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Armenia's Trade Performance in 1995-2002 and the Effect of Closed Borders: A Cross-Country Perspective

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Abstract

The paper deals with two issues. First, it focuses on the analysis of Armenia's trade performance based on the utilization of standard statistical models and develops comparative estimates of this performance relative to the peer countries. The comparison is undertaken in terms of trade openness, diversification, and composition. The main finding is that Armenia has been lagging in its export development relative to most CIS countries. The recent improvements in exports helped somewhat to reduce the gap. The second part of the paper provides for re-estimation of the "costs of blockade" effect. Armenia's trade under-performance cannot be explained in terms of distorted government policies, because Armenia is recognized as a reform leader in the CIS.

Journal of Economic Literature Classification: F140, P270

Keywords: Armenia, international trade, transition economies, blockade

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Introduction

This paper focuses on the analysis of Armenia's international trade performance in the years of transition based on the utilization of standard statistical models. It intends to compare the achieved level of Armenia's trade development, and especially export development, to the "international norm", i.e., to the average levels achieved by the countries that are at similar income levels, including other CIS members. The paper uses this international benchmarking to obtain estimates for the existing losses from under-trading and under-exporting.

The paper is broadly based on the ideas from the two recent reports by the World Bank (2002, 2003b), which were prepared with the participation of the authors of this paper. For this paper, we undertook a comprehensive update of trade information, ran additional analysis of the latest trends, and developed a completely new analysis of the blockade-related trade effects.

We argue in this paper that the Armenia's current under-performance in the trade area can not be explained in terms of distorted trade, macroeconomic and structural policies of the Armenian government, because Armenia has been among the reform leaders in the CIS since the second half of the 90s. Instead, this under-performance should be primarily attributed to the effect of closed borders with its neighbors, which continue to depress Armenia's export capabilities. One of the primary objectives of the paper is to estimate the size of such a "blockade tax" and suggest how it has been recently developing. Using the more advanced models of international trade than were earlier available helps to get more accurate estimates of the blockade effect.

The paper has the following structure. The next section provides a brief description of the pre-transition trade arrangements and explains why the transition shocks were so painful for Armenian exports and the economy in general. The third section reviews the country's export trends for the last decade. The fourth section presents two models of international trade which are used to develop a comparative evaluation of Armenia's trade performance as well as to generate estimates of the impact of the blockade on volumes of both overall trade and export.

Our ultimate assessment of the blockade is that, while still considerable, its effect is smaller than it is usually thought, and it has been declining steadily. At the moment, the blockade hurts Armenia much less directly (through higher transportation costs and lost volumes of exports) than indirectly -- through its overall impact on the depressed investors' expectations, inflated international perceptions of investment risks and depressed levels of FDI.

We also argue that at the moment the overall negative impact on competitiveness of Armenian exporters (thus loss of trade volumes) due to the remaining deficiencies in the investment climate is higher that one associated with the costs of blockade. Thus, advancing deregulation of the economy in the short to medium term would bring greater

potential benefits for Armenian traders than lifting of the blockade. To support this claim we present a case study of a leading Armenian exporter.

2. Armenia's trade in the Soviet era and the shock of the early 90s

During the Soviet period, the Armenian economy was relatively open, with the volume of external trade amounting to 103 percent of GDP in 1987, which was rather common for the smaller FSU republics. 1987 exports in domestic currency terms amounted to more than 50 percent of GDP, and the trade balance was close to zero[2]. The value of Armenian exports estimated in 1987 dollars was US$2.5 billion. The manufacturing sector dominated overall exports, making up more than 95 percent of the total. Among the individual sectors, the light industry[3] had the biggest share, at 37.7 percent, followed by machinery, food and chemical industries with 25.2, 14.3 and 10.0 percent respectively. At the same time, before independence, Armenia was practically isolated from the rest of the world. For instance, in 1988, only about 2 percent of Armenian exports were shipped outside of the FSU.

The pre-transition structure of Armenia's economy, especially industry, proved to be quite vulnerable to external shocks (Avanesyan and Freinkman, 2003). This was primarily due to the role played by big industrial plants that produced mostly intermediary goods, with both suppliers and customers located in the rest of the FSU. These "core" industrial enterprises did not have a sufficient volume of internal linkages to other Armenian firms, and at the same time they had too little of their own marketing and development capacity, which dramatically limited their ability to respond to external shocks, including through changes in their output mix and/or by entering new export markets. Such a high dependence on export of parts, components, and tools (especially for defense use) to other FSU states, which accounted for about 40 percent of total industrial export, as well as on imports of raw materials, played a critical role in the steep decline of industrial output in the early 90s.

Overall, the traditional Armenian export volumes could not be sustained at their Soviet levels after the disintegration of the FSU and market liberalization due to a number of factors that included:

a) a sharp decline in defense and other final demand in Russia and other FSU states;
b) the low competitiveness of Armenian goods, especially in the consumer sector, after energy and other subsidies had been withdrawn: FSU markets were mostly lost to competitors from lower-cost countries, e.g., Turkey and China;
c) political factors that pushed Russian producers (e.g., in defense industries) to switch to local suppliers;
d) new cost factors, such as increased transportation costs for Armenian goods.

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[2] However, the overall current account deficit in Armenia in 1987 was very large, in excess of 16 percent of GDP, and was financed primarily by the USSR central investment budget (Avanesyan and Freinkman, 2003).

[3] Light industry includes textiles, footwear, leather, and garments among its primary components.

Avanesyan and Freinkman (2003) provided quantitative estimates for the magnitude of major transitional shocks for Armenia during the early transition, such as:

a) impact of terms of trade shock, defined as deterioration of real incomes due to economic liberalization and shifts in domestic prices towards prices of the world market; and

b) impact of external demand shock (market loss), defined as export losses due to the opening of traditional export markets to global competition and the deterioration of overall demand in these traditional markets.

In particular, they suggested that because of the external demand shock, Armenia lost about US$2 billion equivalent in industrial exports (about 80 percent of its 1987 export level or 25 percent of its total pre-transition industrial output). Respectively, the shift to world prices cost the economy about 17 percent of GDP in terms of lost incomes.

3. Export performance in 1994-2002

Thus the economic conditions for early transition in Armenia were highly challenging. The country lost about 60 percent of its GDP between 1989 and 1993. Total merchandise exports declined to US$215 million in 1994. However, after macroeconomic stabilization was achieved in 1995, the economic recovery in Armenia started, and since the middle of the 90s the country has been in the group of the best growth performers among transition economies. This ongoing growth episode could be divided in two intervals – before and after 2000.

