitrary intrusion into property rights.[34] In Kazakhstan, the internal levies are an example of the augmented trade costs due to the central government's failure to establish its authority.

High transactions costs are symptomatic of incomplete transition to a market economy, and reflect policy choices (of omission to protect and enforce traders' property rights, rather than a choice of commission). While such obstacles do not apply specifically to farm products, many are related to distance and vary according to local jurisdiction, features which make them especially onerous for geographically specific but dispersed activities.[35] Thus, they often effectively discriminate against agriculture, and against some farmers more than others, depending upon location, perishability of output, and so forth.

The problems related to output marketing of a fairly typical independent farm are illustrated by a case study from the survey of farms in northern Kazakhstan in 1999 reported by Gray (2000, 59-60). The farm's 36 workers produced wheat, barley and mustard seed for export to Russia. The *akim* (provincial governor) frequently banned

[33] Some trade costs require bilateral attention, eg. coordination of opening times of border crossings, and, especially for a landlocked country like Kazakhstan, some require regional or multilateral action. Reports by the United Nations Development Programme (2005) and Asian Development Bank (2006) estimated that the Central Asian countries, including Kazakhstan, were trading below potential and a major reason was high trade costs.

[34] The term "tragedy of the anti-commons" was coined by James Buchanan to describe the situation where viewing something as an open-access common property resource (eg. traders' rents) leads to too little of a desirable activity occurring. Douglass North has emphasised reducing transactions costs as the key to explaining economic development.

[35] The poor quality of roads in Central Asia is emphasised by Shepherd and Wilson (2006).

the export of grain, even to neighboring provinces, until all farms in the province had paid all arrears on inputs, which was unfair on farms with no arrears. When permission to export was available, the farm had to obtain (1) a permit from the provincial Department of Agriculture, (2) a permit from the provincial Department of External Relations, (3) phytosanitary certification, (4) a quality certificate from *Gostandard*, (5) clearance from the Commodity Exchange, (6) a licence from the Chamber of Trade, (7) clearance from the Customs Committee, (8) a certificate from the Tax Inspectorate of no outstanding tax, and (9) a certificate from the Russian Committee for Standards and Metrology. The last consignment before the farm was interviewed required twenty-two days of full-time effort to obtain the clearances and permits. Once the consignment left the farm, corruption on the road was a major problem. The farm reported facing many checks, each of which required 15-20 Russian rubles per policeman. Reviewing the broader evidence from the survey of farms in northern Kazakhstan in 1999, Gray (2000, 32) found that "Harassment by uniformed officers appears to be universal, with established normal bribes required to pass each of a large number of police checks, even if papers are in order". The situation has improved since 1999, but anecdotal evidence suggests that such obstacles to trade remain substantial, despite presidential decrees on simplification.[36]

There are regional variations.[37] The logistical situation for farmers is better in southern Kazakhstan, where agricultural recovery began in 1997-8 as opposed to 1999 or later in northern Kazakhstan. For cotton producers this reflects the active role of the gin-owners, described in section 3b, and for other farmers the most likely reason is better market access: urban markets in Almaty, Bishkek, Chimkent, Taraz or Tashkent are within 200 kilometers of most southern farms. In western Kazakhstan, the situation is worse because of the poor hard infrastructure, in particular the larger proportion of unpaved rural roads, and greater distance to markets. The wheat farmers of northern and central Kazakhstan are exposed to these costs, because they are responsible for trucking their crop either to the Russian border or to the railway, and this is likely to explain the magnitude of the price gap reported in section 3a (and in Table 7).

(f) Rate of Assistance Estimates

Table 9 presents support estimates for 2000-4 for fifteen major products, accounting for about four-fifths of agricultural output (Table 1). The method, comparable to that used for wheat in section 3a, is to divide market price support (the gap between a reference price based on the border price adjusted for trade and handling costs, P^b, and the farmgate price, P^d) plus budget support per unit of output (B) by the farmgate price:

$$\text{Support} = (P^d - P^b + B) / P^d$$

The general picture is of negative support for grains and oilseeds, and positive support for potatoes, sugar and especially livestock. The trend towards increased support for livestock products is very strong, especially for meat, while support for the two main

[36] Kazakhstan scores poorly on international measures of economic freedom or corruption. By the Heritage Foundation index of economic freedom it is "mostly unfree" with "high levels of administrative barriers", ranking 113th out of the 157 countries graded in 2006. Transparency International ranked Kazakhstan the (equal) 150th most corrupt country in 2007, out of 179 countries covered. The World Bank's quality of governance indicators give low marks to Kazakhstan in areas such as governance efficiency, regulatory quality and the rule of law.

[37] Based on relative prices of standard goods Grafe, Raiser and Sakatsume (2005) conclude that there is more price variation among regions of Kazakhstan than between countries in Central Asia.

exports (wheat and cotton) is variable. Although budget support increased during this period (Table 5), the support estimates are dominated by the gap between the farmgate price and a reference price.

