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Distortions to Agricultural Incentives in the Kyrgyz Republic

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Executive summary

- The Kyrgyz Republic was one of the poorest Soviet republics and one whose economy was most hard-hit by the end of central planning and the dissolution of the Soviet Union.
- In the Soviet economy the Kyrgyz republic was a substantial importer of grains, and an exporter of tobacco, cotton, and livestock products. Livestock products accounted for two-thirds and crops one-third of farm output. The most important agricultural outputs (valued at Soviet relative prices) in 1990 were beef and veal (13 percent), milk (17 percent), sheep meat (11 percent) and wool (12 percent). The main crops were tobacco (8 percent) and grains (6 percent), with fruit and vegetables in total also accounting for 6 percent. Cotton accounted for less than 2 percent of farm output in 1990, but was important as a readily exportable crop to hard currency markets.
- After independence in 1991 the Kyrgyz Republic experienced a severe transitional recession and high incidence of poverty. Incipient recovery in 1996-7 was damaged by the Russian Crisis of 1998 and a domestic banking crisis, and again by a debt crisis in 2001. Nevertheless, farm output recovered substantially after the mid-1990s and overall agricultural performance in the decade after 1991 was the best in the CIS.
- The composition of farm output changed substantially during the 1990s as areas under the staple crops, wheat and potatoes, increased dramatically. After 1995 other sub-sectors recovered but the relative importance of crops to livestock products remained larger than in the Soviet era, and some previously important farm outputs (e.g., tobacco and wool) have dwindled to insignificance.
- The transition strategy and economic policies of the Kyrgyz Republic focused on fairly rapid price liberalization, macroeconomic stabilization and privatization. It was the first former Soviet republic to join the World Trade Organization. Comprehensive reform of policies that distorted agricultural incentives contributed to the significant reduction in poverty after the mid-1990s. However, the longer term effect of the reforms on output has been considered disappointing, largely because the institutional environment for a well-functioning market economy still does not exist.
- In the farm sector, prices were quickly freed and subsidies largely eliminated by the mid-1990s. Initially this was a mixed blessing to farmers, insofar as output prices rose by much less than the prices of key inputs.
- Land privatization was initiated in 1991, but implementation was slow until 1994. Between 1995 and 2000 almost the entire sector was reformed with the 500 collective and state farms being replaced by over 60,000 individual farms. Since 2001 land has been private property in a meaningful sense, and a functioning land market exists.

- Since the mid-1990s the Kyrgyz Republic has had a liberal trade policy, with a maximum tariff rate of 15 percent, no specific duties and no quantitative restrictions on trade. The currency is convertible and the exchange rate is a managed float without major distortion.
- Estimates of distortions to agricultural producers' incentives for six major products (wheat, maize, cotton, milk, poultry meat and wool) from 1995 to 2004 indicate that many domestic prices are substantially above reference prices based on the border price. This is especially true for wheat and maize for which there were large positive price gaps throughout the period. The pattern for cotton is more erratic, although farmers appear to have benefited from the establishment of a competitive ginning sector in the second half of the 1990s. For the livestock products covered in this analysis, the price gap was negative for milk and wool during the second half of the 1990s, but has generally been positive since 1999. In the years 2000-4 wool and poultry meat enjoyed the largest price gap of any of the commodities studied.
- The estimates of producer support, with the possible exception of cotton since 2000, reflect the slow process of creating integrated well-functioning markets in the Kyrgyz Republic. For most products, high trade costs reduce the usefulness of the world price (or any other border price) as an appropriate reference price against which to measure distortions. Farmers may be price responsive, but they respond to local prices in a poorly integrated national market which is largely disconnected from external markets.
- Despite the slow process of constructing a market economy, public policy has been good in terms of creating ownership rights and competitive market structures. The Kyrgyz Republic has been the most reformist of all Central Asian countries, and the policy-induced distortions to agriculture are minimal although, as in Kazakhstan, there may be high general costs of doing business or market imperfections which drive wedges between border prices, domestic market prices and farm-gate prices. Trade and price reform needs to be followed by the construction of market-supporting institutions and infrastructure so as to lower the costs of trade and help markets to become better integrated.

Distortions to Agricultural Incentives in the Kyrgyz Republic

Garry Christensen and Richard Pomfret

Introduction and summary

The Kyrgyz Republic was one of the poorest Soviet republics and, despite attempts by central planners to locate industries in the republic, outside the capital city and its neighborhood the economy remained predominantly agricultural. When the country became independent in December 1991, agriculture accounted for just under two-fifths of GDP. During the transitional recession workers moved from the towns to the countryside, and agriculture's share of GDP reached 50 percent in 1996. The share of GDP declined after 1997 as gold production increased, but remains above a third, while at least half of the population is directly or indirectly dependent on the farm sector for their livelihood.¹

The country is mountainous and dry.² Arable land, accounting for less than ten percent of the territory, is concentrated in the Chui valley in the north and the Ferghana valley in the south, and about two thirds is irrigated (Table 1). The Tien Shan Mountains divide a heavily populated and climatically warmer south from a more sparsely populated and richer north. The three southern oblasts (provinces) of Jalalabad, Osh and Batken contain three-fifths of the rural population but have only a third of the country's arable land; agriculture in these oblasts is similar to that in neighboring areas of Uzbekistan and Tajikistan. The Chui oblast contains a third of the arable land and benefits from the location of the capital and largest city, Bishkek, and proximity to Almaty, the largest city in Kazakhstan. The other northern oblasts (Issyk-Kul,

¹ Measurement of sectoral shares of GDP is difficult during the 1990s when there was a substantial retreat into subsistence farming; the numbers cited here are World Development Indicators data (Appendix Table A1). Employment in agriculture is even harder to measure (the more or less constant numbers in Appendix Table A1 fail to capture the increase in unpaid farm workers after 1992), but two-thirds of the population in 2004 was rural.

² The low average rainfall (415 mm per annum) means that rainfed farming is only possible in limited areas near the mountains, but the country is well-endowed with water. The available renewable water resources per capita, 10,613 cubic meters, are roughly the same as in the United States, but they have historically been shared with downstream countries (primarily Kazakhstan and Uzbekistan).

Naryn and Talas) are more mountainous. Although agro-ecological conditions are diverse, much of the country faces unfavorable conditions associated with low rainfall and irrigation-dependent farming, soil problems (water-logging, salinity, nutrient-deficiency, and erosion), overgrazing of pasture lands, and an inadequate domestic transport network combined with long distances to world markets – the nearest seaport, Novorossiysk, is 3,800 kilometers away.

This chapter analyses the country's policies towards agriculture since independence, including an attempt to quantify the distortions to agricultural incentives and competitiveness. The Kyrgyz experience is characterized by the most liberal reforms in the Commonwealth of Independent States (CIS) and also by the best performance of any farm sector in the CIS. At the same time, establishment of a well-functioning market economy has been a slow process, and corruption and lack of truly competitive markets remain major problems. The first section sets out the historical background, describing overall economic strategy and agricultural development. The next section examines the evolution of policies affecting the farm sector, before quantifying the distortions to agricultural incentives in the third section. The last two sections analyze the political economy of policy choices in the Kyrgyz Republic and future policy reform paths.

Historical background³

The economy of the Kyrgyz Republic suffered perhaps more than any other from the breakdown of central planning, the dissolution of the USSR and the hyperinflation of the early 1990s. Much of the country's industry had been established as part of Soviet regional dispersion policies, and many of the factories were part of long supply chains producing military equipment.⁴ In addition to the breakdown of Soviet supply chains, Kyrgyzstan suffered from the cessation of net transfers from other Soviet republics, which were substantially reduced in 1991 and had ended

³ This section is based on Pomfret (1995; 2006).

⁴ In the 1992-5 period, Kyrgyzstan was exporting machinery and equipment, while the output of the machine-building sector declined sevenfold (Mogilevsky and Hasanov 2004, p. 233), reflecting the destruction of the nation's physical capital stock. During the 1990s private investment was small, apart from a spike in 1995-7 associated with the Kumtor goldmine, which reflected low domestic savings rates and failure to attract foreign direct investment apart from a single project.

completely by May 1993.⁵ The initial transition period saw substantial economic decline and deindustrialization, accompanied by urban-rural migration as town-dwellers returned to their family villages and by the re-emergence of subsistence and informal activities. Real output fell by about fifty percent between 1990 and 1995. The collapse of the Soviet economic system and shift to a more market-oriented economy led to a sharp increase in inequality; Milanovic (1998) calculated Gini values for the Kyrgyz Republic of 0.26 in 1987/8 and 0.55 in 1993/5, representing a shift from one of the world's most equal to one of the world's most unequal distributions within half a decade. With low initial income levels this translated into high rates of unaccustomed and unanticipated poverty; using a \$120 per month benchmark, Milanovic calculated a poverty rate of 88 percent in 1993 – the highest in any transition economy.⁶

Transition strategy and macroeconomic developments

The options available to the newly independent Kyrgyzstan - the names Kyrgyzstan and Kyrgyz Republic, the country's official name since 1999, will be used interchangeably in this paper – were limited. Its main natural resource is the water flowing down from some of the world's highest mountains, but harnessing this for hydroelectricity generation requires large investments with long payback periods and grids to take the electricity to reliable markets. In practice, during the 1990s, water only led to quarrels with downstream neighbors, who needed it for irrigation but were unaccustomed to paying anything like an economic price for water. The single exploitable resource was gold in the Kumtor mine, which came to play a dominant part in the monetized economy after production came on stream in 1997, but whose physical life is limited.⁷

⁵ The transfers, 13-14 percent of GDP in 1990 according to World Bank estimates (Pomfret 1995, p. 72), are difficult to measure because many transactions were within All-Union enterprises which would have been unprofitable at opportunity cost prices.

⁶ Although data on inequality and poverty in this period of great dislocation must be treated with caution, all evidence supports the picture of traumatic economic deprivation during the 1990s (Anderson and Pomfret 2003). The adverse costs of rapid loss of purchasing power are illustrated by Howell's (1996a; 1996b) harrowing picture from the southern provinces of the Kyrgyz Republic of families cutting down fruit trees, slaughtering livestock and keeping children out of school in order to maintain subsistence consumption levels.

⁷ The Kumtor goldmine has estimated deposits of around 700 tonnes. The aggregate rate of economic growth remains sensitive to this single enterprise; when a landslide shut down the mine in 2002, GDP growth dropped to zero, recovering in 2003 after the mine reopened (Table 3). In 2005 growth again dropped to around zero due to reduced gold output, as well as political disruption. The mining industry also produces some non-ferrous metals (antimony, mercury, rare earth), and there are undeveloped deposits of gold, tin, tungsten and other metals, as well as unexplored coal deposits and possible oilfields.

Whether due to limited options or to other reasons, the Kyrgyz Republic had by 1993 become the country in Central Asia most closely aligned with the view of transition advocated by the IMF and the World Bank. In May 1993 it became the first Central Asian country to leave the ruble zone and issue its own national currency, and thereafter it was the first to bring hyperinflation under control, with annual inflation reduced to below 50 percent in 1995. Price and trade reforms were the most sweeping in Central Asia, and in 1998 the Kyrgyz Republic became the first of all Soviet successor states, including the Baltic countries, to accede to the World Trade Organization.

Privatization was fairly rapid. Housing and small enterprises were mainly transferred to current occupiers and operators. Large and medium-sized enterprises were privatized through a voucher scheme. By the end of the 1990s the private sector was producing three-fifths of GDP.⁸ The relative ease of privatization in the Kyrgyz Republic was assisted by the lack of valuable assets to be contested. Even among the small enterprises privatized in the early transition years, most failed to survive for more than two years (Anderson and Pomfret 2001).

Despite success in liberalization, stabilization and privatization, the results were not as good as expected even though the economy began to register positive growth in 1996 (see Tables 2 and 3 and Figure 1). The economy was hurt by the 1998 Russian Crisis and by a concomitant domestic banking crisis, after which reforms were put on hold. The major source of the economic problems was the failure to create an environment in which market forces could produce socially desirable outcomes. Despite formal progress in establishing institutions related to the rule of law and other market-supporting institutions, in practice market-unfriendly institutions such as the importance of personal contacts and the ubiquity of corruption dominated.⁹ When he encountered obstacles in the mid-1990s, the initially tolerant president resorted to ruling by decree, and subsequent elections, while not as outrageously manipulated as in Turkmenistan or Uzbekistan, were not fair.