Despite relatively comfortable growth rates in the late 90s, the structure of growth in the first of these two intervals was a matter of concern (World Bank, 2001). A significant portion of the overall growth was generated either by one-time factors (e.g., recovery in the energy supply, privatization in agriculture), or by sectors that have limited potential for longer-term expansion (e.g., mining, metallurgy). Another driver of earlier growth, production of construction materials, was responding primarily to an expansion in public investments, which were largely financed with donor funds. At the same time, skill- and labor-intensive manufacturing, the sector where many believe Armenia has longer-term comparative advantages, remained mostly depressed.

Weak export performance was one of the strongest indicators of the fragility of Armenia's economic recovery in that period. In contrast to a number of countries where the acceleration of economic development has been export-driven, in Armenia total merchandise exports were low and unsteady (Table 1), and their average annual growth rates during 1995-99 amounted to only 2.6 percent. The merchandise export ratio to GDP was less than 13 percent, which was low even when compared to other CIS countries. The total average exports without diamonds, the largest export item with the low locally produced value added, amounted to only US$172.5 million per year between 1995 and 1999, which was less than 10 percent of GDP. As a result, in the middle 90s, the deficit of trade balance exceeded 30 percent of GDP, which led to a considerable accumulation

of external debt. This poor export performance was directly linked to the depressed levels of FDI.

Table 1: Armenia: Export performance 1994-99

	1994	1995	1996	1997	1998	1999
Total merchandise export (fob, US$ million)	215.4	270.9	290.3	232.5	220.5	231.7
Growth rate (%)	…	25.8	7.2	-19.9	-5.2	5.1
Export w/o diamonds, US$ million	…	199.7	156.2	185.2	173.5	147.8
Growth rate (%)	…	…	-21.8	18.6	-6.3	-14.8

Source: NSS.

Starting from mid-2000, Armenia's economic performance further improved. The average annual rate of economic growth in the four years (2000-03) amounted to about 10 percent, macroeconomic stability was further strengthened, and the sectoral base for growth was broadened. The structure of economic growth has been gradually improving, reflecting a significant adjustment in the Government reform strategy.

Several factors contributed to this improvement:

- improvements in the business environment that included reductions in the administrative burden on the private sector, improved communications between the government and the private sector, and enhanced government capacity to promote investment and exports;
- improved relations with the Diaspora, which somewhat increased the inflow of Diaspora investments; and
- increased remittances, which to a large extent reflect improved performance of the Russian economy since the 1998 crisis.

An improvement in export performance in the period between 2000 and 2002 shows the effects of the new policy initiatives. The volume of total merchandised exports (including diamonds) increased by about 120 percent in three years. In 2002, exports excluding diamonds regained their highest post-Soviet level of US$200 million, which was previously achieved in 1995, and by 2002 exceeded this level by 53.6 percent (Table 2). The deficit of trade balance declined from 31 percent of GDP in 1999 to 20 percent in 2002. The sectoral decomposition of export growth also suggests a considerable diversification: while 21 percent of total export growth[4] in 1999-2002 came from jewelry and diamond polishing, other major expanding export sectors included food processing (27 percent of the total), textiles (12 percent), and production of instruments and equipment (17 percent).

[4] We use an adjusted measure of total exports that reflects diamond exports at their value added (i.e., gross exports excluding gross imports of diamonds).

Table 2: Armenia: Export growth 1999-2002

	1999	2000	2001	2002
Total merchandised export (fob, US$ million)	231.7	300.5	341.8	505.2
Growth rate (%)		29.7	13.8	47.8
Export w/o diamonds, US$ million	147.8	201.8	256.0	307.0
Growth rate (%)	…	36.5	26.9	19.9
Trade balance, % of GDP	31.4%	30.6%	25.1%	20.4%

Source: NSS.

Characteristics of the trade structure[5]

The World Bank Report (2002) "Armenia Trade Diagnostic Study" provides an in-depth analysis of the Armenia trade trends for 1995-2001. Some of the main findings of the report could be summarized as follows:

- Between 1995 and 1999, Armenia's imports have grown faster than exports leading to an increasing trade deficit. The trade deficit declined in 2000-02, but still amounted to about US$500 million in 2002 (more than 20 percent of GDP).

- There is a clear but declining difference in the structure of EU- and CIS-destined exports from Armenia; the former rely mostly on diamond cutting and polishing while the latter are heavily affected by the historical patterns of trade under the Soviet Union; the former consist mostly of skilled labor intensive activity (diamond processing) and natural resources, the latter rely more on natural resource-based products and capital intensive goods.

- Armenia's exports are excessively concentrated in a few product categories.

- Despite its very liberal trade regime Armenia is not closely integrated into international production networks. High transport costs hinder Armenia's participation since bringing semi-processed materials for further processing or manufactured parts and components for assembly, as is the case in many Central European countries, is not economically viable.

- The on-going blockade of borders with Azerbaijan and Turkey, resulting from the Nagorno-Karabakh conflict, has heavily distorted Armenia's trade patterns by increasing transport costs faced by both importers and exporters. As a result, the structure of Armenia's exports is biased towards goods with high value relative to weight and discourages sales of bulky low costs products of light industry. Unlike in other transition economies, Armenia's exports of textiles, apparel and footwear have been limited.

[5] This section is based on Chapter 2 of the World Bank Study (2002), but utilizes more recent trade data.

- The effects of the border blockade are further exacerbated by domestic constraints. In particular, deficiencies in the operations of the Customs and the inability of exporters to obtain VAT refunds for imported inputs hinder international trade. Moreover, weak governance and poor business climate coupled with limited export opportunities discourage new entry, both domestic and foreign.

As far as the geographic orientation of trade is concerned, Russia and the CIS remain important markets for Armenian exports. However, their shares, which in 2002 were equal to 12.8 and 6.3 percent respectively (Table 3), went down after the Russia crisis and now are about a half of what they used to be in 1995.

The European Union (EU15) has been growing in importance as a market for Armenian exports, which increased from US$70 million in 1995 to US$198 million in 2002. Overall they accounted for almost 40 percent of total exports, which is twice the combined share of sales to Russia and CIS. However, the EU share in imports (26 percent) is smaller than the CIS's share (30 percent), mostly because of the remaining dominance of Russia in energy imports.