The estimates reported in Table 9 are an early attempt at such an exercise for Kazakhstan, and the numbers should be treated with caution, especially in light of the high internal trade costs described in the previous sub-section. Poor infrastructure is associated with weak transmission of border prices and permits market segmentation and local monopolies. During a poor harvest, even small increases in excess demand may lead to large domestic price increases because trade costs limit the import response; conversely a bumper harvest may depress domestic prices well below the border price because trade costs limit the extent to which the surplus is exported. Perhaps most fundamentally, high trade costs have turned most of the commodities in Table 9 into essentially non-traded goods for which the unit value of the small quantities exported or imported in any year may be a poor guide to true undistorted opportunity cost prices.[38]

The results are sensitive to assumptions, which may even affect the overall or sector averages if they apply to products with a large weight or lead to large outliers. The earlier discussion of the wheat estimate, which concluded that the negative support estimate may be too large for 2004, is the most important example. Given the weight of wheat (55% of the value of crops covered), this dominates the aggregate 2004 PSE for crops. If the wheat numbers were smaller (as calculated by Serova for the years up to 2002), then the aggregate picture would be of more positive support for farmers. The aggregate PSEs for livestock producers indicate increasing support since 2000 which is consistent with the rising farmgate prices, but caveats need to be made about individual meat PSEs (eg. the sheep meat numbers).

As a sensitivity analysis, the aggregate estimates in Table 9 can be compared to a simple hypothetical alternative to show the importance of removing outliers (or the least plausible PSEs) and of reviewing the PSE for the largest commodity, wheat (Table 10). The coverage is reduced below normal minima of 70-75%, but in practice wheat may be a good proxy for barley and other grains and the pattern of other meats' PSEs may be similar to that of beef and pork. The crop/livestock balance remains representative of the national proportions. The omission of oil seeds, barley and other grains, and cotton is more or less off-setting in its effect on the sub-total for crops. Because some PSEs were extreme values, omitting sheep meat, poultry and eggs from the livestock category does have a significant effect in reducing the sub-sector's negative PSE in 2000 and increasing it in 2003-4. By far the biggest source of variation, however, is the treatment of the 2004 wheat PSE.

The alternative estimates imply that the increasing producer support during 2000-4 applied to both crop and livestock farmers, although the rate of increase was larger for the latter. The increase in aggregate support in 2000-3 is more consistent in the alternative estimates, and the final year's level is higher. The general conclusion is that the pattern of support reported in earlier sections of this chapter is robust to alternative assumptions about appropriate reference prices, although caution should be exercised in interpreting the support for crops in 2004.

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[38] The estimates in Table 9 treat grains, cotton and pig meat as exports (ie. export unit values are fob border prices) and oilseeds, sugar and sheep meat as imports (ie. import unit values are cif border prices). Beef and veal are exports for 2000-1 and imports for 2002-4. Only milk is treated as a non-traded good, with the quality-adjusted price of New Zealand milk for delivery to western Europe as the reference price.

The qualitative picture in Tables 9 and 10 is consistent with the description of agricultural policies in Section 2. After generally operating since 1992 in an environment of policy neglect which was associated with a negative price gap, in the period 2000-4 the farm sector moved from facing negative to positive distortions. Most livestock sub-sectors (cattle farming for meat and milk, sheep and goats, and poultry) have performed well since the end of the 1990s, which is partly recovery from a deep trough but has been helped by a more positive policy and price environment.[39] The situation facing farmers of grains and other crops is less clear-cut; estimates of negative support for crops around the turn of the century may reflect high trade costs rather than policy-induced distortions specific to grain producers, although the negative support for grains and oilseeds could also be evidence of feed subsidies to livestock producers. Since the formulation of the AFP in 2002 there may have been growing support for grain farmers, although the estimates in Tables 9 and 10 are contradictory on this point.

4. Conclusions

Measuring the policy-induced distortions facing Kazakhstan's farmers is challenging but also informative. For the main product groups the expected measures are fairly clear. Grains and cotton are export items where there should be small distortions, perhaps shifting from negative to positive after the turn of the century, while for livestock products the picture is more opaque because they had become largely non-traded goods by the late 1990s before benefiting from favorable polices in the 2000s. In practice it is not easy to capture these patterns in producer support estimates, largely because border prices are hard to define for wheat (due to quality variations, long and varied land borders, and imperfectly competitive markets) and for cotton (due to large-scale smuggling across neighboring borders). For livestock products the absence of trade leads to some extreme values depending on the assumptions made.

Nevertheless, the estimates presented in Tables 9 and 10 provide insights. The negative estimates for the export goods in 2000 and 2001 suggest substantial behind-the-border trade costs of the kind highlighted by Anderson and van Wincoop. The shift from negative to positive support is captured especially in Table 10 where outliers are removed and a more plausible border price for wheat is assumed, but the extent to which this result is due to the policy shift embodied in the 2003-5 AFP or reduction in trade costs due to better governance is impossible to say. In a situation of low trade barriers in the traditional sense of trade taxes and trade subsidies or even the more commonly analyzed non-tariff barriers, there can still be significant deviations between border and producer prices, but their source requires detailed analysis.

[39] Booming domestic demand as a result of rapid economic growth and the large devaluation against the Russian ruble in 1999, which restricted import competition, stimulated the revival of livestock farming. The inward orientation of growth in the livestock sector is reflected in the production of pig-meat - consumed by Russians rather than by Kazakhs or their Islamic southern neighbors - which was given a short-term boost by the devaluation but has benefited little from domestic growth.

