

# General Equilibrium Analysis of the Effects of Regional Cooperation in Trade Policy, Transport, and Customs Transit on the Kyrgyz Republic

The preceding chapters argued that the CARs would reap considerable benefits from improved regional cooperation in trade policy, transport, and customs transit. In particular, Chapter 4 argued that by acceding to the WTO and joining the coalition of WTO members pushing for the elimination of trade-distorting cotton subsidies in developed countries, the CARs could bring about a reduction in these subsidies. This would in turn raise world cotton prices and increase the CARs' cotton export revenues. Chapters 5 and 6 argued that the CARs could reduce transport costs, make transit times shorter and more predictable for international shipments through increased regional cooperation in transport and customs transit. This would in turn help the CARs expand trade, take more active part in GPNs and related trade in manufactured products, and diversify trade in terms of both commodity composition and geographical distribution. The increase

in cotton export revenues and the expansion of trade would improve social welfare and stimulate economic growth. And the diversification of trade would make the CARs less vulnerable to fluctuations in world commodity prices and possible swings in import demand in, and protectionist measures by, trading partners.

This chapter presents quantitative estimates of the likely effects of regional cooperation in trade policy within the multilateral framework and increased regional cooperation in transport and customs transit on the Kyrgyz Republic, based on the country's CGE model.<sup>1</sup> Specifically, the chapter presents the results of simulations of a 70% and 35% rise in world cotton prices that the CARs could bring about through regional cooperation in trade policy within the multilateral framework and of estimated reductions in transport costs that would result

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<sup>1</sup> Like the CGE model of Kazakhstan mentioned in Chapter 4, the CGE model of the Kyrgyz Republic has been developed by the Asian Development Bank as part of its study on Central Asia regional cooperation in trade, transport, and transit. The model includes 31 sectors, 8 regions, 16 household types, government, and one composite trading partner. The specification and structural equations of the model are identical to those of the Kazakhstan's model described in Appendix 3.

from increased regional cooperation in transport and customs transit. The chapter also compares the effects of increased regional cooperation in transport and customs transit with those of a 50% reduction in tariffs.

## 7.1 Effects of Regional Cooperation in Trade Policy within the Multilateral Framework

One form of regional cooperation in trade policy that the CARs could and need to pursue within the multilateral framework is joint efforts with other developing countries to push for the elimination of trade-distorting cotton subsidies in the EU and the US. If successful, these efforts would raise world cotton prices by up to an estimated 71% and boost export revenue and GDP in cotton exporting developing countries. The Kyrgyz Republic, where cotton accounts for more than 6% of merchandise exports and about 2% of GDP, would be one of the major beneficiary countries.

To assess the likely effects of regional cooperation in trade policy within the multilateral framework on the

Kyrgyz Republic, we made simulations of a 35% and 70% rise in world cotton prices in 2006. The results of the simulations show that—as expected—a rise in world cotton price would give a major boost to the Kyrgyz economy. If world cotton prices rose by 35%, the cumulative increase in real GDP in 2006–2015 would be more than US\$0.6 billion (at 2002 prices) greater or 33.4% (relative to 2005) higher than in the baseline (“no change”) scenario (see Table 7.1). If world cotton prices rose by 70%, the cumulative increase in real GDP would be US\$1.2 billion (at 2002 prices) greater or 61.3% (relative to 2005) higher than in the baseline scenario. The value of exports would grow substantially faster than in the baseline scenario, but growth of the volume of exports would accelerate only modestly, as the surge in cotton exports revenue would slow down growth of non-cotton exports through appreciation of the real exchange rate.<sup>2</sup> Both the value and the volume of imports would expand much more rapidly than in the baseline scenario to keep the trade balance at zero, as required by the model specification. Although aggregate income of poor households would rise less than that of nonpoor households in absolute terms, it would rise much