A notable characteristic of Armenian trade is the importance of the US market. Armenia trades more with the US than most of the small transition economies. Sales to the US, to a large extent driven by the presence of the Armenian Diaspora, registered more than a five-fold increase between 1995 and 2002 rising from US$8 million to US$46 million dollars. In 2002, they accounted for almost 10 percent of total exports. This is the most dynamic market for Armenian exports, albeit growing from a low initial base.

Table 3: Geographic Distribution of Armenia's Foreign Trade, 1995-2002

	1995	1999	2001	2002	1995	1999	2001	2002	2002
	Export Value (US$ million)				**Export Share (%)**				**1995=100**
Russia Fed.	57.7	33.9	60.5	64.6	23.0	14.6	17.6	12.8	112.0
CIS (excl. Russia)	31.5	21.3	28.6	31.7	12.6	9.2	8.3	6.3	100.6
EU15	70.1	106.5	88.6	197.7	27.9	46.0	25.8	39.1	282.0
USA	8.2	16.0	52.3	46.2	3.3	6.9	15.3	9.2	563.9
CEEC+Baltics	1.2	1.8	1.7	3.3	0.5	0.8	0.5	0.6	271.6
Others	82.1	52.1	111.1	161.7	32.7	22.5	32.4	32.0	196.9
World	250.8	231.7	342.8	505.2	100.0	100.0	100.0	100.0	201.4
	Import Value (US$ million)				**Import Share (%)**				**1995=100**
Russia Fed.	142.1	149.9	137.2	170.4	24.9	18.5	15.5	19.5	135.7
CIS (excl. Russia)	55.3	37.2	36.5	44.7	9.7	4.6	4.1	5.1	196.9
EU15	124.0	252.4	302.8	252.2	21.8	31.1	34.2	28.8	206.2
USA	86.6	88.6	102.7	84.2	15.2	10.9	11.6	9.6	60.9
CEEC+Baltics	21.4	22.6	16.8	17.4	3.8	2.8	1.9	2.0	350.5
Others	140.3	260.1	288.7	305.4	24.6	32.1	32.6	34.9	215.2
World	569.8	810.9	884.7	874.3	100.0	100.0	100.0	100.0	173.3

Source: World Bank (2002) and NSS.

Note, however, that the figures on export structure may be somewhat misleading as a large part of EU-destined exports from Armenia consists of exporting diamonds brought to Armenia for cutting and polishing. The value added in this activity is equal to only about 15-17 percent of the final product's value. If we restrict our attention to the value added rather than the total value of diamonds exported, the share of EU in total exports drops from 35.6 to 12.3 percent in 2000.

About one-third of Armenia's trading partners fall under the "other" category, which includes Israel, Iran, Switzerland, United Arab Emirates, Cyprus and Turkey. Note that according to official statistics trade between Armenia and Azerbaijan is zero. Yet in reality goods exchange takes place between the two countries via Georgia where the goods are relabeled.

Armenia's exports are highly concentrated. The top five product categories included precious stones, minerals, machinery, base metals and food. As seen from Table 4, during the whole period these five product groups accounted for more than eighty percent of Armenia's total exports.

Table 4. Composition of Armenian Exports 1997-2002, %

Product group	Export shares					
	1997	1998	1999	2000	2001	2002
Precious stones and metals	23.7	24.1	43.1	40.4	35.9	51.1
Mineral production	7.7	13.9	13.4	12.4	11.1	8.3
Machinery and equipment	13.8	18.5	7.5	10.3	12.7	4.2
Base metals and articles thereof	24.8	17.5	13.0	9.9	8.3	8.9
Products of prepared food	10.6	7.6	6.9	9.1	14.0	10.8
Textile articles	4.5	6.2	5.9	4.4	7.1	5.7
Plastic, rubber	4.0	3.7	3.9	3.0	3.8	1.3
Chemicals	1.9	1.0	0.8	1.1	0.8	0.4
Sum of the above	91	92	95	91	94	91
TOTAL	100	100	100	100	100	100

Source: World Bank (2002) and NSS.

A popular way of measuring trade concentration is to use the Hirschmann index, whose values range from zero to unity, with higher numbers corresponding to greater concentration. As is evident from Table 5, the Hirschmann index for Armenian exports is much higher than for other FSU economies, especially in the years of booming diamond exports, such as 2002. The index showed substantial spikes in 1999 and 2002 putting it way above comparator countries. While the number of product groups being exported from Armenia has been steadily expanding, it is still lagging the Baltic countries.

Table 5. Armenia's Export Concentration Index

Country	No. of Items Exported	Concentration Index	Country	No. of Items Exported	Concentration Index
Armenia, 97	93	0.237	Russia, 99	222	0.261
Armenia, 99	114	0.323	Moldova, 99	97	0.250
Armenia, 01	157	0.237	Latvia, 99	188	0.211
Armenia, 02	172	0.369	Estonia, 99	201	0.124
			Lithuania, 99	210	0.113

Source: World Bank (2002) and own estimates. Estimated at the 3-digit SITC level.

The structure of Armenian exports to the EU is a good indicator of the challenges Armenian exporters have been facing. In many transition economies, trade with the EU became a key driver of their export expansion, employment generation, and growth. Armenian exports to the EU consist mainly of diamonds (three-quarters of the export value in 1999 and half of the 2002 exports), gold jewelry, mineral commodities, and metal scrap. Notable is the absence of textile and apparel exports, which constitute a large share of EU-destined sales in other transition economies. For instance, in 2001, these two categories accounted for almost one-quarter of Lithuania's and more than a half of Moldova's sales to the EU. In Armenia this bias toward goods with high value-to-weight ratio, such as diamonds and jewelry, is clearly a result of the border blockade. Both diamonds and jewelry are transported by air and thus not affected by the blockade, and since they are high value items, the transport costs constitute a small share of their price.

The blockade, however, is detrimental to low value large volume items such as apparel, where transport costs constitute a significant share of the price and adversely affects competitiveness. Moreover, since a large share of clothing trade between transition economies and the EU takes place through the so-called outward processing arrangements, under which the EU buyers supply their partner firms in transition countries with designs, fabrics and other inputs, transport costs are incurred in both directions. In order to receive higher prices for their services, it is important for clothing producers in transition economies to be capable of responding quickly to changing demand patterns in the EU. The delays and unreliability of transport routes from Armenia make it difficult for Armenian producers to enter into this type of arrangement. It is quite likely that in the absence of the blockade Armenia (in a way similar to that of Turkey and many other countries) could take advantage of its inexpensive labor and proximity to the EU and become a supplier of apparel to those markets under outward processing arrangements.