Table 1: Production of Main Agricultural Products

	1980	**1985**	**1989**	**1990**	**1991**	**1992**	**1993**
Wheat	17,548	14,191	10,784	16,197	6,889	18,285	11,585
Barley	6,405	6,357	5,727	9,303	3,412	9,482	7,909
Rye	129	144	784	889	506	568	889
Oats	691	570	283	681	265	831	906
Maize	414	598	479	442	330	368	355
Potatoes	2,238	2,197	1,783	2,324	2,143	2,570	2,296
Seed cotton	358	305	315	324	291	252	200
Sugar beet	2,223	1,901	1,188	1,134	726	1,276	925
Vegetables	1,134	1,085	1,254	1,136	955	985	808
Meat	1,069	1,133	1,573	1,560	1,524	1,258	1,312
Milk	4,597	4,763	5,563	5,642	5,555	5,265	5,577
Wool	103	97	110	108	104	97	95
Eggs	3,369	3,803	4,253	4,185	4,075	3,565	3,288

Source: De Broeck and Kostial, 1998, 42.
Notes: in thousand tons, eggs in millions.

	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Wheat	11,586	9,052	6,490	7,678	8,955	4,746	11,242
Rye	403	283	184	226	255	236	199
Barley	7,149	5,497	2,208	2,696	2,583	1,093	2,265
Oats	802	822	250	359	286	73	194
Rice	403	283	184	226	255	236	199
Soybean	6	6	4	3	3	4	4
Potatoes	2,296	2,040	1,720	1,657	1,472	1,263	1,695
Sunflower seed	86	97	99	64	54	83	104
Tobacco	4	3	2	2	2	9	8
Seed cotton	198	208	223	183	198	162	249
Vegetables	808	781	780	778	880	1,079	1,287
Meat	2,231	2,102	1,774	1,541	1,346	1,213	1,182
Milk	5,577	5,296	4,619	3,627	3,220	3,394	3,535
Wool	96	75	58	42	32	25	22
Eggs	3,288	2,629	1,841	1,263	1,242	1,388	1,512
Animals:							
Cattle	9,576	9,347	8,073	6,860	5,425	4,307	3,958
Sheep & goats	37,660	29,759	23,062	13,679	10,384	9,527	9,657
Pigs	2,591	2,445	1,983	1,623	1,036	879	892
Horses	1,742	1,649	1,521	1,310	1,083	986	970
Poultry	52,308	45,121	26,481	15,378	15,982	16,985	18,022

Source: National Statistical Agency data and FAO database.
Notes: crops in thousand metric tons, eggs in millions, animal population in thousand head at end of year.

	2000	2001	2002	2003	2004	2005
Wheat	9,073	12,707	12,700	11,537	9,937	11,300
Rye	48	43	106	42	20	23
Barley	1,664	2,244	2,209	2,154	1,388	1,600
Oats	182	220	183	171	130	150
Rice	214	199	199	273	276	310
Soybean	4	7	25	38	47	45
Potatoes	1,692	2,185	2,269	2,308	2,261	2,300
Sunflower seed	105	149	190	293	266	240
Tobacco	16	15	16	16	14	14
Seed cotton	287	418	361	480	467	350
Vegetables	1,544	1,782	1,867	1,938	2,058	1,939
Meat	1,140	1,155	1,191	1,243	inc	inc
Milk	3,730	3,923	4,110	4,317	4,557	4,713
Wool	23	24	25	27	28	29
Eggs	1,692	inc	inc	inc	inc	inc
Animals:						
Cattle	3,998	4,107	4,294	4,560	4,871	5,204
Sheep & goats	9,981	10,400	11,171	inc	inc	inc
Pigs	984	1,076	1,124	1,230	1,369	1,292
Horses	976	986	990	1,019	1,064	1,120
Poultry	19,700	21,300	23,800	inc	inc	inc

Source: FAO database; inc = inconsistent with earlier series.

Notes: crops in thousand metric tons, eggs in millions, animal population in thousand head at end of year.

Value of main crops	**2000**	**2001**	**2002**	**2003**	**2004**
Wheat	89.0	143.9	122.9	139.2	144.7
Rye	0.4	0.4	1.0	0.4	0.2
Barley	10.7	17.7	15.7	14.7	11.9
Oats	0.9	1.2	1.2	1.0	0.9
Maize	2.3	3.4	4.7	4.5	5.7
Sugar	11.2	18.6	22.2	25.1	26.1
Potatoes	31.2	36.0	35.6	48.2	47.4
Sunflower seed	1.8	2.8	4.9	7.0	6.7
Seed cotton	14.7	12.6	16.5	29.7	16.3
Value of livestock production					
Beef and veal	42.3	49.4	57.5	65.6	76.8
Sheep and goat meat	10.2	12.4	28.1	32.6	38.2
Pig meat	34.9	42.1	26.4	27.5	31.8
Poultry meat	4.4	5.1	6.3	7.1	7.9
Cow milk	64.8	72.0	79.6	84.5	101.0
Eggs	9.0	10.7	11.6	13.6	16.5
(15 items as % of total ag.output)	82%	80%	78%	81%	76%

Source: quantities and producer prices from national statistical authorities (also as reported on the FAO database).

Notes: value at farmgate prices (animals – live weight), in billion tenge.