⁸ These are the rounded figures quoted in EBRD *Transition Reports*. In the Kyrgyz Republic the extensive unofficial sector makes it likely that the private share was even larger.

⁹ In the 1999 BEEPS survey, on the headline measure of perception of corruption as an obstacle to doing business, Kyrgyzstan was rated the worst of the twenty transition economies covered – and this was in the face of serious competition for the wooden spoon from war-torn and failed states such as Georgia, Moldova, Bosnia and Romania. In the 2002 survey, which covered 26 transition countries, Kyrgyzstan moved up to 16th place on the same measure, but it still ranked below the three other Central Asian countries in the survey - Uzbekistan, Kazakhstan and Tajikistan (Gray, Hellman and Ryterman 2004, p. 12).

Macroeconomic management was flawed, as price stability was achieved without bringing the budget deficit under control. Assistance from multilateral institutions, by far the highest in Central Asia, was used to support consumption rather than to generate future growth. High growth rates in 1996 and 1997 proved temporary after the negative shocks of the 1998 Russian crisis and Kazakhstan's subsequent devaluation were exacerbated by domestic bank failures. In 1996-9 the real exchange rate depreciated by 50 percent against the US dollar. This was a slight real appreciation vis-à-vis important CIS trading partners (Russia and Kazakhstan), but it led to improved competitiveness relative to other trading partners (e.g. China) and most import-substituting activities experienced robust growth between 1998 and 2001. The depreciation exacerbated the external debt problem, forcing fiscal adjustment in 2000-1 and scaling back of external borrowing, followed by the government obtaining a debt restructuring from the Paris Club in 2002.

After the turn of the century, with a more sustainable macroeconomic policy, microeconomic reforms were resumed, especially in areas of deregulation and reduction in bureaucratic red tape. Economic growth was not smooth, but it was higher in 2000-4 than it had been in 1998-9 (Table 2 and Figure 1). A second Paris Club restructuring in 2005 established a more manageable external debt position.¹⁰ Economic recovery was helped by robust growth in Russia and Kazakhstan, and after the turn of the century labor migration to those two countries and workers' remittances became significant.

Nevertheless, popular frustration remained strong. The President's family, especially his daughter and son-in-law, were perceived to be benefiting economically from political connections, and in the southern part of the country people complained that the political system favored northern groups closer to the President. When political change came, it happened remarkably rapidly. The parliamentary elections of February and March 2005 were widely perceived as unfair because leading opposition candidates were barred. Protests began in Jalalabad on March 10, and within a week both Jalalabad and Osh, the main cities of the South, were in opposition hands. The North was initially quiet, until on March 24 crowds converged on the seat of government, and the President fled. President Akayev formally resigned on 4 April 2005, paving the way for the first peaceful transition of political power in Central Asia. After the

¹⁰ IMF (2005, p. 14). Whether the Kyrgyz Republic should accept the conditions of the IMF-sponsored scheme for Highly Indebted Poor Countries (HIPC) in order to further reduce the debt burden was a major domestic political issue in 2006-7.

“Tulip Revolution”, new elections were held in June 2005. The government appears to be committed to continuity of economic policies, but the political situation remains fluid. A new constitution in 2006 granted greater powers to the Parliament, although how effective this arrangement will be remains uncertain.

Agricultural development

At the time of independence the most important agricultural outputs (valued at Soviet relative prices) were livestock products: beef and veal (13 percent), milk (17 percent), sheep meat (11 percent) and wool (12 percent). The main crops were tobacco (8 percent) and grains (6 percent), with fruit and vegetables also accounting for 6 percent (Table 4 and Appendix Tables A1 and A2). Cotton accounted for less than 2 percent of farm output in 1990, but was important as a readily exportable crop to hard currency markets.

A large part of Kyrgyzstan’s pre-independence level of livestock output was based on high levels of support for state and collective livestock production, funded from outside the republic. In order to maximize the use of extensive pastoral grazing areas, this budgetary support was used to raise the capacity for carrying stock through the winter by importing manufactured feed and housing animals during the winter, and then using publicly owned trucks to transport livestock to and from the pastoral areas during the spring and summer. Fine wool sheep breeds were given particular support in this system as they are well adapted to pastoral grazing and produce high value wool. This highly subsidized structure led to widespread overgrazing of the pastoral areas. The system rapidly collapsed when Russian budget support ceased. Livestock were slaughtered as farmers were unable to feed and house them during the winter. Fine wool production fell concomitantly.¹¹

In the Soviet economy the Kyrgyz republic was a substantial importer of grains, and an exporter of tobacco, cotton, and livestock products. The largest industrial enterprise in the country was a refinery which processed sugar imported from Cuba for sale throughout the USSR; after independence, as transport was costed at economic rates and these supply chains

¹¹ The composition of the sheep flocks shifted dramatically towards fat-tailed sheep raised for their meat and producing low-quality wool. The decline in wool output may be overstated in official data (as in Table 4) because much of the low quality wool is now sold through an informal market of domestic and foreign buyers who pay cash and avoid taxes. According to the World Bank (2005, p. 51), the informal market may account for “up to 80 percent” of the wool market.

collapsed, raw sugar was imported from China and refined sugar exported to Uzbekistan and Kazakhstan. There was also a two-way trade in dairy products, which after independence consisted of exports to Uzbekistan and imports of more processed items from Russia and the rest of the world. In 1994, the main agricultural exports were wool (\$25 million), tobacco (\$20 million) and cotton (\$19 million), and the dominant agricultural import was wheat (\$54 million); no other agricultural import was valued at over \$5 million (Appendix Tables A3 and A4).

Agricultural production fell considerably from 1990 to 1995, accompanied by a demonetization and retreat into self-supply during the transitional recession. There were large changes in output composition during the 1990-7 period as wheat output increased by 164 percent, and potatoes and sugar beet also experienced large increases in output.¹² The area under winter wheat increased from 183,000 to 360,000 hectares and the area under spring wheat from 11,000 to 193,000 hectares, replacing barley and fodder crops.¹³ The collapse of international and domestic trade in the early 1990s encouraged greater focus on wheat and potatoes, both staple foods which are easy to store. The area sown to vegetables and cotton also increased in this period, but insufficiently to offset falling yields.¹⁴ Area sown to tobacco and barley, both cash crops, fell substantially during the 1990s. Meanwhile, high input prices and inadequate availability of fodder led to drastic cuts in livestock numbers and falling output especially of poultry products, sheep and goats, and pigs. The Kyrgyz Republic shifted from being a net importer of primary agricultural products in 1993 to a net exporter in 1997. At the same time, due to quality problems in the agro-processing sector, it shifted from being a net exporter to a net importer of processed agricultural products.¹⁵

Aggregate farm output began to pick up in 1996 and 1997, reflecting responses to post-1995 land privatization and favorable prices, helped by good weather in 1996 and 1997.

¹² The Kyrgyz sugar beet crop was devastated by disease in the 1980s and some output growth in the 1990s represented a rebounding from this disaster. The extent to which the growth in beet production during the mid-1990s was justified is, however, debatable as it mainly supplied the pre-existing refinery, which had temporarily turned to China for raw sugar, but which is energy inefficient and technologically obsolete.

¹³ The share of wheat in the total sown area increased from 15 percent in 1990/1 to 46 percent in 1996/7, while the share of fodder crops fell from 50 percent to 25 percent (World Bank 1998, p. 12).

¹⁴ Fresh and processed vegetables had been an important export to other Soviet republics, but as transport costs increased and Kyrgyz products had to compete with better quality imports from outside the former Soviet Union, those markets collapsed in the early 1990s. To some extent wool exports, which had also been intra-USSR, suffered a similar fate, exacerbated by the decline in sheep numbers and the quality of wool.

¹⁵ In 1993 the deficit on trade in primary agricultural products was \$18.9 million and in 1997 the surplus was \$10.6 million. Trade in processed food went from a \$12.1 million surplus in 1993 to a \$3.7 million deficit in 1997 (World Bank 1998, p. 61).

Livestock production, which had remained strong on household plots, began to expand after the mid-1990s as incomes recovered and the demand for livestock products increased, although this further hastened the decline of fine wool sheep production as the emphasis shifted to meat and dual purpose sheep breeds, produced on a small-scale but intensive basis. More recently, improved access to livestock feed from Kazakhstan has given impetus to restructuring and growth, particularly for poultry production. Hence the decline in livestock production as a share of agricultural sector output and the shift from extensive to intensive production systems represent a rational economic response to a new and less distorted policy environment.

Despite the negative impact on export demand of the 1998 Russian crisis, robust agricultural growth continued in the late 1990s and early 2000s. By the end of 2001 agricultural output had regained pre-transition levels. Indeed, over the first decade after independence agricultural performance, whether in terms of gross output, increased labor productivity or improved yields, was probably the best in all Soviet successor states (Rozelle and Swinnen 2004). The recovery which began in the second half of the 1990s was characterized by a shift to more commercial activities, including products with higher income elasticity of demand such as livestock products and fruit and vegetables, while wheat output fell from its 1997 peak.

Over the period 1990-2004 a substantial reorientation of Kyrgyz agriculture occurred. Crops are relatively more important now and livestock products less important than at the time of independence. Among grains, wheat has become clearly dominant. The vegetable sub-sector is diversified: 2004 output in million som consisted of potatoes 4,272, tomatoes 892, cabbage 879, onions 599, carrots 547 and cucumbers 395. Among livestock products, both dairy and eggs have recovered from 1995 troughs. Some agricultural sub-sectors, which were important in 1990, notably wool and to a lesser extent tobacco, have been practically eliminated.

Evolution of policies since 1991

Policies affecting agriculture have followed the general economic strategy described in the previous section. In the initial years following independence the picture is confused as prices were freed but well-functioning markets did not exist. Some subsidies were maintained to shelter

consumers and producers from the deep recession, but these had been abandoned by 1995. Indirect subsidies through credit markets and under-priced inputs such as water and electricity remain, but farmers operate in a market setting. Land reform was likewise slow to be implemented in 1991-4, but after that there were far-reaching changes as state and collective farms were replaced by individual farms and, more recently, land markets have been established. Trade policy has been liberal with low and fairly uniform tariffs and few non-tariff barriers to trade, and the currency has been convertible since 1995.

Prices and subsidies

The Soviet economic system was based on distorted accounting prices, and large direct and indirect subsidies. Agricultural input and output prices were all below world prices, but price distortions generally worked in favor of farmers. Output prices were closer to world prices than were the prices for key inputs (fertilizers, machinery and transport), although some crops (e.g. cotton and grains) were favored relative to others. After independence output and input prices, apart from irrigation water, electricity and railway tariffs, were quickly deregulated.¹⁶ The price of inputs, which are almost all imported, quickly rose to world price levels, while output prices adjusted more slowly due to local monopolies and poor infrastructure.¹⁷ Relative prices changed substantially (see Table A5 for crop prices).

In 1993-5 the government maintained some direct subsidies and budget transfers to soften the impact of the transitional recession on consumers and enterprises. The main items in 1993 were bread subsidies of 70.6 million som, other food subsidies of 3.9 million som, and 78.8 million som on enterprise support. By 1995 these transfers had been reduced to 20.0, 3.5 and 4.0 million som, and after 1995 they were eliminated as support switched to interest rate subsidies.¹⁸

¹⁶ Although state orders were abolished in 1994, considerable administrative interference in markets continued at the local level (World Bank 1998, p. 25). The state needs system after 1994 involved voluntary supply (mainly for the 1,000-ton national wheat reserve) at negotiated prices. Water charges were introduced in 1992, but fees paid by farmers only cover a small fraction of the actual expenditures by the Department of Water Resources; in 2003 farmers paid 119 million som and the actual budget expenditure was 1,020 million som (World Bank 2004, p. 42).