Since raw diamonds are imported and cutting and polishing takes place in Armenia, only a relatively small percentage of the value of exported diamonds is accounted for in exports. Therefore looking simply at export shares of different product categories may be misleading. In our analysis of export structure below, we present the export shares calculated taking into account only the value added to diamonds during their processing in Armenia (assumed to be equal to 17 percent of export price). Note that with this modification, the value of all EU-destined exports drops by about 60 percent.

With the above mentioned adjustment for diamonds, exports of manufactured goods account for 30 percent of Armenia's sales to the EU (Table 6). This is at the level of the corresponding figure for Georgia, but below Moldova's 53 percent and Lithuania's 68 percent share[6]. As mentioned above, the absence of textiles and clothing exports explain most of this difference.

An interesting feature of Table 6 is steady conversion of the export structure between various markets. While the share of manufacturing exports in trade with the EU has been expanding gradually, the one in trade with Russia declined from 55 percent in 1999 to 28 percent in 2002. This suggests that Armenia continue to lose its transitional post-Soviet markets for goods with a high degree of processing.

Table 6. Manufacturing Share in Exports, 1999-2002, %.

	Trade with EU				Trade with US				Trade with Russia			
	99	00	01	02	99	00	01	02	99	00	01	02
Share of manufacturing in trade	24	27	35	31	70	54	48	45	55	49	39	28
O/w: products other than diamonds	9	13	24	20	66	50	41	36	55	49	39	28

Source: Own estimates based on the NSS data. Reflects adjustment for value added in diamond exports as explained in the text.

The excessive concentration of exports in diamond and jewelry and heavy reliance on sales of commodities (such as ferro-alloys, crude minerals, etc.) makes Armenia vulnerable to demand and price shocks and is not a viable long-term strategy. There are, however, some encouraging changes that have taken place in Armenia's export structure. For instance, since 1999, Armenia started to export some new manufacturing products, such as automotive and machinery parts, spare parts for watches, components of optical instruments, etc. But exports in most of these new categories remain small.

4. Armenia's trade performance in the cross-country perspective and "costs of blockade"[7]

In order to understand how Armenia's trade performance compares to other countries, we used two popular trade models -- the openness model and the gravity model -- that broadly determine the association between intensity of countries' trade flows, income levels, size and geographical characteristics. We pay special attention to a comparison between Armenia and other CIS and transition economies, which provide

[6] Data for Georgia, Lithuania, and Moldova are for 1999. Note that if we do similar adjustments for Moldovan and Lithuanian exports (to account their main export of garments at its value added), the share of manufacturing in the EU exports in these two countries still will be close to 40 and 60 percent respectively.

[7] This section utilizes some results and models developed by the authors for Chapter 2 of the World Bank Study (2003b).

natural benchmarks for Armenia's performance due to their common history of socialist past and transitional shocks of the early 90s.

Our main hypothesis could be summarized as follows. Armenian economic performance for the last 3-4 years has been favorably compared to that of other CIS members. Armenia has shown higher growth, stronger macroeconomic indicators (see e.g., World Bank, 2003a), and more progress in the area of structural reforms (Tables 7 and 8). However, Armenia has been lagging the most advanced transition economies, such as the EU accession countries. Still, based on various analyses of the overall economic and reform performance, one should expect that Armenia's trade performance should be at least on par or superior to that of its neighbors. And alternatively, if we find that Armenia significantly under-trades relative to its comparators, we believe that we have sufficient justification to claim that the main reason for such under-trading relates to the blockade, but not to the policies of the Armenian government.

Table 7. EBRD Transition Index, 2002

Armenia	*3.0*
CIS-7 average, excl. Armenia 1/	2.6
Kazakhstan, Russia and Ukraine	2.9
Balkan countries	2.8
EU accession countries 2/	3.5

1/ Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan.
2/ Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia.
Note: The index ranges between 1, which denotes lack of reforms and 4 that indicates completed reforms.
Source: EBRD.

Table 8. The Average Percentage of Total Annual Sales Paid in Unofficial Payments, 2002

Armenia	2.9
CIS-7 average, excl. Armenia 1/	3.6
Kazakhstan, Russia and Ukraine, average	3.3
Balkan countries	2.9
EU accession countries 2/	2.8

1/ Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan.
2/ Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia.
Source: BEEPS Survey by the IBRD

Analysis based on the model of trade openness

The theoretical hypothesis underlying this approach to the analysis of openness (trade integration) is that richer countries trade more (as a percentage of their GDP) and larger counties trade less. Following Rodrik (1998), variable for openness, measured by

the share of trade in the GDP, was regressed on GDP per capita and the country population, which was used as a proxy for the country size.

Table 9 presents our regression results for different modifications of the openness model. The model was estimated on the averages for 1994-2001. All 166 countries for which trade and income data[8] are available from the World Development Indicators database have been included in the pool. Thus, we have a much larger sample and more recent data than is usually available for such analysis. Of primary importance is that our sample includes all former Soviet republics. Following Rodrik's approach, we included dummies for regional country groupings as independent variables in Model 2. As seen from the table, the dummy for the CIS is not only positive and statistically significant but among the highest in the world. The level of the CIS dummy indicates that, controlling for the income level and size, the CIS are more open on average than any other regional country group except for Eastern Asia. Our regression coefficients are in line with the ones in the Rodrik's model estimated on the 1980s data. All country groupings preserved the sign of their respective dummies.[9]

As many countries, especially a number of low-income countries including Armenia, have been running significant current account deficits, it is interesting to see whether their trade openness has been mostly influenced by imports, i.e., whether export-based openness is shaped much differently than more conventional trade-based openness. Models 3 and 4 in Table 9 include the export-to-GDP ratio as the dependent variable with the same independent variables as in Models 1 and 2. The estimated coefficients for Models 3 and 4 are qualitatively similar to those in Models 1 and 2. However, Models 3 and 4 have much better statistical fit, i.e., import (not export) depends more on the factors that are not reflected in the model.

Table 10 presents the comparisons of 2001 actual trade openness indicators for individual CIS countries with the theoretically expected openness that corresponds to their actual size and income. The "theoretical openness" corresponds to the regression line in the above models.