**Table 7.1: Aggregate Effects of a Rise in World Cotton Prices in 2006 on the Kyrgyz Republic in 2006–2015**

	Cumulative Change over Baseline Scenario		Cumulative Change Relative to 2005	
	(In million US dollars at 2002 prices)		(In percent)	
	A 35% Rise	A 70% Rise	A 35% Rise	A 70% Rise
Real GDP	631.5	1,159.8	33.4	61.3
Value of exports/imports	179.2	454.1	21.4	54.2
Volume of exports	26.6	72.9	3.1	8.4
Volume of imports	196.9	512.0	17.5	45.6
Income of poor households	114.6	246.7	37.8	81.3
Income of nonpoor households	333.1	633.1	29.9	56.9

Note:

GDP – gross domestic product

Source: Computable general equilibrium model-based simulations made by the authors.

<sup>2</sup> This is the phenomenon referred to as the “Dutch Disease.”

more than that of nonpoor households relative to 2005 in both scenarios.

However, the rise in household income would be rather uneven across regions (see Figure 7.1). In particular, household income would rise significantly more in the Batken and Chui regions than in Bishkek city and the Naryn region. Furthermore, poor households' income would rise more than nonpoor households' income in the Issyk-Kul and Batken regions, but less than nonpoor households' income in all other regions.

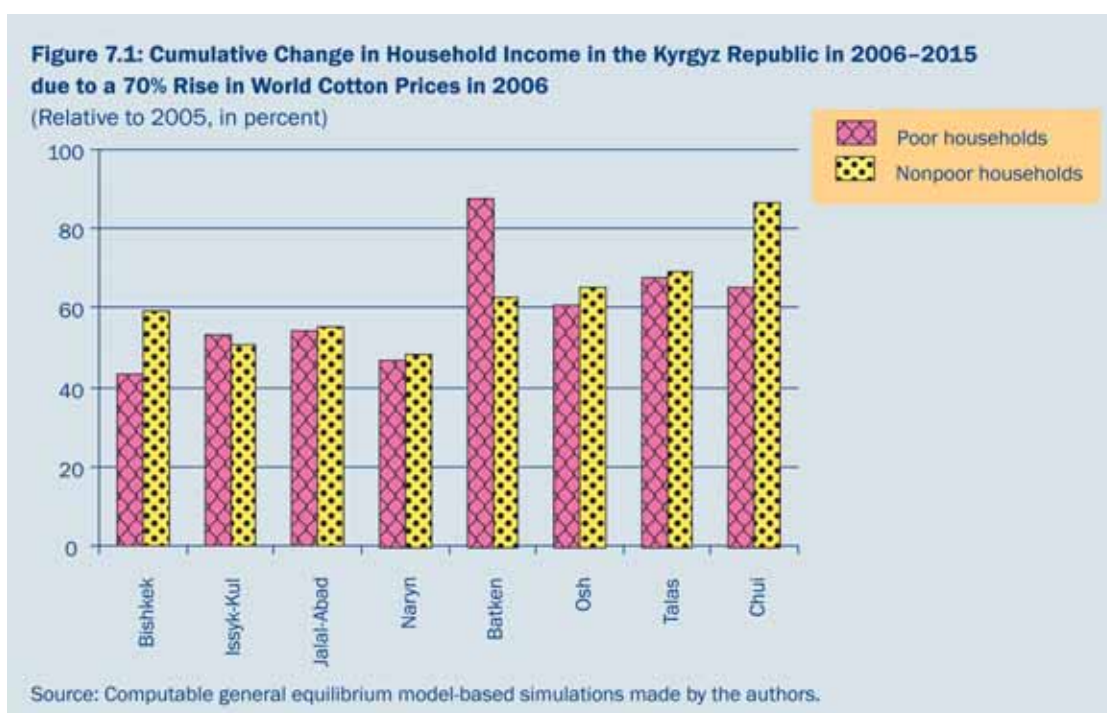
## 7.2 Effects of Regional Cooperation in Transport and Customs Transit

To be able to assess the effects of increased regional cooperation in transport and customs transit on the Kyrgyz

Republic using its CGE model, we first estimated how increased regional cooperation in the two areas would affect the external transportation costs and domestic distribution margins for the sectors included in the CGE model.<sup>3</sup> We did so in three steps.