¹⁷ The World Bank (1998, p. 50) stated that "In 1996, most farm product prices in the Kyrgyz Republic were two-thirds to three-quarters of the corresponding prices in the United States, yet Kyrgyz farmers paid close to world prices for agricultural inputs." The evolution of input/output prices for seven major farm products are given in World Bank (1998, Table A4.1). See also Mudahar (1998, pp. 49-51).

¹⁸ Data from the Budget Execution reports of the Government of Kyrgyzstan. In 1993, 153.3 million som was equivalent to \$24.3 million (roughly \$5 per capita). In 1995, 27.5 million som was equivalent to \$2.5 million.

Budget loans to companies, oblasts (for bread price support) and Agroprombank amounted to 814.1 million som in 1995.¹⁹ Credit subsidies were switched to directed credit through banks, to agricultural enterprises and to the Ministry of Water (total of 240.9 million som in 1996 and 277.8 million som in 1997), and then were phased out in 1998 (83.1 million som) and 1999 (zero). In 2000-3 small amounts of subsidized credit went to agricultural enterprises through the banking system (between 7 and 24 million som per annum). These credit subsidies were eliminated in 2004.

Budgetary support for agriculture was minor during the 1990s. At the time of WTO accession in December 1998 the Ministry of Finance reported that total budgetary support was much below one percent of gross agricultural output (Mogilevsky 2004, p. 13; World Bank 1998, p. 75). The total budget expenditure for agriculture and water resources in 1999 of 389 million som was less than \$10 million. Nevertheless, indirect subsidies (low charges for irrigation water or electricity) continued to distort input use and the composition of farm output.²⁰

Privatization and organizational structure

Agrarian reform was difficult because of population pressure on the land and suspicion of the creation of a rich peasant (*kulak*) class. Various measures of arable land per person in the late Soviet era all indicate population pressure in rural Central Asia, but an added problem in the Kyrgyz Republic was the regional variation. Irrigated land per person was much less in the southern districts of Jalalabad and Osh than in the mountain areas or the northern districts (Table 1). A further complication in the south was the ethnic tensions over land; the worst outbreak of violence in Central Asia during the Gorbachev era followed a reallocation in 1990 of land tilled

¹⁹ In 1996 annual inflation was about 35 percent and market interest rates 45-120 percent but farm credit from the public budget or donor-supported programs charged 9-12 percent, which stimulated demand for subsidized credit and crowded out all other forms of credit, to the detriment of creating a viable financial sector. Facing massive defaults on agricultural loans made in 1992-6 Agroprombank was replaced by a Debt Resolution Agency in July 1996, and an independent non-banking public financial institution, Kyrgyz Agricultural Finance Corporation (KAFC), was subsequently established as part of a World-Bank-supported Rural Finance Project. In 1997 the KAFC charged annual interest rates of over 30 percent when inflation was about 15 percent. Credit unions were also established as part of an ADB-supported Rural Credit Project. Since 1997 a large number of non-bank financial institutions providing rural credit have emerged in the Kyrgyz Republic, supported by defining legislation in 1999 and 2002, and considered to be a success story in the region.

²⁰ Other indirect subsidies are provided through the research institutes which deliver new seed varieties to farms and through the distribution of inputs received by the government as aid (e.g. fertilizers from Japan 1994-7 or tractors and combines from Japan 1995-2001) or in barter deals (e.g., tractors from Belarus in 2002).

by ethnic Uzbeks to ethnic Kyrgyz, and several hundred people were killed in the ensuing interethnic riots.

Land reform laws date from February 1991, but implementation was slow until 1994. The initial laws on peasant farms and land reform in February and April 1991 were resisted by local officials and by managers of state and collective farms. The situation was complicated by the November 1991 decree creating the National Land Fund, which favored distribution to ethnic Kyrgyz. Starting in February 1994 the legal situation of individual farmers was clarified and in May detailed non-discriminatory regulations for the National Land Fund were promulgated. Further reforms in 1995 created more representative committees for implementing farm enterprise reorganization, which reduced the influence of local officials and of state and collective farm managers.

Between 1995 and 2000 reform accelerated and the approximately 500 collective and state farms averaging over 2,500 hectares per farm at the time of independence were replaced by over 60,000 farms averaging about 20 hectares per farm (World Bank 2004, vol. II, p. 130).²¹ By early 2002 about half of the arable land was cultivated by individual farmers, a fifth was owned individually but managed under a reformed collective or privatized structure, a quarter was held by the community-based Land Redistribution Fund (LRF),²² and the remaining five percent was in the hands of about twenty state research farms, mostly seed and livestock breeding farms (Cord et al. 2004, p. 177). The successor organizations operated at first with long-term leases. Following a 1998 referendum, private land ownership was legalized, but a five-year moratorium was placed on transactions involving land. In September 2001 the moratorium on rural land sales was lifted, although restrictions were imposed (e.g. land could only be sold to a member of the same community). By the mid-2000s land was private property in a meaningful sense, and a land market was functioning.

Land reform in the Kyrgyz Republic has been among the most far-reaching in the former Soviet Union, and has certainly gone much further than anywhere else in Central Asia. Many

²¹ Giovarelli (1998) reported very large differences in productivity between individually-owned and state or collective farms; although the two groups each cultivated about half of the ploughed land by 1996, the individual farms' output was worth 12.25 billion sum while that of the state and collective farms was worth 3.05 billion sum. This may partly reflect the geographical pattern of ownership, with individual farms dominant in the fertile Chui valley in the north and state and collective farms dominant in the poorer south (Mudahar 1998, pp. 45-6).

²² Initially about half of total irrigated arable land, in most cases the best land, was transferred to a National Land Fund. This was subsequently reduced to a quarter and the National Land Fund was replaced by the LRF, which has since 2001 been managed by local governments. Currently LRF land can only be leased.

observers ascribe a key role to land reform in the post-1995 revival of Kyrgyz agriculture. Access to some inputs and to rural credit remains imperfect but farmers have substantial control over their land and, although there is little hard empirical evidence, the expectation is that they will be responsive to price incentives.

In the agro-industrial complex, a large number of state-owned enterprises were privatized during the 1990. This reduced the government's obligations to loss-making enterprises, although in some cases (e.g. fertilizers and farm machinery) public monopolies became de facto private monopolies (World Bank 1998, p. 3).

The cotton sector saw a rapid expansion of the number of cotton gins from three at the end of the Soviet era to 23 in 2005, at least nine of which were built after 1999 (Sadler 2006, p. 98).²³ The ginners play a key role in providing finance to cotton producers, initially raised from international sources and since 2000 largely from their own resources. The farmer contracts to deliver seed cotton to the gin in return for local currency advances to pay for inputs and labor.²⁴ Despite the apparent competition Sadler (2006, p. 99) reports average prices received by farmers for seed cotton in 2003 as \$450 per ton in the Kyrgyz Republic and \$550 in Kazakhstan, and he explains the difference by the monopsony power of Kyrgyz gins. However, the average price masks regional variations, e.g. Sadler reports that the price was \$75 higher in Jalalabad than in Osh (the two cotton-producing oblasts in southern Kyrgyzstan), which may be due to market conditions or to quality differences.

Trade policies

The Kyrgyz Republic's trade policies are difficult to track in the early post-independence years because borders were extremely porous.²⁵ In 1994 the government abolished the state monopoly

²³ Lupton (2002) reporting on a fieldtrip in autumn 2002 identified twenty-two gins: three big Soviet era plants (privatized in 1992-4), three owned by a Russian group, five Turkish-owned and eleven other private gins whose owners included English, German and Uzbek companies. Most of the new plants use second-hand equipment, either re-sited from other former Soviet republics or roller gins from Turkey. The five roller gins are slower but have a higher out-turn (38-39 percent) with better quality fiber.

²⁴ Initially the gins offered a local currency price, bearing all the exchange rate and world price risk, but in recent years prices have been pegged to the Cotlook A world price index. Many inputs are smuggled from Uzbekistan where they are subsidized.

²⁵ 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 shuttle trade phenomenon has become relatively less important in the twenty-first century as

on international trade, and since 1995 the Kyrgyz Republic has pursued a trade policy based on moderate most-favored nation (MFN) tariffs with a maximum rate of 15 percent and no specific duties (Appendix Tables A6 and A7). Most tariffs were set at 10 percent, with 5 percent for imports from developing countries and 0 percent on intra-CIS trade. The effective tariff in the second half of the 1990s was around 2 percent. Higher VAT rates applied to imported goods than to identical domestically produced goods, but this was discontinued after WTO accession in 1998.

In February 1996 the Kyrgyz Republic initiated its WTO accession process and became a WTO member in December 1998. The Kyrgyz Republic's WTO commitments are remarkably liberal, with bound tariffs set at low rates and with virtually all sectors included in its GATS commitments (Mogilevsky 2004). The growth of international trade and integration into the global economy since WTO accession has been disappointing, partly because the business environment remains unattractive to private investors due to the poor institutional arrangements and widespread corruption, but it is also due to geography (Raballand 2003; Cadot, Carrere and Grigoriou 2006) and to lack of regional cooperation to facilitate transit (ADB 2006; UNDP 2005)

Neither Russia nor any other Central Asian country was a WTO member as of mid-2007, so that the Kyrgyz Republic operates in a dual-track trade environment whereby much of its trade is conducted outside WTO rules. The Kyrgyz Republic is a member of several regional organizations, of which the most significant is the Eurasian Economic Community (EEC) which contains its major CIS trading partners. In 1996 the Kyrgyz Republic signed a customs union agreement with Belarus, Kazakhstan and Russia, and in 1999 the union was extended to include Tajikistan.²⁶ In February 2000, reflecting the lack of progress towards a customs union, a new agreement was signed, which envisaged tariff harmonization within five years, but by 2005 the common external tariff covered only 6,156 of the 11,086 tariff lines identified in the union's

the retail sector, especially in the principal cities has become better organized. The export taxes introduced in 1992 to limit the outflow of goods were soon abolished, although exports outside the CIS were subject to the 20 percent VAT and some exports required hygiene certificates.

²⁶ In October 2000 the union was renamed the Eurasian Economic Community and the institutional structure was strengthened. In October 2005 Uzbekistan acceded to the Eurasian Economic Community, and this was accompanied by dissolution of the Central Asian Cooperation Organization, another regional organization with lofty aspirations but minimal achievements. The Kyrgyz Republic is also a member of the Economic Cooperation Organization and the Shanghai Cooperation Organization, neither of which has had an impact on trade policy (UNDP 2005; Pomfret 2006, Ch. 10).

classification system (and these were largely ones where the members' pre-existing tariffs had been similar). The main reason why an EEC common external tariff is unacceptable to the Kyrgyz Republic or Kazakhstan is that Russia's tariffs are higher than those of the Kyrgyz Republic or Kazakhstan, both on average and with peaks on individual items. It is highly unlikely that Russia would agree to cutting its tariffs to the bound rates agreed by the Kyrgyz Republic in its WTO accession, but even if the Kyrgyz authorities were tempted to override their WTO obligations, they would not 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 Kyrgyz exporters (Tumbarello 2005, Table 4). In sum, despite strong paper commitments the EEC is unlikely to evolve into a stronger trading arrangement in the near future.

Despite the existence of a regional agreement, the Kyrgyz Republic's trade relations with its contiguous neighbours suffer from lack of WTO commitments. Following the 1998 Russian Crisis, Kazakhstan introduced a number of draconian import duties, including tariffs of up to 200 percent on dairy fats and margarines, which hurt Kyrgyz dairy exports. The Kyrgyz Republic reacted with restrictions on the wheat trade, although a seasonal (July-November) export tax on wheat in 1999 and 2000 appeared to have minimal impact. More important than trade taxes has been the lack of agreement on issues such as customs valuation or transit which have augmented the costs of inter-regional trade in Central Asia. A frequently quoted number in the late 1990s was that a truck transiting Kazakhstan from the Kyrgyz Republic to Russia could expect to have to pay \$1700 in unofficial charges.²⁷ The situation with Kazakhstan has improved substantially since December 2003.²⁸ With Uzbekistan, however, there has been no progress in alleviating trade restrictions, which include cumbersome customs clearance procedures and frequent border closures.