The first conclusion that follows from Table 10 is that Models 2 and 4 with the regional dummies seems to provide fundamentally more accurate predictions for CIS countries. The predictions in Models 1 and 3 (without dummies) are too low: e.g., according to these models, central CIS countries (Belarus, Kazakhstan, Russia, and Ukraine) over-traded by 30-40 percent relative to the trade potential, which, in our view, does not correspond to a common view that these countries are not excessively opened. Therefore, our further analysis is based on Models 2 and 4.

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[8] As a measure of income level two variables were used: GDP per capita in current US$ and GDP per capita in PPP terms. We define the dependent variable -- the openness ratio -- as the ratio of exports and imports to nominal GDP. We used alternatively nominal GDP and GDP in PPP as dependent variables. However, the regression results that are based on nominal GDP as the dependent variable are very close to the ones based on GDP in PPP.

[9] The dummy for Sub Saharan Africa is found statistically insignificant from zero in both Rodrik's and our model, although it appears to have different signs in these two models.

Table 9. Trade Openness Models

	Dependent variable: ratio of exports and imports to GDP			*Dependent variable: ratio of exports to GDP*	
	Model 1	Model 2	The Rodrik model (1980-89 data)	Model 3	Model 4
ln population	-11.0 (1.7)*	-11.6 (1.6)*	-15.5 (1.8)**	-3.8(0.7)*	-5.0 (0.7)*
ln GDP per capita[1]	8.3 (2.8)*	14.9 (4.1)*	12.1 (3.8)**	8.6 (0.8)*	9.5 (0.7)*
CIS	--	24.9 (11.7)**	--	--	11.3 (6.1)***
East Asia	--	63.8 (11.4)*	28.8 (9.6)**	--	34.8 (6.0)*
Latin America	--	-13.3 (9.6)	-25.6 (7.5)**	--	-6.6 (5.1)
OECD	--	-20.4 (11.0)***	-15.7 (9.2)***	--	-9.7 (4.8)**
Sub Saharan Africa	--	11.7 (9.0)	-1.8 (7.8)	--	5.0 (3.9)
Intercept	111.3 (29.5)*	55.1 (41.1)	118.6 (36.9)**	--	--
R^2	0.26	0.44	0.60	0.79	0.84
Number of countries	166	166	119	166	166

[1] in PPP terms

Source: Authors' calculations based on the data from World Development Indicators; Rodrik (1998).
Note: (*) stands for statistical significance at 1% level; (**) and (***) – at 5 and 10% respectively.

Secondly, if compared with their peers worldwide (Model 2 for total trade and Model 4 for exports), three CIS countries – Armenia, Georgia, and Kyrgyzstan – stand as serious underperformers. Their realization ratios for 2001 vary between 0.60 - 0.73 for the total trade, and 0.50 - 0.84 for exports.[10]

Overall, our main conclusion from this part of the analysis is that Armenia has been lagging in its export development relative to most CIS countries as well as to low-income developing countries in general. The recent improvements in exports only reduced the gap but did not manage as yet to eliminate it.

Finding Armenia in this group of under-performers is somewhat surprising, given striking differences in all other main economic indicators of these three countries. Armenia's serious trade under-performance confirms that the blockade imposed on Armenia as a result of the regional conflict remains costly (Polyakov, 2001). As mentioned above, we claim that the factor of closed borders is the only plausible explanation of this finding. Thus, we used this result to estimate the economic "costs of blockade" for the Armenian economy. The estimate equals to the difference between the actual volumes of trade and exports and those that correspond to the regression line, given the Armenian fundamentals such as GDP per capita and population.

[10] Two more CIS countries – Russia and Uzbekistan – have low realization ratios for overall trade, but their export performance is relatively strong.

While in 2001 actual openness of the Armenia economy was 72 percent, our model suggests that the "normal" level for this indicator for Armenia would be 103 percent. For 2002 the respective ratios are 75 percent and 106 percent. It suggests that annual losses of total trade fall in the interval of US$655-730 million or about 30 percent of GDP.

Table 10. CIS Actual vs Theoretical Openness, 2001

	Trade to GDP			Exports to GDP		
	Actual	Realization ratios (actual/predicted by the model)		Actual	Realization ratios (actual/predicted by the model)	
		Model 1	Model 2		Model 3	Model 4
Armenia	*72*	*0.8*	*0.7*	*26*	*0.6*	*0.5*
Azerbaijan	81	1.0	0.8	42	1.2	1.0
Belarus	139	1.6	1.3	68	0.9	0.8
Georgia	60	0.7	0.6	22	0.6	0.5
Kazakhstan	95	1.3	1.0	46	1.4	1.2
Kyrgyz Republic	73	0.9	0.7	37	1.0	0.8
Moldova	124	1.5	1.3	50	1.5	1.2
Russian Federation	61	1.1	0.8	37	1.1	1.0
Tajikistan	140	1.9	1.7	64	2.3	1.8
Turkmenistan	94	1.1	0.9	47	1.2	1.0
Ukraine	111	1.8	1.4	56	1.9	1.6
Uzbekistan	56	0.9	0.7	28	1.5	1.3
Averages:						
CIS (excl. Armenia)	94	1.3	1.0	45	1.3	1.1
CIS-7 (excl. Armenia) 1/	89	1.1	1.0	41	1.4	1.1
Central CIS 2/	101	1.5	1.1	52	1.3	1.1

1/ Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan
2/ Belarus, Kazakhstan, Russia, Ukraine
Source: Own estimates.

Table 11 presents our estimates for losses in Armenia's exports. It suggests that the country may lose about US$420 million a year due to the blockade.[11] It is worth noting that the relative cost of the blockade in GDP terms has been steadily declining – from 23 percent in 1999 to 18 percent in 2002. This reflects the fact that with time the private sector operators found various ways to reduce the impact of the blockade on their activities, which for example is seen in gradual reduction in transportation tariffs (World Bank, 2001). It is worth noting that these numbers are smaller than estimates obtained by Polyakov (2001) for the earlier period of the mid-90s[12]. Overall, since 1999, a considerable catch up in Armenian exports has taken place, while the blockade gradually becomes less binding.

[11] Thus, export losses represent about two-thirds of the total trade losses.
[12] Polyakov (2001) estimated that under-exporting amounted to 30 percent of the annual average GDP for the period of 1995-98.