First, representative export and import commodities were selected for those sectors in the model for which the external transportation costs and/or domestic distribution margins were likely to be affected by increased regional cooperation in transport and customs transit.

Second, interviews were conducted with Kyrgyz firms to determine how improvements in transport infrastructure, transport regulations, transport and logistics services, and customs systems in the CARs would affect the external transportation costs and domestic distribution margins for the representative commodities.



<sup>3</sup> The domestic distribution margin for a particular sector is the difference between the price received by producers and the price paid by consumers in the case of a domestically produced and consumed product, the difference between the price received by producers and the border price in the case of an exported product, and the difference between the border price and the price paid by consumers in the case of an imported product. A major component of a domestic distribution margin is domestic transportation costs, including costs of delays in domestic transportation of goods.

Third, estimates of reductions in the external transportation costs and domestic distribution margins (as percent of border prices) for 17 sectors were made, based on interviews with Kyrgyz firms and additional information from other sources.<sup>4</sup>

The estimates are given in Table 7.2.

We then adjusted the border prices in the model in 2006 to reflect the estimated reductions in external transportation costs and domestic distribution margins that would result from increased regional cooperation in transport and customs transit.<sup>5</sup> The results of the simulation indicate that increased regional cooperation in transport and customs transit would have considerable positive effects

**Table 7.2: Estimated Reductions in External Transportation Costs and Domestic Distribution Margins in the Kyrgyz Republic due to Increased Regional Cooperation in Transport and Customs Transit**  
(In percent of border prices)

	External Transportation Costs		Domestic Distribution Margin	
	Exports	Imports	Exports	Imports
Cotton	9.0	0.0	1.2	0.0
Other Agriculture	10.5	11.5	1.5	2.4
Fishery	0.0	4.0	0.0	0.7
Energy	4.0	14.0	0.7	1.3
Metal Mining	4.0	7.0	1.2	0.6
Other Mining	4.0	4.0	1.2	0.5
Processed Food	4.0	2.5	0.7	0.4
Textile and Apparel	9.0	15.0	3.0	1.0
Wood Products	11.0	19.0	2.0	1.5
Paper and Printing	5.0	11.0	1.3	1.3
Chemicals	6.0	13.0	1.4	1.5
Mineral Products	7.0	17.0	1.2	2.0
Metallurgy	4.0	10.0	1.2	1.5
Metal Products	4.0	10.0	1.2	1.5
Machinery	3.0	7.0	1.1	0.8
Other Industry	19.0	20.0	1.2	2.8
Electricity	9.0	18.0	1.2	2.0

Source: Estimates made by the authors based on interviews with Kyrgyz firms.

<sup>4</sup> For the other 14 sectors included in the model (mostly services), it was assumed that increased regional cooperation in transport and customs transit would have no impact on external transportation costs and domestic distributions margins.

<sup>5</sup> The border price for exported goods were adjusted as follows:

$$P_i^a = P_i * (1 + T_i/100) * (1 + D_i/100)$$

where  $P_i^a$  is the adjusted border price for exported product  $i$ ,  $P_i$  is the border price for exported product  $i$  in the baseline scenario,  $T_i$  is the estimated reduction in the external transportation costs for exported product  $i$ , and  $D_i$  is the estimated reduction in the domestic distribution margin for exported product  $i$ .