²⁷ Stryker and Livinets (2002, pp. 32 and 59-61) report that, out of the \$4500 it costs to send a 20-ton truck of apples from Issyk-Kul, in the Kyrgyz Republic to Russia, \$1500-2000 goes to "bribes and other unnecessary transactions costs"; the same farm estimated that it paid about 30,000 som in domestic bribes before their 160 tons of apples left the farm (ie about 0.04 US cents per kilogram). Stryker and Livinets (2002, p. 68) also provide a case study of a tomato paste exports from the Kyrgyz Republic to Russia, Belarus and the Baltic countries, which must pay illegal transactions costs at the Kazakhstan border of \$300 per truck and then give 2-4 jars of tomato paste at the each of the police stops through Kazakhstan.

²⁸ In January 2005 the Kazakhstan parliament ratified the 1998 International Transport Agreement, establishing permit-free transit for Kyrgyz trucks and in March 2005 the two countries' customs authorities signed an agreement establishing that transiting trucks do not have to pay a deposit at the border and no longer have to be accompanied by customs officials. See IMF (2005, p. 14).

Quantifying the distortions

The expectation from the discussion in the previous section is that policy-induced price distortions should be small both within the Kyrgyz Republic's agricultural sector and for agriculture relative to other sectors. The main export products, cotton, tobacco and wool, have not been affected by significant subsidies or by taxes. For cotton this is in contrast to neighboring Uzbekistan where state marketing boards attempt to cream off a large part of the rents, inducing farmers to smuggle their crops across the border into the Kyrgyz Republic where they can receive closer to the world price (Pomfret 2008). Agricultural activities have not been heavily protected by tariffs, either as a group or individually. The government drastically cut back on subsidies to the farm sector during the 1990s. In general, input prices have been unregulated since the early 1990s, although key exceptions are water for which payment is not always enforced and electricity. Agriculture has also benefited from credit subsidies, although these appear to have been minor.

There are no published producer support estimates (PSEs) for the Kyrgyz Republic. The OECD has produced estimates for transition economies, but the only CIS countries covered before 2007 were Russia (Melyukhina 2003) and Ukraine (OECD and World Bank 2004). Those two studies indicate at the aggregate level large positive PSEs up to 1991 that were sharply reversed in 1992 before increasing to positive values again.²⁹ In broad terms, we may expect PSEs in the Kyrgyz Republic to have exhibited a similar pattern of pre-1991 positive PSEs turning negative in 1992 as output prices increased by less than input prices, but policy divergence among the Soviet successor states is likely to have increased as the Soviet legacy recedes further into the past.

The remainder of this section makes a preliminary attempt at estimating the nominal rates of assistance facing producers of some of the main agricultural products, using the methodology outlined in Anderson et al. (2006). The six commodities covered in Tables 6, 7 and 8 account for

²⁹ In Russia the aggregate PSE rose to 17-30 percent 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.

35-40 percent of agricultural output.³⁰ Particular attention is paid to wheat, the Republic's largest single farm output, and cotton, its most important farm export item. These estimates must be treated with caution because it is difficult to identify appropriate reference prices, the producer prices are derived from sale in domestic markets (rather than at the farm-gate), and assumptions about transport and handling costs are approximations. Unfortunately, the problems with establishing a plausible reference price were especially acute for two of the major agricultural products, beef and veal (due to the heterogeneous nature of the output) and potatoes (due to their being largely non-traded). For all products, attempts to create reasonable price estimates for the hyperinflationary years before 1995 were impossible, and even for 1996-8 the implausible estimates for milk reflect difficulties in identifying appropriate prices before a national market existed

Wheat

The bottom line of Table 6 indicates that the gap between the domestic price for wheat and the border price adjusted for transport and handling costs amounted to 65-72 percent of the domestic price in 2000-3. In 2004 the gap was substantially smaller (49 percent), but this may reflect an inappropriately high border price.³¹ The pattern of a substantial positive gap between domestic prices and reference prices is also apparent in the data for 1995-9 (Table 8 and Figure 2), although there is more variation in these years. In all years, the price gap may be overestimated if the reference price is too low due to an underestimated border price or an inflated allowance for transport and handling, but comparison with other "world price" indicators or with border prices used by the OECD to estimate wheat PSEs for Russia or Ukraine suggest that the border price used in Table 6 cannot be too far out. Similarly, although transport costs clearly vary by location, changing the numbers in line 5 of Table 6 would not alter the sign of the support estimates. In

³⁰ This share applies to both 1990 and 2004, although the relative weights differ, with wool much more important in 1990. Data were collected for eleven commodities, accounting for over three-quarters of agricultural output in 2004, and the relatively small share of products covered in Table 8 reflects difficulties in establishing reference prices.

³¹ The import prices used for the analysis of wheat are unit values derived from Kyrgyz wheat imports from Kazakhstan. These follow a similar pattern to measures of Kazakhstan's wheat export prices and other regional indicators of wheat prices for 2000-2004, and on this basis the 2004 border price in Table 6 is treated as a legitimate trend in the regional market for wheat. The 50 percent price increase in 2004 is, however, not reflected in indicators of world wheat prices, such as the FAO index of world wheat prices which increased by only 7 percent from 2003 to 2004.

sum, domestic market prices in the Kyrgyz Republic have consistently been higher than an appropriate reference price; Table 6 suggest that the price gap is substantial, even though the numbers should be treated as no more than rough approximations.³²

In the period 1990-7 there was a massive increase in the area sown to wheat and in wheat output. This reflected a retreat into staple consumption, problems of storage for more perishable products, and import substitution as trade with Kazakhstan became more difficult and costly than it had been in the Soviet Union. The existence of high domestic prices for wheat is not surprising, although the use of domestic market prices rather than farm-gate prices makes it hard to interpret the large price gap or to identify its proximate determinants. During the 1990s and early 2000s policy-caused distortions may partially explain the price gap; there are reports of local authorities encouraging wheat-growing, although it is unclear with what policy instruments, and in the early 2000s there was a small seasonal export tax on wheat, but these seem inadequate to explain a large policy-induced distortion in favor of wheat. The price gap is more plausibly explained by a general lack of integration of the domestic and the external market, and the drop in the support estimate for 2004 may be capturing a diminution in the structural problems which disconnect market prices.

Cotton

Of all Kyrgyz farm products, cotton sales are most integrated into world markets, so selecting appropriate border prices is least problematic for this crop. Nonetheless, calculating support for cotton farmers is complicated by the need for there to be a processing stage between the raw cotton sold by the farmer and the ginned cotton which is exported. Table 7 illustrates the calculations starting from the Cotlook “world price” for cotton fiber. In converting the reference price into a price for raw cotton a constant ginning outturn of 36 percent is assumed.³³ The

³² Using the border price as the denominator would assign a lower numerical value to the distortion. Inclusion of budget support for wheat farmers would increase the measured distortions, although the numbers in Table 5 indicate that such an adjustment would not be large.

³³ The actual outturns in the Kyrgyz Republic have been highly volatile. Sadler (2006), using FAOSTAT data on aggregate output of raw cotton and of cotton fiber, calculates wide swings between 27 percent in 1993 or 29 percent in 1999 and 40 percent in 1997 or 47 percent in 2003. One reason is that the raw cotton data need to be treated with caution due to widespread smuggling from Uzbekistan to the Kyrgyz Republic to avoid the former’s state marketing systems and from Tajikistan to the Kyrgyz Republic where the ginning sector is more competitive (Pomfret 2008). If the raw cotton numbers are volatile due to uneven patterns of smuggling (for example, after Uzbekistan introduced exchange controls in 1996 or when Uzbekistan tightened monitoring of its border with Kazakhstan in 2001-2), then

estimates are sensitive to this and other assumptions, and at first sight the pattern appears to be one of implausibly volatile distortions in favor of or against cotton farmers between 1995 and 2004, rather than the small negative values that would be expected for an export crop produced under fairly competitive and undistorted market conditions.

As for most of the Kyrgyz economy, price data are difficult to interpret in the high inflation years of the early 1990s, but the cotton calculations show plausible low support estimates for 1995, 1996 and 1998. The exceptional years in the late 1990s occurred when there was a large nominal depreciation of the Kyrgyz som against the US dollar – from 12.8 to 17.4 in 1997 and from 20.9 to 39.0 in 1999 (and to 47.7 in 2000). In these years the som value of the border price increased sharply while domestic producer prices were more sluggish, so that the estimated price gap is negative and large. Since 2000 the exchange rate has been more stable, but in both 2001 and 2004, which were years when world cotton prices dived, cotton buyers in the Kyrgyz Republic offered prices early in the season which turned out to be too high. Whether the high September prices equated to windfall gains to cotton farmers or whether they were more of a statistical artifact influencing the calculation of domestic prices is difficult to know, but they contributed to estimates in Table 7 of large positive assistance in 2001 and 2004. In the more stable (from the perspective of world cotton prices) years 2002 and 2003, the small negative support estimates are consistent with a non-distorted export sector.

Inexperience with market mechanisms applies not just to the cotton buyers who failed to forecast world price downturns, but even more to farmers who seem to be surprisingly poorly informed. A continuing feature of the cotton economy is the presence of itinerant buyers who profit from the farmers' limited knowledge of prices, and perhaps their need for cash, by buying cotton at low prices. The gap between the "producer price" in Table 7, which is the price of raw cotton delivered to the gin and what the farmers actually receive is probably the largest distortion against cotton farmers, but unfortunately we do not have data on this price gap.

Overall assessment

the ginning outturn data will also be volatile. Peaks in ginning outturns in the Kyrgyz Republic in 1997 and since 2001 most likely reflect inputs greater than domestic production of seed cotton.

Estimates of price gaps for six major products from 1995 to 2004 indicate that the domestic prices are generally above an appropriate reference price, and often substantially so. This is especially true for wheat and maize, for which the price gap generally exceeded 50 percent of the domestic price.³⁴ The pattern for cotton is more erratic, although farmers appear to have benefited from the establishment of a competitive ginning sector in the second half of the 1990s and are operating in a fairly non-distorted setting. For the livestock products covered in this analysis, the price gap was negative for milk and wool producers during the second half of the 1990s, but has generally been positive since 1999. In the years 2000-4 wool and poultry meat producers enjoyed the highest support of any of the commodities studied.

How do these distortion estimates relate to the patterns of farm output and the policies affecting the agricultural sector which were described in the first two sections of this paper? A major problem is deriving border prices which are a useful reference price when there is little trade. This is exacerbated for dairy products and for beef and veal by the heterogeneity of the products and possible biases due to the quality composition of small trade volumes.³⁵

Since the end of central planning and the dissolution of the Soviet Union, the incentives facing farmers have been driven by domestic market conditions. In the early and mid-1990s domestic demand fell sharply and long distance trade was hurt by market disruption. Output of staple food crops (wheat and potatoes) increased, while commercial livestock farming collapsed and output of grains used as inputs into livestock production or into agricultural processing fell. After 1995 (the last year of negative GDP growth), as people's income levels began to recover, domestic demand increased, especially for meat, dairy products and eggs. However, much of the output was sold locally and a national market still scarcely exists. Output of crops like sunflower seeds or of fruit and vegetables increased, largely as an import-substitution process even though formal trade barriers remained low.³⁶ The overall picture for the 1990s and into the early 2000s is of increased self-sufficiency in primary farm products, even though wheat and flour and oils

³⁴ The price gap while still positive was probably smaller for barley, but the price data were not always consistent. Note that in Tables 6 and 7 producer support is equated with the price gap. Although there is also some budget support, this is difficult to allocate by farm output, and the magnitude of budget support since 1995 has been small.

³⁵ The difficulties with using unit values of recorded trade are exacerbated by corruption in the customs service, which has been associated with under-invoicing of imports to reduce official duty payments. Anecdotal evidence reports that customs officials on both sides turn a blind eye to much of the local cross-border trade in dairy products from northern Kyrgyzstan to the Almaty region of Kazakhstan

³⁶ The biggest increases in vegetable production in the 1990s were of tomatoes, carrots, cabbages and cucumber, while production of onions, which had been a significant export as well as a popular domestic vegetable, grew less strongly.

remain significant imports and beans have emerged as an export crop. In such a situation, comparing ‘the’ domestic price to a reference price based on the world price or on the unit value of trade in the product makes limited economic sense.