Table 11. Armenia: Estimated Exports to GDP Ratio, Using the Openness Model.

	1999	2000	2001	2002
Actual export/GDP ratio, %	20.8	23.4	25.6	29.2
Projected ratio, using model 4, %	43.9	44.8	45.8	47.1
Under-exporting, using model 4, mln $	428	409	428	422
Under-exporting, as % of GDP	23.2%	21.4%	20.2%	17.8%

Source: Own estimates.

Analysis based on the gravity model

The gravity model represents the standard framework for the analysis of the direction of international trade, more specifically, of the potential and the realized trade flows. It allows the incorporation into analysis of several additional factors that have a critical importance for international trade, including those of economic and political geography. Despite theoretical controversies surrounding the model since its inception (which have been somewhat alleviated recently), the gravity model has proven to be the most accurate tool for the explanation and the prediction of bilateral trade flows. Earlier analysis of intra-CIS trade, based on the gravity model, was undertaken by Kaminski *et al*. (1996).

For our analysis we applied a relatively new version of the gravity model, estimated by Frankel (1997) with the 1992 data on the sample of 63 countries (with the CIS not included). The main distinction of this model is that it explains bilateral total trade flows (exports plus imports), and thus it helps to answer the question whether given trade partners under-trade or over-trade among themselves in comparison with other countries with similar characteristics.[13] Frankel's model has also an additional advantage: it has an expanded set of dummies explicitly incorporating the trade bloc effects.

For the analysis of potential trade in the CIS, we used the model of the first type, which describes total bilateral trade flows, as was estimated by Frankel (1997). The applied gravity equation is the following (with standard errors is parenthesis):

$$\log(T_{ij}) = \underset{(0.469)}{-12.146} + \underset{(0.018)}{0.930}\log(GNP_i\, GNP_j) + \underset{(0.019)}{0.128}\log(GNP/pop_i\, GNP/pop_j)$$

$$\underset{(0.038)}{-0.770}\log(Dist_{ij}) + \underset{(0.157)}{0.445}(Adj_{ij}) + \underset{(0.090)}{0.768}(Lang_{ij}) + \gamma\,(Bloc_{ij}) + u_{ij}$$

[13] The model used by Kaminski et al. (1996) used the older data and answers the question if the given country under- or over-exports to certain destinations.

where T_{ij} is the trade turnover between countries *i* and *j* (that is exports from country *i* to country *j* plus imports of country *i* from country *j*), *GNP* is the nominal Gross National Product, *GMP/pop* is the nominal per-capita GNP, *Dist* is the great circle distance between the main commercial centers (countries' capitals with a few exceptions[14]), *Adj* is the adjacency dummy (equals one for adjacent countries and zero otherwise), *Lang* is the language dummy (equals one for countries sharing the same language[15]), *Bloc* is the bloc dummy (equals one for countries in the same trading bloc), and u_{ij} is the error term.

The bloc dummy is the most powerful dummy in this model. The higher the estimate for the bloc dummy, the more trade is predicted among the members of the bloc, controlling for all other factors. Therefore, each dummy estimates the trade creation effect of the bloc (rather than trade diversion). The original model has six dummies for six different trade blocs: the EU, the NAFTA, the Mercosur bloc, the Andean bloc, the ASEAN, and the Australia-New Zealand Free Trade Area. The estimators for the trade bloc dummies vary widely – from insignificantly different from zero for the EU and NAFTA[16] to 1.766 for the ASEAN.

As explained in the World Bank (2003b) report, we have a reason to believe that the CIS countries also form a natural trade block, and members tend to trade relatively more with each other than with the rest of the world. This justifies a need for adding an extra dummy for the CIS to Frankel's model.[17] Without developing a new global gravity model that would explicitly have a separate bloc dummy for the CIS, we might suggest only a preliminary indication of the revealed bloc effect for the CIS. Our indirect proxy estimates for such an effect suggest that the value of respective coefficients in the late 90s would fall in the range of 1.8-1.9, which is close to the values of dummies for both the ASEAN and the Australia – New Zealand FTA. The powerful bloc effects for these two groupings can be largely explained by geography: These countries are located on the periphery of the world trade flows, far from the global trade center of gravity and hence are "forced" by geography to trade excessively among themselves (Smarzynska, 2001).

In our opinion, the same factors of geographical remoteness explain the high value for the coefficient that reflects impact of the CIS block. In addition, other factors underlying the strength of the CIS bloc effect include the common economic history of its members, high complementarities of their economies, similarities in the accumulated stock of technologies and skills, and the same market transition process they all undergo, albeit with various speeds and detours. These factors far exceed the usual effects of

[14] Almaty for Kazakhstan, Yekaterinburg for Russia in the case of trade with Asia and Moscow otherwise, Bonn for Germany, and Chicago for the U.S.

[15] All CIS countries share the same language (Russian) while conducting trade.

[16] Frankel (1997) explains the insignificance of the bloc effect for these two groupings through higher-than-average openness of the participating countries. As these countries trade more than average with all their partners, the bloc effect could not be detected under this equation specification. Frankel goes on to single out the bloc effects for these countries by controlling for openness in the gravity equation.

[17] One of the reasons for this relates to the fact that without such a dummy the predictions of Frankel's model for CIS countries are too low. As it was the case of the openness model without regional dummies, the original gravity model suggests that on average the CIS countries have over-developed levels of international trade.

shared borders and common language, captured by the relevant variables of the gravity model.

Tables 12-13 present the 2001 realization ratios for all CIS countries. The numbers in the Tables reflect the ratio between the actual trade volumes[18] and projections obtained from the gravity model. The actual estimates in Tables 12-13 were obtained based on the value for CIS dummy coefficient equal to 1.766, i.e., identical to the one for the ASEAN block.

Table 12. CIS: Realization Ratios for Total Volumes of Trade Based on the Gravity Model, 2001

	Total trade	with CIS	with EU
Armenia	*1.0*	*1.0*	*0.9*
Azerbaijan	1.1	0.6	1.9
Belarus	0.9	1.2	0.6
Georgia	1.0	0.6	1.0
Kazakhstan	1.5	1.6	1.7
Kyrgyz Republic	1.3	1.5	1.1
Moldova	1.9	2.6	1.4
Russian Federation	1.1	1.1	1.1
Tajikistan	3.2	5.3	1.7
Turkmenistan	1.3	1.8	0.5
Ukraine	1.1	1.1	1.0
Uzbekistan	1.0	1.4	0.9
Simple averages:			
CIS (excl. Armenia)	1.4	1.7	1.2
CIS-7 (excl. Armenia) 1/	1.6	2.0	1.3
Central CIS 2/	1.1	1.2	1.1

1/ Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan
2/ Belarus, Kazakhstan, Russia, Ukraine
Source: Own estimates.