The border price for imported goods were adjusted as follows:

$$P_j^a = P_j / [(1 + T_j/100) * (1 + D_j/100)]$$

where  $P_j^a$  is the adjusted border price for imported product  $j$ ,  $P_j$  is the border price for imported product  $j$  in the baseline scenario,  $T_j$  is the estimated reduction in the external transportation costs for imported product  $j$ , and  $D_j$  is the estimated reduction in the domestic distribution margin for imported product  $j$ .

on the Kyrgyz Republic. The cumulative increase in real GDP in 2006–2015 would be US\$2.1 billion (at 2002 prices) greater or 112.3% (relative to 2005) higher than in the baseline scenario (see Table 7.3). While both exports and imports would expand faster than in the baseline scenario, growth of real imports would accelerate more than that of real exports to keep the trade balance at zero. This is because improved regional cooperation in transport and customs transit would raise border prices for exported goods

and lower border prices for imported goods. The cumulative percentage increase (relative to 2005) in both poor and nonpoor households' aggregate income would be substantial, although the former would be slightly lower than the latter. Moreover, the increase in household income would be fairly even across regions (see Figure 7.2).

We also made a simulation of the estimated reductions in external transportation costs and domestic

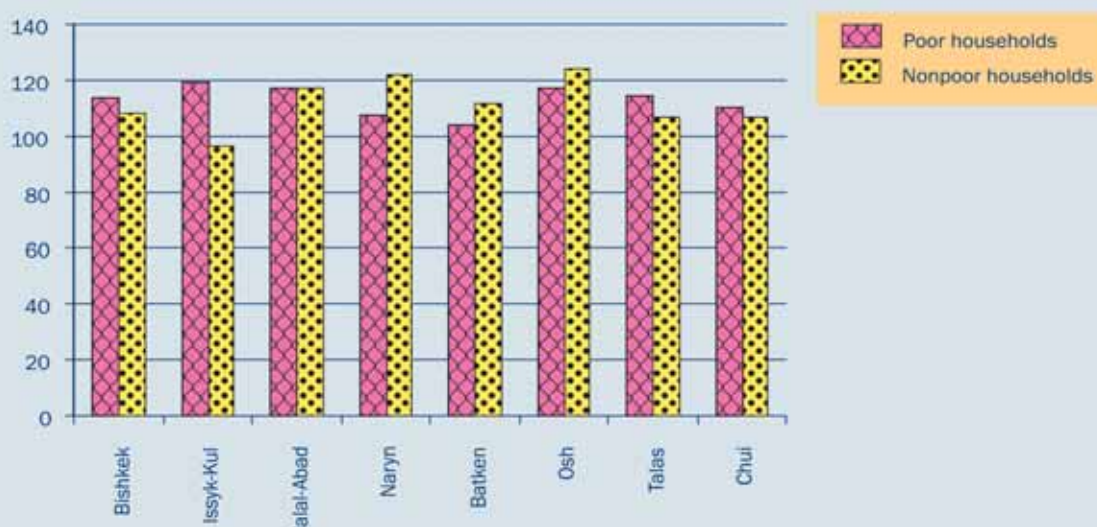
**Table 7.3: Aggregate Effects of Increased Regional Cooperation in Transport and Customs Transit in 2006 on the Kyrgyz Republic in 2006–2015**

	Cumulative Change over Baseline Scenario	Cumulative Change Relative to 2005
	(In million US dollars at 2002 prices)	(In percent)
Real gross domestic product	2,125.2	112.3
Value of exports/imports	1,682.7	200.9
Volume of exports	1,467.0	168.1
Volume of imports	4,338.0	386.2
Income of poor households	286.1	94.3
Income of nonpoor households	1,114.0	100.1

Source: Computable general equilibrium model-based simulations made by the authors.

**Figure 7.2: Cumulative Change in Household Income in the Kyrgyz Republic due to Increased Regional Cooperation in Transport and Customs Transit, 2006–2015**

(Relative to 2005, in percent)



Source: Computable general equilibrium model-based simulations made by the authors.