The collapse of trade in primary products is best illustrated by tobacco, which in the late Soviet era was the main non-food crop, accounting for one-twelfth of total farm output and still the most important agricultural export in 1994 (Appendix Table A3). After 1994 the acreage under tobacco dropped sharply and, despite some recovery in 1998-2000, by 2004 less than a third as much land was devoted to tobacco as a decade earlier. Although tobacco continues to be exported, its share of output has dwindled to near insignificance (Table 4).³⁷

The story of the other Kyrgyz industrial crop, cotton, provides a stark contrast. Raw cotton output has increased almost continuously since the early 1990s, and by 2005 cotton exports were almost four times larger than tobacco exports and cotton accounted for about one-third of all agricultural exports. Part of the story is the importance of domestic reform: land reform was faster in the cotton-growing oblasts of Osh and Jalalabad (and there were no significant scale diseconomies from growing cotton on smaller farms), and the ginning sector was also privatized rapidly. Part of the story also has to do with the nature of cotton as an export commodity. All across Central Asia cotton was the pillar of the monetized economy after the dissolution of the USSR, because western European cotton agents quickly came to the region and export of baled cotton to world markets could be organized with less difficulty than exportation of any other major farm commodity. This underpinned the relative economic success of Uzbekistan, the heart of the Soviet cotton economy, until prices started to fall in 1996. In Uzbekistan, Turkmenistan and Tajikistan the cotton sector was repressed by various degrees of state control and this encouraged expansion of the originally much smaller cotton sectors in Kazakhstan and the Kyrgyz Republic.³⁸ Some cotton exports from the Kyrgyz Republic are smuggled Uzbek cotton, but there has been a genuine expansion of domestic output, especially from Jalalabad oblast. The Table 8 estimates are a guide to this story, but an imperfect one. Public policy has reduced distortions in the cotton sector and this is reflected in the small negative support in 2002 and 2003, but the large positive support estimates for 2001 and 2004

³⁷ Due to differing stages of production, there may be a classification issue in interpreting tobacco entries in Appendix Table A5, but the raw crop certainly declined in significance and the Kyrgyz Republic is a large net importer of the final product (cigarettes – see Appendix Table A4).

³⁸ Pomfret (2008). Cotton funded some of the president’s grandiose construction projects in Turkmenistan, and was one of the two economic prizes (the other was an aluminum smelter) in the Tajik civil war which ended in 1997.

indicate either the immaturity of market mechanisms in the cotton sector or a lack of concern for short-run profit-maximization.³⁹

The construction of a more efficient market economy is a slow and continuous process. It is helped by improvements in the physical infrastructure as well as in the soft infrastructure that facilitates trade, but that process became internationalized only after 2003 when the Kazakhstan economy was clearly booming and the costs of entering or transiting the country were reduced.⁴⁰ The apparent paradox between the description of policy interventions in the second section and the estimated price gaps in Table 8 can be explained by the time taken to replace the coordinating mechanisms of central planning by a well-functioning market economy - a process which has been hindered in the Kyrgyz Republic by lack of any pre-Soviet tradition of a modern market economy and by geographical isolation (in turn exacerbated by the large increase in trade costs with key neighbors).⁴¹ The main responses to the shocks of the early 1990s – cuts in commercial livestock farming and expansion of staple crops – are easy to explain but, because they reflected retreats from commercial farming, they are poorly picked up by price-gap measures of distortions. At a conceptual level, open trade policy and low levels of protection have a limited impact on domestic prices when domestic markets are extremely weak, subsistence oriented production results in low marketed surplus, and transaction costs are high,

³⁹ Although gins offer a price linked to the world price (Cotlook A index), the substantial share of gins owned by Russian and Turkish groups operate as suppliers to textile mills in their home countries and they are more concerned about ensuing continuous supply of best quality cotton fiber than responding to short-run price signals. The main distortion in cotton markets may be a gap between the at-gin price for raw cotton (which is the basis for the domestic price in Table 7) and the farm-gate price, because many farmers sell to itinerant middle-men who take advantage of farmers' ignorance of price information to pay low farm-gate prices.

⁴⁰ The Soviet transport network ignored republic boundaries. The train from Osh to Bishkek passed through Uzbekistan, Tajikistan, Uzbekistan again and Kazakhstan before re-entering Kyrgyz territory. The railway no longer operates from Osh, and there is no internal rail network beyond the spur linking Bishkek to the Kazakhstan network. The road between the two major cities was only upgraded after the turn of the century; before that, the Bishkek-Jalalabad road was of poor quality crossing through mountain passes which were often impassable in winter, while the Jalalabad–Osh sector passed through Uzbekistan and trucks were subject to delays and charges at the border as well as occasional unannounced border closures.

⁴¹ The slow emergence of competitive trade in agricultural products is still striking to outside observers doing fieldwork in Kyrgyzstan. Shady “middle-men” still seem to play a disproportionate role in agricultural marketing, taking advantage of the asymmetry of price information and producers' limited marketing alternatives to pay farmers low (farm-gate) prices. Significant costs are incurred in getting farm products to markets, including transport and bribes. Reports of informal checks by local police, who require payment of 30-200 som, are common (see, for example, World Bank 2005, pp. 72-3) drivers may take side roads to avoid the checks, but at the cost of longer driving time and increased fuel costs. The high domestic costs observed in local and regional markets reflect this combination of high rent-seeking and high transaction costs, and both producers and consumers bear these costs. The domestic market prices used in the Table 8 estimates may be substantially higher than farm-gate prices; a measure of producer support can be decomposed into two distortions (from the domestic market to the border, and also from the farm-gate to the domestic market), which have opposite signs in the Kyrgyz Republic.

so that there is a distinct risk that the extent of policy-induced distortions, as well as the immediate benefits of a more liberal trade regime, will be overestimated in the Kyrgyz setting.

The political economy of policy choices in the Kyrgyz Republic

The role of state farm managers and of local authorities in resisting farm reform was apparent in the Kyrgyz Republic, as in other Central Asian countries, in the early 1990s. Their long-term influence on the reform process was, however, uniquely limited, because serious land reform was undertaken after 1995 and (unlike in Kazakhstan) there was substantial structural change as the large farms were replaced by individual farms. The acquiescence of local authorities in farm reform may have partly reflected the sense of separateness of the South, where there were no good technical arguments against breaking up large farms and (unlike in Uzbekistan, Turkmenistan or Tajikistan) the central government did not impose on local authorities a policy of squeezing farm rents. More generally, President Akayev seems to have accepted arguments made by international financial institutions (and personal advisers such as Anders Aslund) against trying to retain close control over producers. Around the turn of the century this advice may have appeared flawed as lack of domestic revenue sources contributed to the Debt Crisis, but in the long-run the Kyrgyz Republic is much better placed for sustained agricultural growth than its neighbors which have squeezed farmers dry.

The situation since the Tulip Revolution of March 2005 is confused. The new government was not fully constituted until the third quarter of 2005 and internal policy differences within the government, which is an uneasy coalition of the leading southern and northern politicians, remain. At the same time the government faced almost continuous crises as various interest groups, including criminal elements, scramble for the country's assets and violence increased. A decline in agricultural output in 2005 was in part caused by the disruption.

The political situation remains fluid and, although the major economic reforms appear to securely in place, the longer term implications for the economy are difficult to predict. The 2006 Constitution gives significant power to Parliament, the first such constraint on presidential power in post-Soviet Central Asia. This may be a harbinger of a less personalized political system, with

policy continuity and incremental change. On the other hand, how the Constitution will be implemented remains unclear, as the President remains skeptical of limitations to executive power and as the cohesiveness of Parliament is tested by events such as the resignation of the government in December 2006.

Future policy reform paths

The Kyrgyz Republic inherited a situation where the main agricultural exports were bulky unprocessed commodities or the processed outputs of inefficient processing plants, and a major challenge has been to shift to higher-value specialized products and a processing sector based on local raw materials. The dilemma is highlighted by the huge sugar refinery, whose closure would have been economically disastrous for the local economy, but whose long-run value has long been known to be dubious. Sustainable agricultural development will involve continuous shifts away from such activities (including the extensive fodder- and fuel-intensive livestock farming of the Soviet era) to a more intensive farming based on good quality products such as dairy, fruit and vegetables, and cotton.

The ability to make this quality transition is limited not only by ongoing domestic market distortions due to sub-standard institutions and infrastructure, but also by the high costs of transit imposed by neighboring countries. This is especially true for perishable fruits and vegetables and dairy products.⁴² The trade facilitation and transit situation is improving with respect to Kazakhstan, which is an important local market for producers in the northern part of the Kyrgyz Republic as well as an important transit route to Russia or western China.⁴³ Almaty, the biggest urban market in Central Asia and only two hours' drive from the Kyrgyz border (contiguous with the rich farming oblast of Chui), has the only large modern supermarkets in the region and is the

⁴² The elimination of onion exports to Russia in 1998-9 as a result of the high costs of transiting Kazakhstan is highlighted in Pomfret (2006, pp. 209-10). The World Bank (2005, pp. 70-84) describes the high costs imposed on dairy goods producers by traffic controls and by inspection agencies.

⁴³ Although the Kyrgyz Republic borders China, the mountains are high and the immediate border towns small; trade with western China's largest urban center, Urumqi, is more convenient through Kazakhstan. Overland trade with potentially important partners like Turkey or Iran (and via the closest ocean port, Bandar Abbas) is discouraged by the poor transit regime in Uzbekistan, while transit through Tajikistan and Afghanistan to the booming markets of South Asia is more hazardous.

source of growing demand for Kyrgyz inputs into processed farm products.⁴⁴ Nevertheless, trade costs remain unnecessarily high, and any improvement in regional cooperation on trade and transit (as advocated in UNDP (2005) and ADB (2006)) would be hugely beneficial for the Kyrgyz Republic.

Conclusions

The Kyrgyz Republic is intriguing among the Soviet successor states for being one of the poorest and also one which embraced rapid and deep reforms. The transition strategy and economic policies focused on fairly rapid price liberalization, macroeconomic stabilization and privatization. It was the first former Soviet republic to join the World Trade Organization. However, the effect of the reforms was disappointing, largely because the institutional environment for a well-functioning market economy still does not exist. In the early 1990s the country experienced a severe transitional recession and high incidence of poverty. Incipient recovery in 1996-7 was damaged by the Russian Crisis of 1998 and a domestic banking crisis, and again by a debt crisis in 2001.

Nevertheless, farm output recovered substantially after the mid-1990s and overall agricultural performance in the decade after 1991 was the best in the CIS. In the farm sector, prices were quickly freed and subsidies largely eliminated by the mid-1990s. Since the mid-1990s the Kyrgyz Republic has had a liberal trade policy, with a maximum tariff rate of 15 percent, no specific duties and no quantitative restrictions on trade. Land privatization, initiated in 1991, was slow until 1994, but between 1995 and 2000 almost the entire sector was reformed with the 500 collective and state farms being replaced by over 60,000 individual farms. Since 2001 land has been private property in a meaningful sense and a functioning land market exists. The comprehensive reforms of the farm sector contributed to the rapid reduction of the country's high rural poverty rates after the mid-1990s.

⁴⁴ The development of supermarkets in the Kyrgyz Republic has been much slower, and limited to the capital city. Most of the 'supermarkets' are the size of a convenience store in western Europe or North America, although the situation in Bishkek is changing rapidly as stores become more modern and consumer-oriented and in 2006 Ramstore, one of the largest shops in Almaty, opened a supermarket in Bishkek.

Estimates of distortions to agricultural producers' incentives for six major products (wheat, maize, cotton, milk, poultry meat and wool) from 1995 to 2004 indicate that many domestic prices are substantially above reference prices based on the border price. This is especially true for wheat and maize, which had large positive price gaps throughout the period. The pattern for cotton is more erratic, although farmers appear to have benefited from the establishment of a competitive ginning sector in the second half of the 1990s. For the livestock products covered in this analysis, the price gap was negative for milk and wool producers during the second half of the 1990s, but has generally been positive since 1999. In the years 2000-4 wool and poultry meat producers enjoyed the largest price gap of any of the commodities studied.