Table 13. Armenia: Realization Ratio for the Gravity Model

	1999	2000	2001	2002
Total trade	1.0	1.1	1.0	1.1
CIS-7	1.0	0.8	0.7	0.7
Central CIS	1.1	0.8	0.9	0.8
EU	1.0	1.3	0.9	1.0
Eastern Europe	0.9	0.6	0.5	1.0
Other	1.1	1.4	1.4	1.5

Note: Ratio for actual to predicted trade volumes (export + import)
1/ Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, Uzbekistan
2/ Belarus, Kazakhstan, Russia, Ukraine
Source: Own estimates.

[18] Given the problems with the quality of statistical data on CIS trade, actual trade volumes were estimated by using both national and mirror statistics, i.e., actual volumes of export and import to the CIS countries were estimated as simple averages of the numbers, provided by these two data sources.

The main finding from the analysis based on the gravity model is, in our interpretation, that the actual burden of the blockade for Armenian economy is in fact even smaller than those based on a simpler model of trade openness. While the gravity analysis in Table 12 still suggests that Armenian international trade is less developed than on the average in its CIS neighbors, we did not find any confirmation that Armenia significantly under-trades relative to its current economic potential and taking into account its geographic fundamentals: the realization ratios for Armenia in 1999-2002 were close to 1.

We believe that the gravity model provides more accurate estimates for realization of the countries' trade potential than the openness model, because it explicitly takes into account several additional important factors related to economic geography (location). It may be that the openness model overestimates potential trade volumes for small and remote economies that have primarily poor neighbors, for which distances to major markets become quite significant.

It is important to underline that our finding of the absence of under-trading relates to the total trade volumes (exports+imports), and it does not mean that Armenian export volumes are sufficiently developed. The relatively high realization ratios for Armenia to a large extent derive from two sources:

a) Very high imports and respectively large trade deficits, which are funded by remittances, private transfers, and international assistance.
b) Expansion in diamond trade that greatly helped to improve the country's overall trade aggregates, but brought relatively limited benefits to the economy (if compared to more traditional manufacturing exports) due to limited employment opportunities and insufficient linkages to the rest of the domestic economy.

In other words, the gravity results do not mean that the blockade effect is insignificant, because both models are in an agreement that Armenia's exports remain below the "normal" level. The gravity model estimate for export losses due to the blockade amounts to a half of the current trade deficit, i.e., 12.5 percent of GDP in 2001 and 10 percent of GDP in 2002. However, the gravity model also confirms that the under-trading is much smaller than many people think, and it clearly has been declining.

We also would like to make one more caveat with respect to the comparisons of openness and gravity model results. Because it is so much simpler, the openness model is based on a larger sample (166 countries) and more recent data (average trade flows for 1994-2001). The gravity model is based on 63 countries, excluding the CIS, and uses the 1992 data. Given rapid expansion of international trade through the 90s, it could be that the gravity projections based on the older data are downwards biased. How large this bias is would be impossible to say without developing an entirely new global gravity model that would use both the new data and a larger sample.

Our ultimate assessment of the blockade is that it hurts Armenia much less directly (through higher transportation costs and lost volumes of exports) than indirectly -

- through its overall impact on the depressed investors' expectations, inflated international perceptions of investment risks and depressed levels of FDI, and therefore on economic growth and general under-development, and through these parameters indirectly on the current trade volumes.

Table 13 also provides additional information with respect to re-orientation of Armenia's trade flows. Thanks primarily to the diamond trade, Armenia undertook a major restructuring of its trade geography. The initial over-trading with other former Soviet republics has entirely disappeared. In fact, Armenia somewhat under-trades with several of its CIS neighbors, especially Azerbaijan, Georgia, and Ukraine.[19] At the same time, Armenia trades much above the model predictions with several other regional partners, such as Israel, Iran and the United Arab Emirates.

5. Costs of blockade in a comparative perspective and policy conclusions

The previous analysis provides several conclusions with respect to the magnitude of the effect of closed borders on Armenian economy. First, if estimated with the help of the gravity model, the estimates for costs of blockade may be lower than it was earlier considered based on simpler statistical models, and could be placed into a range of 10-13 percent of GDP. Second, it is clear that the blockade effect has been eroding over the last 4-5 years as the private sector has found ways to reduce transportation costs within existing political constraints. Third, even the most radical estimates of under-exporting, based on the model of openness, suggest that annual export losses in 2002 declined to less than 18 percent of GDP. While considerable, this amount does not represent a major development constraint for Armenia.

To understand better the real importance of the effect of closed borders, it should be placed in a comparative perspective, i.e., its impact has to be compared with other factors that affect Armenian exporters and importers. In this paper, we argue that despite recent improvements in the business environment, Armenian firms are still facing major unnecessary administrative barriers in their operations that inflate their costs and undermine their capacity to compete and export. The overall loss of trade due to the remaining administrative burden at the moment is higher than one associated with the costs of blockade. We present below a case study of a leading Armenian exporter to support our claim that advancing deregulation of the economy in the short to medium term would bring much more potential benefits for Armenian traders than lifting the blockade. The case study illustrates that under the current circumstances the exporter's losses from the administrative hurdles represent a larger threat for its competitiveness than additional transportation charges deriving from the blockade.

In his recent paper, Richard Beilock (2003) argues that the blockade is the central development constraint for Armenia, and calls for both the government and international donors to place the issue of blockade removal in the center of government strategy. The author basically reasons that each project in Armenia should be reviewed from the

[19] Overall, Armenia is less reliant on sales to the CIS than for example Georgia and Moldova.

position of how it influences the issue of blockade. He is concerned that some projects (e.g., those that aim at reduction in transportation costs) undermine incentives to lobby for opening the Armenian borders and as such they are strategically incorrect.