distribution margins (that would result from increased regional cooperation in transport and customs transit) and a 35% rise in world cotton prices (that regional cooperation in trade policy within the multilateral framework could bring about). We did so to assess how increased regional cooperation in transport and customs transit combined with regional cooperation in trade policy within the multilateral framework would affect the Kyrgyz Republic. The results of the simulation show that the Kyrgyz Republic would reap substantial benefits from increased regional cooperation in transport and customs transit, and regional cooperation in trade policy within the multilateral framework. If the estimated reductions in external transportation costs and domestic distribution margins and the rise in world cotton prices took place in 2006, the cumulative increase in real GDP in 2006–2015 would be US\$2.8 billion (at 2002 prices) greater or 150.2% (relative to 2005) higher than in the baseline scenario (see Table 7.4). The value of both exports and imports would expand substantially faster than in the baseline scenario, with the cumulative increase in the volume of exports being 163.5% higher and that in the volume of imports 429.1% higher than in the baseline scenario. Growth generated by the reductions in transport costs and the rise in world cotton prices would be pro-poor. Specifically, the cumulative increase in poor households' aggregate income would be 153.9% higher

than in the baseline scenario whereas the increase in nonpoor households' aggregate income would be 136.6% higher.

For comparative purposes, we then made a simulation of a 50% unilateral, nondiscriminatory, and uniform (across products) reduction in tariffs in the Kyrgyz Republic at the beginning of 2006. The results of the simulation suggest that a tariff reduction is not a potent growth stimulus for the Kyrgyz Republic, especially compared with the reductions in transport costs that would result from increased regional cooperation in transport and customs transit. In particular, the 50% reduction in tariffs would lead to a cumulative increase (relative to 2005) in real GDP of 27.6% in 2006–2015, compared with 112.3% in the case of increased regional cooperation in transport and customs transit (see Table 7.5). The reason is that tariffs in the Kyrgyz Republic are already quite low, and relatively high transport costs and long unpredictable transit times are a more significant barrier to imports to the Kyrgyz Republic than tariffs. Furthermore, economic growth generated by the reduction in tariffs would not be pro-poor. The cumulative increase (relative to 2005) in poor households' aggregate income would be 21.7%, compared with the increase of 27.1% in nonpoor households' aggregate income. The increase in household income would be uneven across regions, with nonpoor

**Table 7.4: Aggregate Effects of Increased Regional Cooperation in Transport and Customs Transit and a 35% Rise in World Cotton Prices in 2006 on the Kyrgyz Republic in 2006–2015**

	Cumulative Change over Baseline Scenario	Cumulative Change Relative to 2005
	(In million US dollars at 2002 prices)	(In percent)
Real gross domestic product	2,842.0	150.2
Value of exports/imports	2,555.1	305.0
Volume of exports	1,426.4	163.5
Volume of imports	4,820.0	429.1
Income of poor households	466.9	153.9
Income of nonpoor households	1,520.1	136.6

Source: Computable general equilibrium model-based simulations made by the authors.

households in the Naryn region, for example, benefiting much more than poor households in the Batken region (see Figure 7.3).

### 7.3 Conclusions

Quantitative estimates based on its CGE model suggest that the Kyrgyz Republic would reap considerable benefits from regional cooperation in trade policy within the multilateral framework and increased regional

cooperation in transport and customs transit. A reduction in cotton subsidies and a resulting rise in world cotton prices (that regional cooperation in trade policy within the multilateral framework could bring about) and reductions in transport costs (resulting from increased regional cooperation in transport and customs transit) would accelerate economic growth in the Kyrgyz Republic substantially. If world cotton prices rose by 35% in 2006, cumulative growth of real GDP in 2006–2015 (relative to 2005) would be 33.4% higher than in the baseline scenario.