The estimates of producer support, with the possible exception of cotton since 2000, reflect the slow process of creating integrated well-functioning markets in the Kyrgyz Republic. For most products, high trade costs reduce the usefulness of the world price (or any other border price) as an appropriate reference price from which to measure distortions. Farmers may be price responsive, but they respond to local prices in a poorly integrated national market which is largely disconnected from external markets.

Despite the slow process of constructing a market economy, public policy has been good in terms of creating ownership rights and competitive market structures. For Kyrgyzstan, the impact of changing incentives is captured powerfully and graphically by changes in the level and composition of agricultural production and trade. Not only has sectoral output fully recovered, it has also undergone a dramatic transformation, from dominance by livestock production and the export of processed commodities, to crop production and the export of raw commodities. This has occurred in a stable, highly liberalised trade environment with minimal government support, and rural poverty has fallen as a consequence. Assuming that the costs of trade will continue to fall and markets become better integrated, the future for Kyrgyz agriculture should be bright.

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Table 1: Land resources and population by oblast, Kyrgyz Republic, 1995 and 2001

(a) 1 January 1995

	Total land (thousand ha)	Cultivable land (thousand ha)	Irrigated land (thousand ha)	Rural population (thousands)	Cultivable land per person (3/5)	Irrigated land per person (4/5)
Jalalabad	2,792	159	7	821	0.19	0.12
Osh	4,208	259	129	1,409	0.18	0.09
Issyk-Kul	4,391	188	137	419	0.45	0.33
Naryn	4,412	133	111	262	0.51	0.42
Talas	1,444	120	89	202	0.59	0.44
Chui	2,429	447	273	746	0.60	0.37
Kyrgyz Republic	19,675	1,306	836	3,857	0.34	0.22

Source: Bloch and Rasmussen (1998, p. 115), based on national official data.

(b) 2001

	Share of total oblast land that is arable (percent)	Share of total arable land in the country (percent)	Share of total rural population (percent)	Cultivable land per person (hectares)
Batken ^a	4	6	10	0.23
Jalalabad	5	13	21	0.23
Osh	7	15	29	0.20
Issyk-Kul	4	15	9	0.63
Naryn	3	10	7	0.60
Talas	9	9	5	0.64
Chui	21	33	19	0.70
Kyrgyz Republic	6	100	100	0.39

^a Osh oblast was divided into Batken and Osh oblasts in 1999.

Source: World Bank (2003, p. 39)

Table 2: Basic data, Kyrgyz Republic, 1992 to 2004

Year	Population		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
	total	rural						
	million		US\$	thousand	thousand hectares		hectares	
1992	4.5	2.9	510	574	1,350	0.30	2.35	2.29
1993	4.5	2.9	450	568	1,370	0.30	2.41	2.23
1994	4.5	2.9	370	563	1,367	0.30	2.43	2.30
1995	4.6	3.0	350	559	1,273	0.28	2.28	2.27
1996	4.7	3.0	380	557	1,372	0.29	2.46	2.28
1997	4.7	3.0	390	556	1,371	0.29	2.47	2.26
1998	4.8	3.1	350	556	1,360	0.28	2.45	2.23
1999	4.9	3.2	300	556	1,368	0.28	2.46	2.20
2000	4.9	3.2	280	555	1,335	0.27	2.41	2.17
2001	5.0	3.3	280	557	1,325	0.27	2.38	2.17
2002	5.0	3.3	290	558	1,308	0.26	2.34	2.15
2003	5.0	3.3	340	559	1,310	0.26	2.34	2.13
2004	5.1	3.4	400					

Year	Agriculture (percent of GDP)	Industry (percent of GDP)	Manufacturing (percent of GDP)	Services (percent of GDP)	Exchange rate (som per US\$, period average)	Total Merchandise Exports (million US\$)	Total Merchandise Imports (million US\$)
1992	39.0	37.8		33.7			
1993	41.0	32.0		26.3			
1994	40.9	25.5		21.8	10.84	340	316
1995	43.9	19.5		9.3	10.82	409	522
1996	49.7	18.3		8.5	12.81	505	838
1997	44.6	22.8		14.8	17.36	604	709
1998	39.5	22.8		15.5	20.84	514	842
1999	37.7	25.0		14.0	39.01	454	600
2000	36.8	31.0		19.5	47.70	505	554
2001	37.3	28.9		19.0	48.38	476	467
2002	37.7	23.3		14.3	46.94	486	587
2003	37.1	22.3		14.6	43.65	582	717
2004	36.6	21.1		13.6	42.65	719	941

Source: World Bank, *World Development Indicators*, accessed at [www/worldbank.org](http://www.worldbank.org)

Table 3: Output growth and inflation, Kyrgyz Republic, 1991 to 2006^a
(percent)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Growth in Real GDP	-5	-19	-16	-20	-5	7	10	2	4
Inflation (CPI)	85	855	772	229	41	31	26	36	12
	2000	2001	2002	2003	2004	2005	2006		
Growth in Real GDP	5	5	0	7	7	-1	4		
Inflation (CPI)	19	7	2	3	4	4	6		

^a 2005 = preliminary actual figures from official government sources, 2006 = EBRD projections.

Source: European Bank for Reconstruction and Development *Transition Report 2006*, pp. 32-4.

Table 4: Gross value of agricultural output, Kyrgyz Republic, 1990 and 2004

	1990		2004	
	Value in million 1983 (rubles)	Share of Total Agricultural Output (percent)	Value in million som	Share of Total Agricultural Output (percent)
Grain	159	5.9	10,442	19.0
Potatoes	62	2.3	3,810	6.9
Vegetables	110	4.1	4,701	8.6
Cotton	47	1.7	1,870	3.4
Tobacco	220	8.1	245	0.4
Fruit	66	2.4		
Sugar beet			636	1.2
			925	1.7
Other Crops	257	9.4		
Total Crops	922	33.9		
Beef and veal	353	13.0	15,774	28.7
Mutton and lamb	298	10.9	(meat)	
Pork	95	3.5		
Poultry	104	3.8		
Other meat	41	1.5		
Milk	449	16.5	7,832	14.3
Eggs	62	2.3	777	1.4
Wool	319	11.7	249	0.5
Other livestock products	80	2.9		
Total livestock products	1801	66.1		
Other products			7,694	14
Total agriculture	2723	100	54,955	100

Source: World Bank (1992, Table 6.4); National Statistical Committee (Natskomstat).

Table 5: Budget expenditure for agriculture and water resources, Kyrgyz Republic, 1993 to 2004
(million som)

Year	Total budget expenditure on A&WR	Of which - water use & irrigation	Memorandum item: water use fees	
			charged	received
1993	117.8	24.5	236.1	n.a.
1994	86.3	46.6	115.1	1.0
1995	158.5	79.4	96.2	17.4
1996	181.1	91.6	95.4	30.8
1997	238.3	113.6	85.6	55.9
1998	350.4	142.9	178.9	49.0
1999	388.8	195.5	148.8	70.8
2000	476.1	202.9	142.5	76.1
2001	606.9	253.5	165.8	81.1
2002	744.1	293.1	155.5	63.9
2003	783.0	307.6	n.a.	60.4
2004	896.0	408.6	n.a.	63.7

Sources: Budget Execution reports; Ministry of Finance and Economy; Ministry of Agriculture and Water Resources; National Statistical Committee (Natskomstat).

Table 6: Nominal rate of assistance estimates for wheat, Kyrgyz Republic, 2000 to 2004

(as a percentage of farm-gate revenue)

	2000	2001	2002	2003	2004
1 Production (thousand tons)	1,039	1,191	1,163	1,014	998
2 Border price ^a (fob, US dollars)	79	90	73	81	128
3 Exchange rate (som/USD)	47.7	48.5	46.9	43.7	42.7
4 Domestic currency price (som/ton) = 2x3	3,768	4,365	3,423	3,540	5,466
5 Transport, handling, etc. (som/ton)	2,263	2,305	2,110	2,167	2,484
6 Reference price (som/ton) = 4-5	1,505	2,060	1,313	1,373	2,982
7 Producer price (som/ton)	5,354	5,868	4,730	3,977	5,796
8 Price gap = 7-6	3,849	3,808	3,417	2,604	2,814
Nominal rate of assistance (%) = 100*(8/7)	72	65	72	65	49

^a border price is the unit value of wheat imports from Kazakhstan.

Source: Authors' estimates.

Table 7: Nominal rate of assistance estimates for cotton, Kyrgyz Republic, 2000 to 2004

(as a percentage of farm-gate revenue)

	2000	2001	2002	2003	2004
1 Production (thousand tons fiber)	28,708	33,662	43,000	42,500	48,000
2 Border price ^a (fob, US dollars)	1,191	852	1,160	1,456	1,100
3 Exchange rate (som/USD)	47.7	48.5	46.9	43.7	42.7
4 Domestic currency price (som/ton)	56,811	41,322	54,404	63,627	46,970
5 Transport ^b , handling, etc. (som/ton)	11,744	9,798	11,361	12,266	10,004
6 Price of fiber ex-gin (som/ton)	45,067	31,524	43,043	51,361	36,966
7 Ginning costs (som/ton)	7,155	7,275	7,035	6,555	6,405
8 Seed value (som/ton)	8,491	8,633	8,348	7,779	7,601
9 Reference price ^c , fiber (som/ton)	46,402	32,882	44,356	52,585	38,162
10 Reference price ^c , raw cotton (som/ton)	13648	8730	12963	16130	11002
11 Producer price (som/ton)	10,690	13,495	12,231	15,748	18,926
12 Price gap	-2,958	4,765	-732	-382	7,924
Nominal rate of assistance (%) = 100*(12/11)	-28	35	-6	-2	42

^a Border price is the Cotlook A index minus \$70 (for conversion of cif to fob);

^b Transport and handling etc consist of \$10 handling at the gin, \$10 insurance and \$85 for transport from gin to the border plus marketing costs (15 percent of line 6).

^c The reference price of fiber ex-gin (line 6) = ((raw cotton price + ginning cost)/ginning ratio) - ((value of cotton seed left over)*(0.64/0.36)). With a ginning ratio of 36 percent, 1 ton of cotton fiber requires 2.78 (= 1/0.36) tons raw cotton, and 64 percent of the 2.78 tons will be seed.

Source: Authors' estimates.

Table 8: Nominal rates of assistance for major agricultural products^a, Kyrgyz Republic, 1993 to 2004

(as a percentage of farm-gate revenue)

Commodity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat	64	46	33	75	68	72	65	72	65	49
Cotton	1	5	-39	9	-70	-28	35	-6	-2	42
Maize	-8	52	65	37	51	59	48	16	42	67
Cow Milk	--	-315	-294	-44	37	22	24	-19	11	--
Poultry meat	--	--	--	--	--	72	81	70	75	82
Wool	1	0	-24	-4	-72	38	67	74	90	94

^a Cotton, cow milk and wool are export products (although milk may have been non-traded for most of the 1990s, hence the extreme values for 1996-8). Wheat, maize and poultry meat are import-competing. Empty cells (--) indicate insufficient data to calculate support estimates.

Source: Authors' estimates.