In the view of the authors of this paper, public opinion continues to overestimate the actual costs of blockade for Armenia. Respectively, any recommendation that intends to make even more emphasis on the costs of blockade may indirectly disorient the government and international community with respect to real relative importance of different development constraints, and this could result in wrong prioritization of government policies. Because, as we believe, Armenia has been losing much more from the deficiencies in the business environment than from the blockade, the top priority of the government policy should be aimed at all those elements of the investment climate, which in contrast to blockade do not require complicated international negotiations but are entirely under the government control.

The World Bank (2003c) report *Global Economic Prospects 2004* makes a special emphasis on non-transport factors in trade facilitation as a key determinant of countries' ability to participate in global economy. It singles out such policies as improvements in customs administration, regulatory environment, and availability for traders of services sector infrastructure. The OECD (2001) paper summarizes various available quantitative estimates of the impact of various trade facilitation measures on costs of international trade. For instance, Hummels (2001) concludes that each day saved due to a faster customs clearance is worth 0.5 percent reduction of ad-valorem import tariff.

Case Study: Export barriers for a leading metal exporter[20]

Armenian Copper Programme (ACP) CJSC is a leading Armenian metallurgical company, which produces blister copper and sells it primarily in Europe. The company annual sales are about US$12 million, and it exports practically everything it produces, which makes its share in the total country non-diamond export equal to about 5 percent as of 2002. The ACP has more than 700 employees. Despite not being able to generate profits yet, the firm pays to the budget about US$240 thousand a year in various taxes and mining/environmental fees.

The transportation costs represent a significant expenditure item for the ACP. Despite unit costs (per ton) of transportation to its primary market in Germany declined by 20 percent between 2000 and 2003, the company spends about 4-5 percent of its sale revenues on transport. If the blockade is lifted, the ACP estimates that its transportation bill would decline by half, with a net savings of about $250 thousand a year. It is important to distinguish between two components of these savings. A smaller fraction of it (about 30 percent) would come from opening the Turkish border and respectively from less expensive export shipments. The rest would come from opening the borders with Azerbaijan (Nakhichevan) and re-opening the railway through Nakhichevan, which

[20] Information was collected through interviews with Dr Gagik Arzumanyan, the CEO of Armenian Copper Programme.

would allow for major savings on domestic shipments (from the South to the North of Armenia).

The costs of blockade, although significant, do not look too high when compared to the company's costs associated with the remaining deficiencies in the business environment. The ACP management believes that the total administrative burden is three times higher than the value of the "blockade tax" and exceeds $750 thousand a year. First, the firm is affected by chronic arrears of the VAT refund, which in the second part of 2003 amounted to about US$1.3 million. At the prevailing rates of domestic borrowing (20 percent), the ACP incurs almost quarter of a million in extra interest costs due to an additional borrowing from commercial banks. Second, the estimate for additional costs associated with the complicated regulatory environment and non-transparent enforcement is in the range of 5 percent of company's sales, which exceeds half a million dollars a year.

Overall, from the company perspective, further steps to de-regulate the economy would bring much more potential benefits than lifting the blockade.

We do not claim here that the ACP is a representative exporter and therefore we do not think that ACP's data could be simply generalized for the rest of Armenia economy. However, the case study confirms, in our view, that there are major factors that are under direct Government control, which are supposed to be relatively easy to deal with and which have direct significant impact on export performance and economic growth in general.

REFERENCES

Avanesyan, Vahram and Lev Freinkman. 2003. Costing-out the Big Bang: Impact of External Shocks on the Armenian Economy at the Outset of Transition. Armenian Journal of Public Policy 1:1:1-34 (September).

Baldwin, Richard E. 1994. *Towards an Integrated Europe*. London: Centre for Economic Policy Research.

Beilock, Richard. 2003. Helping the Armenia without Helping the Blockade. Armenian Journal of Public Policy 1:1:79-112 (September).

Belkindas, Misha V. and Olga V. Ivanova. (Eds.) 1995. Foreign Trade Statistics in the USSR and Successor States. *Studies of Economies in Transition*. Issue 18. World Bank. Washington, DC.

Djankov, Simeon and Caroline Freund. 2002. Trade Flows in the Former Soviet Union. Journal of Comparative Economics 30: 76-90.

Frankel, Jeffrey A. 1997. *Regional Trading Blocs in the World Economic System*. Institute for International Economics. Washington, DC.

Grubel, Herbert G. and Peter J. Lloyd. 1975. *Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products.* London: Macmillan.

Hummel, D. 2001. *Time as a Trade Barrier*. Unpublished Paper. Pardue University. West Lafayette, Ind.

Kaminski, Bartlomiej and Manuel De La Rocha. 2002. "Policy-Induced Integration in Balkans: Policy Options And Their Assessment." In *Trade Policies and Institutions in the Countries of South Eastern Europe on the EU Association and Stabilization Process*. The World Bank. Washington, DC. pp. 23-74.

Kaminski, Bartlomiej, Zhen Kun Wang, and Alan Winters. 1996. *Foreign Trade in the Transition: The International Environment and Domestic Policy.* The World Bank. Washington, DC.

Michalopoulos, Constantine and David Tarr. 1996. *Trade Performance and Policy in the New Independent States.* The World Bank. Washington, DC.

OECD. 2001. *Business Benefits of Trade Facilitation*. TD/TC/WP(2001) 21. Paris.

Polyakov, Evgeny. 2001. Changing Trade Patterns after Conflict Resolution in the South Caucasus. Policy Research Working Paper 2593. The World Bank. Washington, DC.

Rodrik, Dani. 1998. Trade Policy and Economic Performance in Sub-Saharan Africa. NBER Working Paper 6562. Cambridge, MA.

Smarzynska, Beata K. 2001. Does Relative Location Matter for Bilateral Trade Flows? An Extension of the Gravity Model. Journal of Economic Integration 16: 3 (September).

Tarr, David G. 1994. The Terms of Trade Effects of Moving to World Prices on Countries of the Former Soviet Union. Journal of Comparative Economics 18: 1-24.

World Bank. 2001. *Armenia: Growth Challenges and Government Policies.* Report No. 22854-AM (in two volumes), Washington, DC.

World Bank. 2002. *Armenia Trade Diagnostic Study*. Washington, DC. June.

World Bank. 2003a. *Armenia: Public Expenditure Review.* Washington, DC.

World Bank. 2003b. *Trade Performance and Regional Integration of the CIS Countries*. Washington, DC. September.

World Bank. 2003c. *Global Economic Prospects 2004: Realizing Promise of the Doha Agenda*. Washington, DC.