Table 2: Export of Main Agricultural Products, 1995- 2004

	1995	**1996**	**1997**	**1998**	**1999**	**2000**
Grain						
volume (000 tons)	3,484.1	2,808.9	3,577.5	2,905.2	3,816.2	5,612.4
price (US $ per ton)	88.5	152.6	143.1	101.7	82.2	88.4
value ($ millions)	**308.3**	**428.6**	**511.6**	**295.4**	**313.6**	**496.2**
Cotton fiber						
volume (000 tons)	25.7	69.7	63.9	48.2	62.1	90.2
price (US $ per ton)	1,425.3	1,388.1	1,213.6	1,077.3	796.8	945.7
value ($ millions)	**36.4**	**96.7**	**77.5**	**51.9**	**49.5**	**85.3**
Wool						
volume (000 tons)	51.7	31.2	41.7	12.0	15.7	10.6
price (US $ per ton)	999.1	1,372.4	1,367.9	1,440.0	426.2	450.3
value ($ millions)	**51.7**	**42.8**	**57.1**	**17.3**	**6.7**	**4.6**
Total exports ($ millions)	**5,440.0**	**6,291.7**	**6,899.2**	**5,870.6**	**5,988.5**	**9,468.1**

Source: International Monetary Fund: Republic of Kazakhstan: Selected Issues and Statistical Appendix, *IMF Staff Country Report No.00/29* (March 2000- revised version of *Staff Country Report No.99/95*), 124; International Monetary Fund: Republic of Kazakhstan: Selected Issues and Statistical Appendix, *IMF Staff Country Report No.03/211* (July 2003), 98.

	2000	**2001**	**2002**	**2003**	**2004**
Grain					
volume (000 tons)	5,612	3,336	4,311	5,835	2,929
price (US $ per ton)	88	103	80	97	150
value ($ millions)	**496**	**344**	**346**	**565**	**440**
Cotton fiber					
volume (000 tons)	90	96	138	126	143
price (US $ per ton)	946	864	763	1,110	1,190
value ($ millions)	**85**	**83**	**105**	**139**	**170**
Wool					
volume (000 tons)	11	8	8	10	7
price (US $ per ton)	450	618	618	465	737
value ($ millions)	**5**	**5**	**5**	**5**	**5**
Total exports ($ millions)	**9,288**	**8,928**	**10,027**	**13,233**	**20,603**

Source: International Monetary Fund: Republic of Kazakhstan: Statistical Appendix, *IMF Staff Country Report No.05/239* (July 2005), 30.

Table 3: Agricultural Exports and Imports by Value, 2003 (thousand US dollars).

	Description	**Exports**	**Imports**
01	Live animals	274	2,608
02	Meat and edible meat offal	668	28,321
03	Fish & crustacean, mollusc & other	18,292	10,304
04	Dairy prod; birds' eggs; natural honey	8,817	61,957
05	Products of animal origin, nes	2,774	191
06	Live tree & other plant; bulb, roots	9	2,045
07	Edible vegetables and certain roots	15,927	2,767
08	Edible fruit and nuts	11,580	15,351
09	Coffee, tea, and spices.	316	34,073
10	Cereals	564,599	4,831
11	Flour, meal, malt & starches	59,750	11,026
12	Oil seeds, roots & other vegetable matter	3,537	25,200
13	Gums, resins & other vegetable products	30	9,293
14	Vegetable plaiting materials, & vegetable matter nes	3,739	167
15	Animal/vegetable fats & oils & clarifying agents	8,451	51,392
16	Preparations of meat, fish or crustaceans	3,252	15,230
17	Sugars and sugar confectionery.	38,670	156,496
18	Cocoa and cocoa preparations.	825	49,335
19	Preparations of cereal, flour, starch/milk;	6,248	45,028
20	Preparations of vegetable, fruit, nuts or olives	1,600	27,239
21	Miscellaneous edible preparations.	1,157	41,885
22	Beverages, spirits and vinegar.	4,382	39,381
23	Residues & waste from the food industry	3,206	7,873
24	Tobacco and manufactured tobacco	20,003	41,326
41	Raw hides and skins (other than furs)	74,325	3,744
52	Cotton.	145,516	5,165
53	Other vegetable textile fibres	0	1,313
	Total of above categories	**997,947**	**693,541**
	Total trade	12,926,687	8,408,685

Source: Trade data from UN-COM trade database

(a) Exports over $10 million (thousand US dollars).

HS code	Description	Exports	Share (%)
030420 + 030379	Frozen fish fillets and frozen fish, nes	15,969	1.60
100100	Wheat and meslin	522,568	52.36
100300	Barley	37,107	3.72
110100	Wheat or meslin flour	57,678	5.78
170199	Cane or beet sugar, in solid form,	37,540	3.76
240110 + 240220	Tobacco, & cigarettes containing tobacco	19,951	2.00
410121	Whole hides and skins of bovine animals	11,423	1.15
410422	Bovine leather	47,327	4.34
520100	Cotton, not carded or combed	140,298	14.06
		889,861	**88.8**

Note: Export shares are of the agricultural total ($998 million) in the panel above.

(b) Imports over $7 million (thousand US dollars).