Figure 1. Kyrgyz Republic: Macroeconomic Performance, 1993-2005

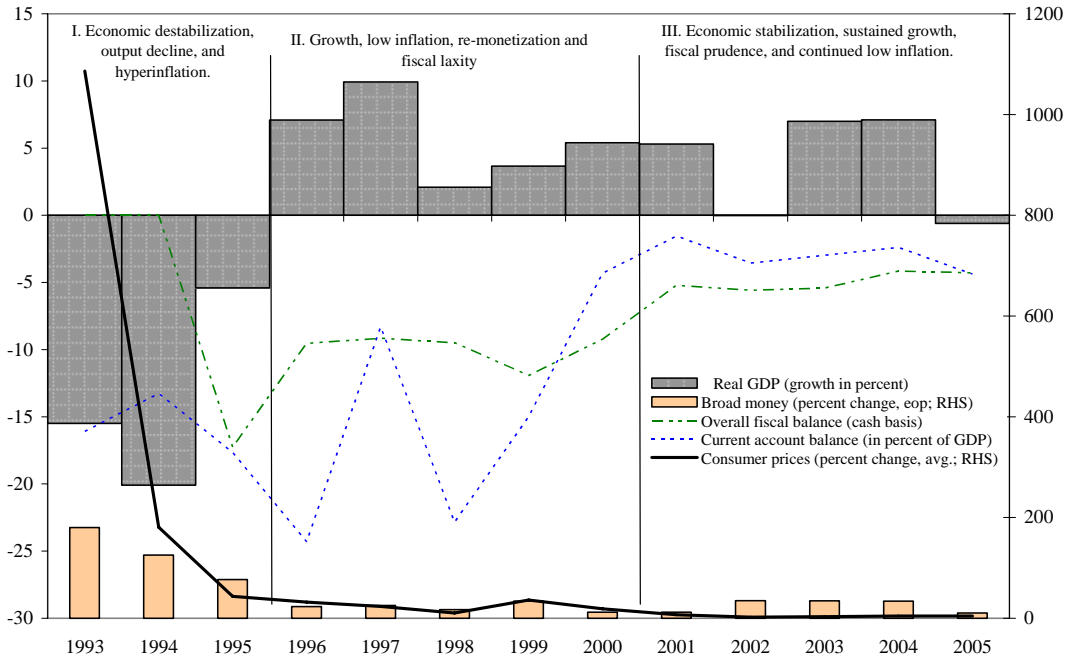
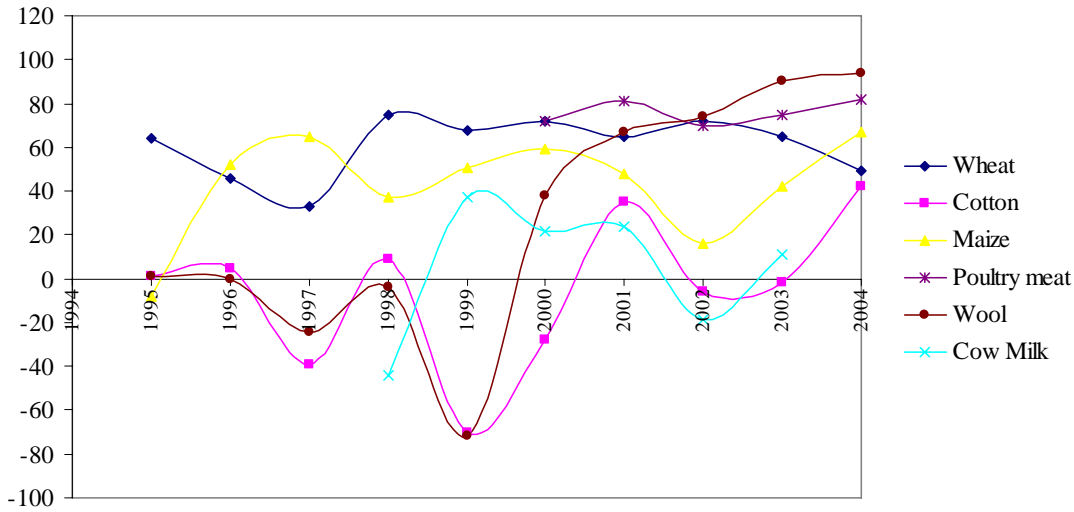


Figure 2: Nominal rates of assistance for major agricultural products^a, Kyrgyz Republic, 1993 to 2004

(as a percentage of farm-gate revenue)



Source: Authors' estimates.

Appendix Table A1: Production of main agricultural products, Kyrgyz Republic, 1993 to 2004

(a) Crops (thousand tons)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat	831	566	625	964	1274	1204	1109	1039	1191	1163	1014	998
Barley	477	288	159	166	152	162	180	150	140	149	198	233
Maize	184	129	116	182	171	228	308	338	443	374	399	453
Raw cotton	49	54	75	73	62	78	87	88	98	106	106	122
Sugarbeet	220	114	107	190	206	429	536	450	287	522	812	642
Tobacco	49	36	18	18	26	28	30	35	24	6	9	13
Potatoes	308	311	432	562	678	774	957	1046	1168	1244	1308	1363
Sunflower	2	3	8	14	19	25	39	40	47	62	59	67
Cabbage	24	24	30	40	60	72	89	101	119	69	104	113
Onions	82	91	106	106	119	115	176	147	149	84	104	117
Cucumber	9	11	15	20	29	36	46	50	58	26	50	56
Tomatoes	61	55	63	80	99	120	138	156	166	102	144	168
Carrots	24	24	32	41	60	82	105	109	113	65	126	127
Seed fruits	35	68	57	73	90	86	83	127	125	103	94	114
Grapes	9	18	20	14	23	17	18	27	27	15	12	15

(b) Livestock products (thousand tons, eggs in millions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Raw Cow Milk	946	872	864	885	912	973	1064	1105	1142	1173	1192	1185
Beef Meat	88	82	85	86	95	95	95	101	100	105	94	95
Sheep Meat	82	76	54	54	44	44	47	43	44	44	44	45
Pork Meat	25	18	28	29	26	30	29	24	26	23	22	25
Poultry Meat	9	7	3	3	3	4	5	5	5	6	7	5
Eggs	389	202	147	160	164	176	193	207	228	243	268	299
Wool	31	21	15	12	11	12	12	12	12	12	12	11

(c) Agro-processing^a

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat Flour	414	314	268	252	292	340	488	467	453	439	421	436
Pasta	13732	6473	7585	8545	11980	10949	7964	40282	2090	1726	1837	1755
Vegetable Oil	4449	3314	2571	2974	4828	6851	7518	8748	6921	9386	10700	12322
Sugar	15954	81623	69685	166790	89834	88280	70324	58011	30536	51192	75476	88130
Cotton Fibre	15731	16896	17657	21274	24990	22743	24526	28708	35662	48470	43232	48185
Processed Milk	65419	28441	14584	9375	10334	12880	11023	11450	16780	20912	25138	27414
Butter	6794	3865	2034	1065	1470	1332	1236	1375	1852	1462	1808	1984
Cheese	2161	1458	835	727	962	1307	1412	1711	1698	2208	2424	2574
Frozen Beef	18316	8382	5077	2608	2008	1657	2214	1344	904	1998	3483	3429
Frozen Sheep Meat	8430	5274	1718	338	371	145	72	219	196	295	101	170
Frozen Pork	11002	3206	2110	1123	331	17	53	44	43	59	23	19
Frozen Poultry	4057	900	63	27	141	220	308	106	50	n.a.	n.a.	n.a.
Mineral Water	3372	2814	5512	3747	6423	9805	8562	8211	9869	11138	10792	11781
Vodka	8450	1236	985	1172	1636	1913	994	13613	18156	24103	24298	21848
Cigarettes	3428	1943	1332	975	716	862	2103	3169	3013	2927	3102	3170

^a wheat flour in thousand tons, mineral water and vodka in thousand liters, cigarettes in millions, all other products in tons.

Source: National Statistical Committee (Natskomstat).

Appendix Table A2: Area under main crops, Kyrgyz Republic, 1993 to 2004
(thousand hectares)

(a) Total

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat	338	333	364	452	550	511	483	506	505	486	437	412
Barley	236	207	151	108	83	81	102	88	74	67	89	103
Maize	41	37	35	46	38	47	61	66	76	65	67	74
Raw cotton	20	27	33	32	25	32	35	34	38	40	41	46
Sugarbeet	12	10	14	14	12	22	29	34	23	27	32	27
Tobacco	22	19	9	9	12	13	13	15	10	3	4	6
Potatoes	27	34	44	49	56	59	64	69	74	52	83	85
Sunflower	4	7	16	21	20	29	40	39	44	52	49	56
Cabbage	2	2	3	3	4	5	6	6	6	3	5	5
Onions	5	7	10	8	7	7	11	8	8	5	5	6
Cucumber	1	2	2	2	3	3	4	4	4	2	3	4
Tomatoes	3	5	6	7	7	8	9	10	10	6	8	9
Carrots	2	2	4	4	5	5	6	7	6	3	6	6
Seed fruits	31	33	31	34	34	33	34	34	33	28	28	28
Grapes	8	9	8	7	8	8	8	8	8	7	7	7

(b) Irrigated

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat	186	186	259	327	408	368	336	341	335	n.a.	294	261
Barley	106	83	81	59	46	41	50	47	41	n.a.	53	56
Maize	29	21	35	43	37	46	59	63	73	n.a.	65	72
Raw cotton	19	25	33	32	25	32	35	34	38	n.a.	41	46
Sugar beet	11	9	13	14	12	22	29	33	22	n.a.	32	27
Tobacco	21	18	9	9	12	13	13	15	10	n.a.	4	6
Potatoes	9	7	43	49	55	58	63	67	71	n.a.	82	83
Sunflower	3	4	12	14	13	19	25	21	22	n.a.	27	26
Cabbage	n.a.	n.a.	3	3	4	4	6	6	6	n.a.	5	5
Onions	n.a.	n.a.	10	8	7	7	11	8	8	n.a.	5	6
Cucumber	n.a.	n.a.	2	2	3	3	4	4	4	n.a.	3	4
Tomatoes	n.a.	n.a.	6	7	7	8	9	9	10	n.a.	8	9
Carrots	n.a.	n.a.	4	4	5	5	6	7	6	n.a.	6	6
Seed fruits	14	17	26	34	34	33	34	33	32	n.a.	n.a.	28
Grapes	7	7	7	7	8	8	8	8	8	n.a.	n.a.	7

Source: National Statistical Committee (Natskomstat).

Appendix Table A3: Principal exports, Kyrgyz Republic, 2002

HS code	Description	Value (US\$m)	Share (percent)
710812	Non-monetary gold	162.8	35.4
520100	Cotton, not carded or combed	43.7	9.5
271000	Petroleum oils	35.3	7.7
271600	Electrical energy	22.0	4.8
240110	Tobacco, not stemmed/stripped	19.6	4.3
410121	Whole hides and skins of bovine animals	15.5	3.4
853922	Other filament lamps	11.2	2.4
870290	Other motor vehicles (>10 passengers)	7.2	1.6
071333	Beans	6.5	1.4
681110	Corrugated sheets	5.6	1.2
170199	Other cane or beet sugar	5.3	1.1
		334.7	72.8

Source: Official data reported to UN COMTRADE.

Appendix Table A4: Agricultural exports & imports by value, Kyrgyz Republic, 1994 and 2004
(in thousand US dollars)

Product Description	1994		2004	
	Imports	Exports	Imports	Exports
Wheat	54,440	48	11,019	239
Maize	14	0	264	0
Other cereals (barley)	3	6	1	3
Sugarbeet			0	1,108
Potatoes	15	13	0	87
Vegetables	182	1,740		
Cabbage			0	2
Onions			0	607
Cucumber			0	28
Tomatoes			12	430
Carrots and turnips			0	397
Fruits and berries	2	68		
Apples			1,875	549
Grapes	0	2	10	65
Sunflower			0	837
Eggs	80	232	119	0
Wool, non-washed	335	24,637	203	168
Wool, washed			356	1,143
Beef skins	26	3,140	27	1,201
Tobacco, not stemmed	0	97	352	10,655
Tobacco, stemmed	25	19,944	2,567	927
Flour	148	430	2,586	81
Pasta			47	16
Sugar	3,884	10,733	17,940	21,977
Cotton fiber	1,519	19,149	0	38,523
Dried fruits	211	34		
Dried apples			0	0
Dried apricots			0	21
Vegetable oil	3,140	191		
Sunflower oil			3,749	1
Cotton oil			2,991	11
Processed milk & products	816	2,800		
Processed milk <1 percent			0	130
Processed milk 1-6 percent			18	2,667
Butter			211	969
Cottage cheese			121	1,547
Soft cheese			269	370
Hard cheese			14	876
Meat	174	2,570		
Fresh beef			0	183
Frozen beef			67	18
Fresh mutton			0	1
Frozen mutton			0	15

Appendix Table A4 (continued): Agricultural exports and imports by value, Kyrgyz Republic,
1994 and 2004

(in thousand US dollars)

Product Description	1994		2004		
	Imports	Exports	Imports		Exports
Fresh pork				2	0
Frozen pork				0	7
Fresh poultry				2	0
Frozen poultry				37	0
Frozen chicken pieces				4,372	0
Non-alcoholic drinks		240	46		
Mineral water				274	14
Vodka		203	3,021	766	4
Cigarettes		540	711	11,777	107

Source: Customs statistics of the Kyrgyz Republic (from National Statistical Committee - Natskomstat).