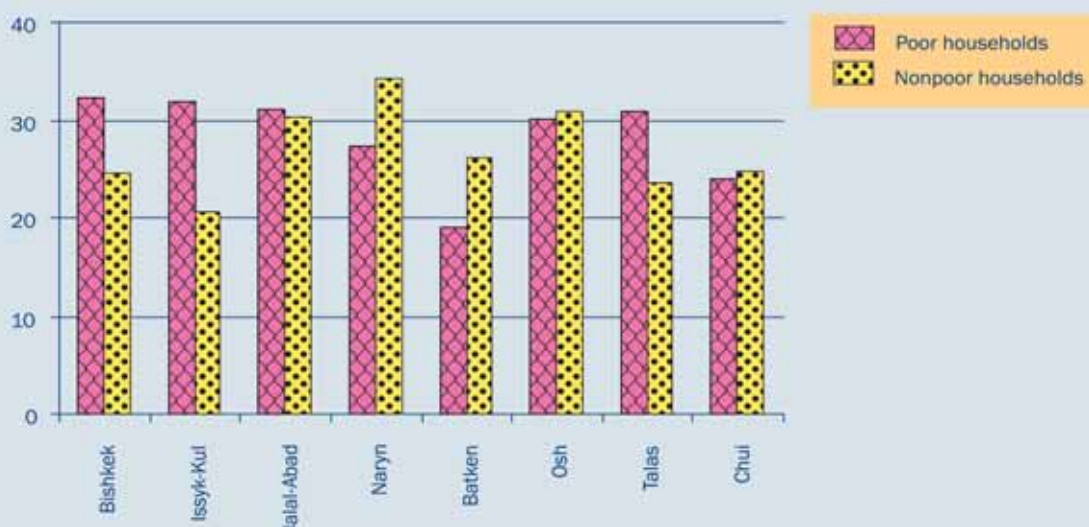
**Table 7.5: Aggregate Effects of a 50% Reduction in Tariffs in 2006 on the Kyrgyz Republic in 2006–2015**

	Cumulative Absolute Change over Baseline Scenario	Cumulative Change Relative to 2005
	(In million US dollars at 2002 prices)	(In percent)
Real gross domestic product	522.5	27.6
Value of exports/imports	408.8	48.8
Volume of exports	387.0	44.3
Volume of imports	983.7	87.6
Income of poor households	65.9	21.7
Income of nonpoor households	301.5	27.1

Source: Computable general equilibrium model-based simulations made by the authors.

**Figure 7.3: Cumulative Change in Household Income in the Kyrgyz Republic due to 50% Reduction in Tariffs, 2006–2015**

(Relative to 2005, in percent)



Source: Computable general equilibrium model-based simulations made by the authors.

If the estimated reductions in transport costs due to increased regional cooperation in transport and customs transit took place in 2006, cumulative growth of real GDP would be 112.3% higher than in the baseline scenario. If both events occurred in 2006, cumulative growth of real GDP would be 150.2% higher than in the baseline scenario. By comparison, a 50% unilateral, nondiscriminatory, and uniform (across products) reduction in tariffs would speed up cumulative growth in real GDP over the decade by a relatively modest 27.6%.

While similar estimates for the other CARs are not yet available, some general qualitative assessments can be made. In particular, one can expect unilateral nondiscriminatory trade liberalization to have greater positive effects on Azerbaijan, Kazakhstan, Tajikistan and, especially, Uzbekistan because their tariffs are, on the average, higher than those of the Kyrgyz Republic. Tajikistan is likely to benefit even more than the Kyrgyz Republic from increased regional cooperation in transport

and customs transit. The reason is that high transport costs and long and unpredictable transit times are a particularly serious trade barrier for Tajikistan. Although the benefits of increased regional cooperation in transport and customs transit for Azerbaijan, Kazakhstan, and Uzbekistan are likely to be smaller than those for the Kyrgyz Republic and Tajikistan, one can still expect them to be considerable. This is because high transport costs and long and unpredictable transit times are a significant trade barrier for Azerbaijan, Kazakhstan, and Uzbekistan as well, albeit not as significant as for the Kyrgyz Republic and Tajikistan. Finally, Tajikistan and Uzbekistan are likely to gain more from a reduction in cotton subsidies in developed countries than the Kyrgyz Republic since cotton accounts for a larger share of their exports and GDP than those of the Kyrgyz Republic. In contrast, Azerbaijan and Kazakhstan would benefit less than the Kyrgyz Republic from a reduction in cotton subsidies in developed countries because cotton accounts for less than one percent of their exports and GDP.