HS code	Description	Imports	Share (%)	Tariff (%)
020741	Frozen cuts and offal of chicken	22,284	3.21	23.75
0402	Milk and cream	34,764	5.01	12
040500	Butter and other fats and oils derived form animals	8,813	1.28	20
0902	Tea	31,228	4.50	5
110710	Malt not roasted	7,974	1.15	10
120600	Sunflower seeds	18,375	2.65	0
130219	Other vegetable saps and extracts,	7,639	1.10	0
151190	Palm oil (excl. crude)	9,243	1.33	0
151219	Sunflower-seed and safflower oil	21,254	3.06	15
151620	Vegetable fats and oils	9,135	1.32	0
160100	Sausages and similar products	9,040	1.30	20
170111	Raw cane sugar, in solid form	120,273	17.34	0
170199	Cane or beet sugar, in solid form	11,888	1.71	12.5*
170490	Sugar confectionery	18,814	2.71	19
1806	Chocolate	43,336	6.25	0.6
1905	Bread, pastry, cakes, etc.	34,477	4.97	15
2101	Extracts and preparations of coffee	7,306	1.05	13.75
210500	Ice cream and other edible ice	9,601	1.38	15
210690	Other food preparations, nes	10,001	1.44	2.14*
2203-2208	Alcoholic beverages	31,306	4.51	
	2203 Beer made from malt - 15,458			0.6
	2204 Wine of fresh grapes - 6,605			0.5
	2205/6 Vermouth & other fermented beverages - 556			0.2/0.7
	2208 Spirituous beverages - 8,687			2
2401	Unmanufactured tobacco; tobacco ref	27,688	3.99	5
2402-2403	Cigars, cigarillos, cigarettes, & other manufactured tobacco	13,638	1.97	30
		508,077	**73.23**	

Note (1): Import shares are of the agricultural total ($694 million) in the panel above.
Note (2): * indicates a residual category with various tariff rates (in the UNCTAD TRAINS database), which could not be matched to the precise import categories.

Table 4: Inventory of Livestock by Farm Type, 1990-2002 (million head)

Year	Cattle			Sheep & goats			Pigs			Horses			Poultry		
	AE	IF	HP	AE	IF	HP	AE	IF	HP	AE	IF	HP	AE	IF	HP
1990	6.7	--	3.0	29.2	0.1	6.4	2.6	--	0.7	1.1	--	0.5	40	--	20.0
1991	6.4	--	3.2	27.2	0.4	7.0	2.3	--	0.7	1.1	--	0.6	40	--	19.7
1992	6.1	0.1	3.5	25.9	0.8	7.8	1.9	--	0.7	1.0	--	0.6	33	0.4	19.1
1993	5.5	0.1	3.8	24.9	0.8	8.5	1.6	--	0.8	1.0	--	0.7	31	0.3	18.2
1994	4.4	0.1	3.6	17.2	0.7	7.3	1.2	--	0.8	0.9	--	0.7	23	0.1	10.0
1995	3.2	0.2	3.5	11.4	1.1	7.0	0.8	--	0.8	0.7	0.1	0.8	13	0.1	7.4
1996	1.9	0.2	3.3	5.8	0.9	6.9	0.3	--	0.7	0.4	0.1	0.8	9	0.2	6.7
1997	0.9	0.2	3.1	2.7	0.9	6.8	0.2	--	0.7	0.2	0.1	0.8	9	0.2	6.7
1998	0.5	0.2	3.2	1.5	0.9	7.2	0.1	--	0.7	0.1	0.1	0.8	10	0.2	7.2
1999	0.4	0.2	3.4	1.1	0.9	7.7	0.1	--	0.8	0.1	0.1	0.8	9	0.2	9.1
2000	0.3	0.2	3.6	0.9	0.8	8.2	0.1	--	0.9	0.1	0.1	0.8	10	0.2	9.9
2001	0.3	0.2	3.7	0.9	0.9	8.6	0.1	--	1.0	0.1	0.1	0.8	10	0.2	11.0
2002	0.3	0.3	3.9	0.9	1.2	9.1	0.2	--	1.0	0.1	0.1	0.9	12	0.3	11.6

Source: Agency on Statistics, Republic of Kazakhstan

Notes: AE = agricultural enterprises; IF = individual farms; HP = household plots; -- < 50,000 head.

Table 5: Budget Transfers to Agriculture, 2000-5 (million tenge)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Grain subsidies on inputs	100	450	645	837	911	921
Grain subsidies on services	0	0	0	400	0	300
Crop subsidies on inputs	16	334	363	1,265	1,553	1,784
Crop subsidies on services	0	70	147	173	2,381	2,237
Crop subsidies (miscellaneous)	0	0	0	1,000	4,806	7,950
Livestock subsidies on inputs	100	468	697	819	1,289	1,489
Livestock subsidies (misc.)	0	0	0	279	2,500	1,500
Total: direct subsidies	**216**	**1,322**	**1,853**	**4,773**	**13,440**	**16,182**
Credit programs & grain reserve purchase	**3,597**	**11,353**	**11,552**	**17,208**	**15,504**	**14,208**
Research and development	103	143	279	1,667	3,048	3,031
Inspection services	2,375	4,396	4,596	6,435	6,852	8,320
Infrastructure	1,582	3,690	4,858	3,685	2,347	1,997
Marketing and promotion	393	901	854	730	148	1,325
Miscellaneous	3,079	4,987	9,368	18,799	26,955	35,027
Total: general services to agriculture	**7,532**	**14,117**	**19,956**	**31,316**	**39,349**	**49,699**
Total Budget Transfers	**11,345**	**26,793**	**33,360**	**53,297**	**68,293**	**80,090**

Source: state budgets as reported in the Agricultural Policy Assessment being conducted under the Joint Economic Research Program (JERP) of the World Bank and the Government of Kazakhstan.