Appendix Table A5: Value of agricultural exports and imports, Kyrgyz Republic, 2005

(a) Exports over \$1 million (in thousand US dollars and percent)^a

HS code	Description	Exports	Share (percent)
010119	Live horses	1,191	0.9
010290	Live bovine animals	1,344	1.0
040120	Milk & cream 1-6 percent fat	5,216	3.9
040390	Buttermilk	1,856	1.4
040610	Fresh uncured cheese	2,589	2.0
070820	Beans	2,001	1.5
071333	Dried kidney beans	8,933	6.7
080232	Walnuts	1,572	1.2
151719	Edible preparations of veg oils & fats	2,383	1.8
1701	Cane or beet sugar	11,202	8.4
210500	Ice cream	2,239	1.7
220210	Mineral water	5,325	4.0
240110	Tobacco, raw	10,475	7.9
4101	Hides and skins of bovine leather	6,455	4.9
4102	Hides and skins of sheep or lambs	2,061	1.6
410422	Bovine leather	1,768	1.3
520100	Cotton, not carded or combed	40,134	30.3
520300	Cotton, carded or combed	1,230	0.9
520532	Uncombed cabled cotton yarn	1,459	1.1

^a Export shares are of the agricultural total (\$133 million) in the panel above.

Appendix Table A5 (continued): Value of agricultural exports and imports, Kyrgyz Republic, 2005

(b) Imports over \$1 million (in thousand US dollars and percent)^b

HS code	Description	Imports	Share (percent)
020741	Frozen cuts and offal of chicken	5,964	3.5
030350	Frozen herrings	1,006	0.6
080810	Apples	5,005	2.9
0902	Tea	2,939	1.7
1001	Wheat	17,574	10.3
1006	Rice	1,242	0.7
110100	Wheat flour	9,003	5.3
1511	Palm oil	1,040	0.6
151219	Sunflower-seed and safflower oil	6,152	3.6
151229	Cotton-seed oil	1,237	0.7
151710	Margarine	1,727	1.0
151719	Edible preparations of veg oils & fats	2,383	1.4
1701	Cane or beet sugar	23,329	13.7
170490	Sugar confectionery	3,911	2.3
1806	Chocolate	11,123	6.5
1901	Malt extracts	1,292	0.8
1902	Pasta	1,598	0.9
1905	Bread, pastry, cakes, etc.	5,757	3.4
220210	Mineral water	4,052	2.4
220300	Beer	12,092	7.1
220421	Wine	1,152	0.7
2208	Spirituuous beverages	2,154	1.3
240220	Cigarettes	18,075	10.6
4101	Hides and skins of bovine leather	2,588	1.5

^b Import shares are of the agricultural total (\$170 million) in the panel above.

Appendix Table A5 (continued): Value of agricultural exports and imports, Kyrgyz Republic, 2005

(c) HS 2-digit exports and imports (thousand US dollars)

Description	Exports	Imports
01 Live animals	2,888	3
02 Meat and edible meat offal	56	6,789
03 Fish & crustacean, mollusc & other	0	1,312
04 Dairy prod; birds' eggs; natural honey	14,369	3,768
05 Products of animal origin, nes	819	34
06 Live tree & other plant; bulb, roots	65	193
07 Edible vegetables and certain roots	13,624	332
08 Edible fruit and nuts	4,015	6,960
09 Coffee, tea, and spices.	1,091	3,147
10 Cereals	11	19,123
11 Flour, meal, malt & starches	175	10,215
12 Oil seeds, roots & other vegetable matter	765	593
13 Gums, resins & other vegetable products	165	60
14 Vegetable plaiting materials, & vegetable matter nes	20	13
15 Animal/vegetable fats & oils & clarifying agents	1,893	13,311
16 Preparations of meat, fish or crustaceans	344	890
17 Sugars and sugar confectionery.	11,293	27,880
18 Cocoa and cocoa preparations.	873	11,405
19 Preparations of cereal, flour, starch/milk;	1,447	8,852
20 Preparations of vegetable, fruit, nuts or olives	2,076	4,462
21 Miscellaneous edible preparations.	2,590	4,260
22 Beverages, spirits and vinegar.	6,123	20,647
23 Residues & waste from the food industry	26	1,464
24 Tobacco and manufactured tobacco	12,438	21,186
41 Raw hides and skins (other than furs)	11,985	2,661
52 Cotton.	43,232	200
53 Other vegetable textile fibres	194	432
Total of above categories	132,577	170,192
Total trade	672,014	1,107,818

Source: Source: Trade data from UN-COMTRADE database

Appendix Table A6: Farm-gate prices for main agricultural products, Kyrgyz Republic, 1993 to 2004

	(som/ton)					
	1993	1994	1995	1996	1997	1998
Wheat	293	588	1394	2551	2218	2290
Maize	n.a.	n.a.	1091	1358	2048	1838
Barley	n.a.	n.a.	700	1510	1770	2489
Raw						
cotton	2169	9430	5286	5848	4979	6818
Sugar beet	121	375	570	701	603	605
Tobacco	4137	3679	4349	9189	9593	9855
Potatoes	637	1082	1579	2080	2082	2442
Sunflower	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Vegetables	557	944	1156	2517	2955	3541
Onions	689	797	1081	1650	1621	3265
Cucumber	1096	1516	1267	2108	14288	14593
Tomatoes	648	1317	423	2175	10626	12118
Carrots	505	612	970	1992	2265	2867
Fruits and						
berries	876	534	1388	1999	3706	8532
Seed fruits	906	489	265	1965	6274	8293
Cabbage	588	793	1104	1863	2338	3542
Grapes	445	2483	2334	3828	5015	6670
	1999	2000	2001	2002	2003	2004
Wheat	3799	5354	5868	4730	3977	5796
Maize	2221	3256	4538	4196	3315	3900
Barley	2878	3822	5381	3940	3965	5336
Raw						
cotton	5850	10690	13495	12231	15748	18926
Sugarbeet	784	1000	1000	1200	1294	1000
Tobacco	10385	18867	18320	13268	14590	18264
Potatoes	3903	3701	3497	5000	5916	3134
Sunflower	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Vegetables	2680	3710	6264	4005	5866	4445
Onions	3138	3239	6535	3347	5312	5119
Cucumber	11688	3940	6414	6514	7116	7059
Tomatoes	9563	3043	4089	5399	6362	5309
Carrots	2931	3267	4784	3939	5771	4309
Fruits and						
berries	10447	11875	10470	17165	16708	17741
Seed fruits	9978	11817	10373	17381	16633	16801
Cabbage	2680	3710	6264	4005	5866	7778
Grapes	6875	6472	5690	5970	6183	6714

Source: National Statistical Committee (agricultural statistics department) *Kyrgyzstan in Numbers*.

Appendix Table A7: Tariff rates on selected products, Kyrgyz Republic, 1998 to 2004
(percent)

Code	Commodity	Tariff rate (1998)	Tariff rate (1999)	Tariff rate (2000)	Tariff rate (2001/2)	Tariff rate (2003)	Tariff rate (2004)
100190910	Soft wheat	0	5	0	0	0	0
100590000	Maize	0-5	10	10	10	5	5
100300900	Barley	0	10	10	10	5	5
121291800	Sugarbeet	0	5	0	0	0	0
070190900	Potatoes	15	20	0	17.5	0	15
070490100	Cabbage	20	15	10	10	10	10
0711110	Onion	20	15	10	10	15	0-10
0711140	Cucumber	15	15	10	10	15	15
0702	Tomatoes	15	15	10	10	15	15
0706	Carrots	15	10	10	10	10-15	10-15
0808	Apples	0.2 ecu/kg.	10	10	10	10	10
200899430	Grapes	20	20	20	17.5	15	15
0806	Sunflower	0	5	0	0	0	0
0401	Fresh cow milk	15	15	10	10	10	10
040700300	Eggs	0-5	15	10	10	10	10
5105	Wool	15	10	10	10	5	5
410210	Beef skins	n.d.	5	0	0	0	0
2401	Tobacco						
	fermented	0	5	0	0	0	0
2401	Tobacco non						
	fermented	5	5	0	0	0	0
3102 30	Silitra (fertilizer)	5	0	0	0	0	0
Agricultural Processing							
110100150	Wheat flour	10	10	0	0	10	10
1902	Pasta	5	10	10	10	10	10
1701 12	Sugar (from						
	sugar beet)	1	1	0	0	0	0
2401	Tobacco	5	5	0	0	0	0
520100	Cotton fiber	n.d.	0	0	0	0	0
081330	Dried apples	10	10	10	10	10	10
081310	Dried apricots	10	10	10	10	10	10
151211910	Sunflower oil	5	5	0	10	10	10
151221900	Cotton oil	5	5	0	10	10	10
0401	Processed milk						
	1-3 percent	15	15	10	10	10	10
0401	Processed milk						
	3-6 percent	15	15	10	10	10	10
040510	Butter	10	10	10	10	10	10
040610200	Cottage cheese	10	10	10	10	10	10
0406	Soft cheese	10	10	10	10	10	10
0406	Hard cheese	10	10	10	10	10	10
020210	Frozen beef	15 (0.15 ecu/kg)	10	0	10	10	10
020441	Frozen mutton	n.d.	10	10	10	10	10
020430	Frozen lamb	n.d.	10	10	10	10	10
0203 21	Frozen pork	15 (0.15 ecu/kg)	10	0	10	10	10
020712	Frozen chicken	n.d.	15	10	10	10	10

Appendix Table A7 (continued): Tariff rates on selected products, Kyrgyz Republic, 1998 to 2004

		(percent)					
020714	Frozen chicken pieces	n.d.	10	10	10	10	10
220110	Mineral water	20	15	10	10	10	10
220860	Vodka	60	10	10	10	10	10
2402	Cigarettes – filtered	15 (3 ecu/1000)	10	10	10	10-15	10-15
2402	Cigarettes - unfiltered	10 (3 ecu/1000)	10	10	10	10-15	10-15
Selected Non-agricultural goods							
		5 for 1000					
271600	Electricity	kWt	5	10	10	10	10
270900100	Gas	5	0	0	0	5	5
270900	Petroleum products	5	0-10	0	0	5	5
7108	Gold	5	10	10	10	10	10
2612	Uranium	5 for 1kg	5	0	0	5	5
280540	Mercury	5	5	10	0	5	5
2701	Coal	5	5	0	0	5	5
7201	Ferrous metals	5	5-10	0-10	0	0	0
6101-6304	Textiles	20	10-17.5	10-17.5	10-17.5	10-15	10-12
8401-8527	Machinery	10	0-20	0-20	0-10	0-10	0-10

Source: Annual Law on Customs Tariff

Appendix Table A8: Trade-weighted applied tariffs, Kyrgyz Republic, 2002 and 2003

	2002	2003
Paddy rice	9.9	9.9
Wheat	3.3	0
Other cereal grains	6.9	4.8
Vegetables, fruit & nuts	5.2	3.8
Oil seeds	0.7	0
Plant-based fibers	5.0	0
Other crops	7.4	4.5
Cattle, sheep, goats & horses	4.3	0
Other animal products	5.3	2.6
Wool & silkworm cocoons	10.0	2.7
Primary agriculture	4.8	2.8
Meat	9.4	8.1
Meat products	10.6	10.0
Vegetable oils & fats	6.8	9.2
Dairy products	9.7	9.6
Processed rice	10.0	10.0
Sugar	12.7	20.0
Other Food products	9.4	8.0
Beverages & tobacco products	10.5	10.0
Processed food	10.2	10.8

Source: UNCTAD-TRAINS database, accessed June 2006.