Note: Budget funds allocated to agriculture (all programs of Ministry of Agriculture and Committees 2000-4, and planned for 2005.

Table 6: Tariff rates on selected agricultural products, 1996-7 (percent).

Commmodity	Taxable imports (1995)	Tariff rate 1/1/96	Tariff rate 1/1/97	TRAINS (1996)
1. Livestock	0.4	5	5	3.7
2. Meat	5.2	15	20	14.6
3. Fish	2.4	10	10	
4. Milk & honey	10.2	10	16	13.2
5. Agricultural products	0.1	10	10	8.8
7. Vegetables	2.6	15	15	14.9
8. Fruit	7.8	10	10	6.1
9. Coffee & tea	23.3	5	5	1.2
10. Cereals	2.0	1	5	0.8
11. Milling (flour etc)	0.6	10	10	10.0
12. Oil seeds	5.4	5	5	4.8
13. Resins and juices	0.5	5	5	1.3
14. Vegetable products	6.4	15	15	13.6
15. Fats & oils	14.2	15	20	1.2
16. Meat & fish products	8.4	15	15	22.7
17. Sugar	58.4	25	25	6.4
18. Cocoa	9.0	0	5	0.3
19. Grain products	28.3	15	15	14.1
20. Vegetable products	12.3	20	20	17.6
21. Misc. food products	8.3	15	15	11.9
22. Alcohol	32.5	40	30	15.0
23. Spices	0.4	5	5	1.0
24. Tobacco	37.7	15	19	20.6
41. Leather	0.6	5	10	5.0
42. Leather goods	1.8	25	20	
43. Fur	0.2	30	5	7.8
46. Hay products	0.0	25	25	
50. Silk	0.6	5	5	
51. Wool	1.1	20	20	20
52. Cotton	5.3	20	20	13.9
Average tariff:				
- simple average		15.2	17.3	9.5
- import-weighted		13.9	12.0	

Source: International Monetary Fund: Republic of Kazakhstan – Recent Economic Developments, *IMF Staff Country Report No.97/67* (August 1997), 124-5. The final column is from the UNCTAD TRAINS database, for 1996.

Note: commodity group numbers and descriptions are as provided by the Ministry of Economics of the Republic of Kazakhstan. There are some discrepancies with the TRAINS (and HS) categories, eg. 22 in the TRAINS database includes non-alcoholic beverages.

Table 7: Support Estimates for Wheat, 2000-4

	2000	**2001**	**2002**	**2003**	**2004**
Production (thousand tons)	9,074	12,707	12,700	11,537	9,937
Border price (fob, US dollars)	91	106	83	100	151
Exchange rate (KZT/USD, mid-year)	142.13	146.74	153.28	149.58	136.04
Domestic currency price (KZT)[a]	*14,227*	*17,110*	*13,994*	*16,454*	*22,596*
Transport, handling, etc. (KZT)	3,017	3,158	3,262	2,937	2,538
Reference price, at farmgate (KZT)	11,198	13,887	10,679	13,581	18,967
Producer price at farmgate (KZT)	9,812	11,322	9,678	12,068	14,565
Price distortion(KZT)	-1,386	-2,565	-1,001	-1,513	-4,402
Market price support (KZT million)	-12,572	-32,595	-12,714	-17,453	-43,741
Subsidies(KZT million)	61	442	593	1,630	2,529
PSE (KZT million)	-12,511	-32,154	-12,121	-15,823	-41,211
Value at farmgate (KZT million)	89,029	143,866	122,911	139,223	144,732
PSE (% of value)	-14%	-22%	-10%	-11%	-28%

Source: Anara Jumabayeva, FAO, prepared for Agricultural Policy Assessment (JERP), January 2006 draft..

Notes: a - domestic currency price = border price adjusted for quality (x1.10) to account for larger proportion of feedstock in exported wheat; for 2004 the adjustment factor is 1.05 because with the poor harvest average quality was higher and quality differentials smaller.

Table 8: Relative Producer Prices for Wheat, Rice and Cotton Lint, 1994-2002

	1994	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Wheat	.0375	.0388	.0552	.0480	.0396	.0339	.0461	.0470	.0411
Rice	.1628	.1628	.2343	.1836	.1761	.1502	.1275	.1249	.1319

Source: Calculated from FAO data base (at http://faostat.fao.org)
Notes: calculated as a fraction of the producer price for cotton lint; the ratios for 1991 and 1992 are identical to those for 1993.

Table 9: Support for Major Agricultural Products, 2000-4
(as a percentage of farmgate revenue)

Commodity	**2000**	**2001**	**2002**	**2003**	**2004**
Wheat	-14	-22	-9	-10	-25
Barley	-6	-6	23	-3	-57
Other grains	-33	-36	-21	-27	-49
Oil seeds	-39	-40	-53	-66	-29
Sugar	6	8	26	30	25
Potato	8	-4	4	3	11
Cotton	31	-13	37	39	-23
Sub-total crops	*-4*	*-16*	*0*	*-1*	*-17*
Milk	-2	-3	1	-4	8
Beef and veal	-60	-2	0	27	41
Sheep meat	-150	-5	17	25	34
Pig meat	39	32	29	46	37
Poultry	46	86	67	79	108
Eggs	20	14	-1	15	46
Sub-total livestock	*-15*	*8*	*10*	*22*	*31*
All products	***-10***	***-5***	***5***	***10***	***8***

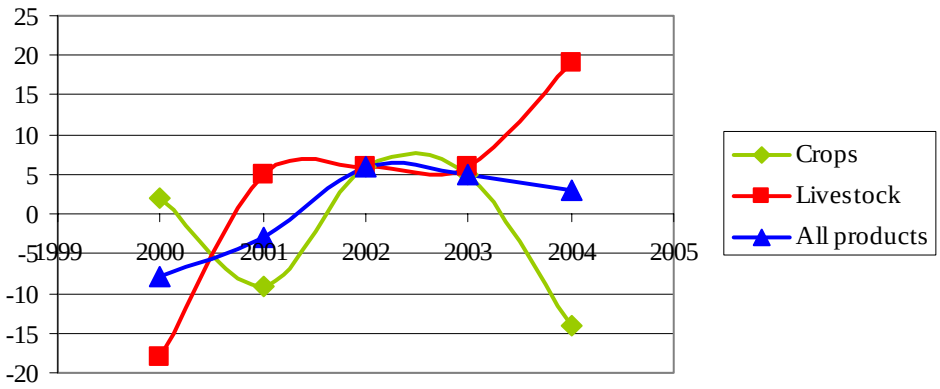
Source: estimates by Anara Jumabayeva (FAO), reported in the January 2006 draft of the Agricultural Policy Assessment being conducted under the Joint Economic Research Program (JERP) of the World Bank and the Government of Kazakhstan.
Notes: the reference prices for exports (grains, cotton, pig meat and for beef and veal in 2001) are based on fob and for imports (oil seeds, sugar, potatoes, sheep meat, poultry, eggs, and beef and veal in 2000 and 2002-4) on cif prices; the reference price for milk is the price of New Zealand milk adjusted for delivery costs to western Europe and for quality.

Table 10: Support for Major Agricultural Products, 2000-4 -- Sensitivity Analysis
(as a percentage of farmgate revenue)

Commodity	2000	2001	2002	2003	2004
Wheat	-1 (22)	-8 (27)	4 (22)	2 (23)	19 (21)
Sugar	-6 (3)	-3 (4)	17 (4)	21 (4)	17 (4)
Potatoes	8 (4)	-4 (2)	4 (3)	3 (5)	11 (2)
Sub-total crops	***1*** (41)	***-7*** (44)	***6*** (40)	***5*** (44)	***14*** (38)
Milk	-2 (16)	-3 (14)	0 (14)	-4 (14)	8 (14)
Beef and veal	-61 (11)	-3 (9)	-1 (10)	26 (11)	40 (11)
Pig meat	39 (9)	32 (8)	28 (5)	45 (5)	37 (5)
Sub-total livestock	***-10*** (41)	***6*** (36)	***4*** (38)	***15*** (37)	***24*** (39)
Average PSE – all commodities	**-5**	**-1**	**4**	**15**	**24**
Coverage (% of farm output)	65	64	58	62	57

Notes: the numbers in parentheses are weights (shares of total farm output). The PSEs for wheat 2000-3 and for sugar, potatoes, milk, beef and pork are from the revised APA (September 2006). The 2004 PSE for wheat is recalculated with a 10% (rather than a 50%) increase in border price.

APA



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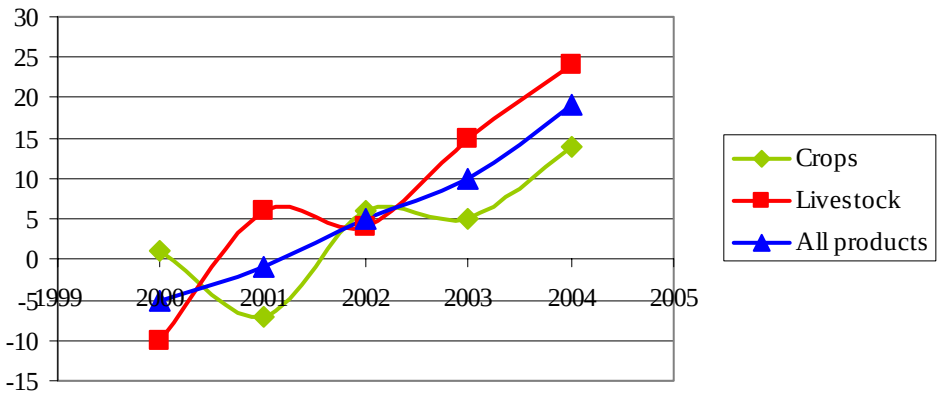

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Appendix: Statistical Tables: A1 Basic Data, Kazakhstan, 1992-2004 (WDI data)

Year	Population total	Population rural	Income GNI per capita	Number employed in agriculture	Arable land area	Agriculture Arable land (per person)	Arable Land by Agriculture worker	Crop and pasture Land per capita
	million		US$	million	hectares		hectares	
1992	16.4	7.1	1,480	1.7	35,055,000	2.13	20.62	13.47
1993	16.3	7.1	1,430	1.7	35,040,000	2.15	21.10	13.58
1994	16.1	7.0	1,310	1.6	34,683,000	2.15	21.44	13.77
1995	15.8	6.9	1,280	1.6	31,742,000	2.01	20.18	13.54
1996	15.6	6.8	1,340	1.5	29,000,000	1.86	19.02	13.57
1997	15.3	6.7	1,390	1.5	26,500,000	1.73	17.95	13.67
1998	15.1	6.6	1,390	1.4	24,205,000	1.61	16.96	13.76
1999	14.9	6.6	1,290	1.4	21,914,000	1.47	15.87	13.73
2000	14.9	6.6	1,270	1.3	21,535,000	1.45	16.07	13.89
2001	14.9	6.6	1,350	1.3	22,133,000	1.49	16.88	13.96
2002	14.9	6.6	1,520	1.3	22,663,000	1.53	17.61	13.99
2003	14.9	6.6	1,800	1.3	22,550,000	1.51	17.81	13.94
2004	15.0	6.6	2,250					

Year	Agriculture (percent of GDP)	Industry (percent of GDP)	Manufacturing (percent of GDP)	Services (percent of GDP)	Exchange rate (tenge per US$, period average)	Total Merchandise Exports (current US$)	Total Merchandise Imports (current US$)
1992	26.7	44.6	8.9	28.7			
1993	17.5	40.0		42.5			
1994	15. 5	41.2		43.4	35.5	3.231E+09	3.561E+09
1995	12. 9	32.0	15.3	55.1	61.0	5.25E+09	3.807E+09
1996	12. 8	27.4	13.9	59.8	67.3	5.911E+09	4.241E+09
1997	12.0	27.3	14.0	60.7	75.4	6.497E+09	4.301E+09
1998	9.1	31.2	12.8	59.7	78.3	5.334E+09	4.314E+09
1999	10.5	34.9	14.9	54.6	119.5	5.872E+09	3.655E+09
2000	8. 7	40.5	17 7	50.8	142.1	8.812E+09	5.04E+09
2001	9.4	38.8	17.6	51.8	146.7	8.639E+09	6.446E+09
2002	8.6	38.6	15.6	52.8	153.3	9.67E+09	6.584E+09
2003	8.4	37.6	15.3	53.9	149.6	1.293E+10	8.409E+09
2004	8.4	39.5	15.5	52.0	136.0	2.009E+10	1.278E+10

A2: Output Growth and Inflation, Kazakhstan 1991-2006 (per cent)

	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Growth in Real GDP	-11	-5	-9	-13	-8	1	2	-2	3
Inflation (CPI)	79	1,381	1,662	1,892	176	39	17	7	8

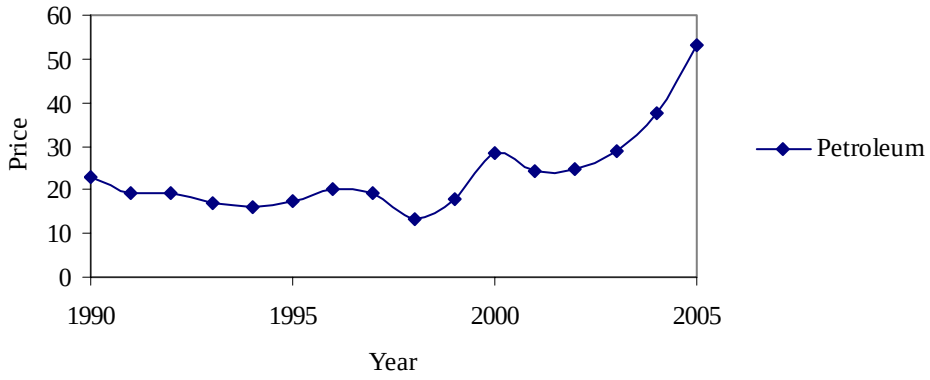
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Growth in Real GDP	10	14	10	9	10	9	9
Inflation (CPI)	13	8	6	6	7	8	9

Source: European Bank for Reconstruction and Development: *Transition Report*, 2006, p. 32 and 34.
Notes: 2005 = preliminary actual figures from official government sources. 2006 = EBRD estimates

A3: World Price of Oil, Wheat and Cotton (IFS Data), 1990-2005

Year	Petroleum (ave. crude price)	Wheat (US Gulf)	Cotton (Liverpool)	Exchange rate (mid-year)
	US $ per barrel	US $ per ton	US cents per pound	KZT/USD
1990	23.0	135.5	82.6	ruble
1991	19.4	128.7	76.9	ruble
1992	19.0	151.2	57.9	ruble
1993	16. 8	140.2	58.0	ruble
1994	15.9	149.8	79.7	
1995	17.2	177. 0	98.3	
1996	20.4	207.1	80.5	67.23
1997	19.3	159.7	79.2	75.61
1998	13.1	126.1	65.5	77.25
1999	18.0	112.1	53.1	132.55
2000	28.2	114.0	59.0	142.83
2001	24.3	126.8	48.0	146.90
2002	25.0	148.5	46.2	147.29
2003	28.9	146.1	63.4	153.08
2004	37.8	156.9	62.0	141.27
2005	53.4	152.4	55.2	135.32

World Price of Oil. 1990-2005



World Prices of Wheat and Cotton. 1990-2005