IMF Working Paper

INTERNATIONAL MONETARY FUND

European II and Policy Development and Review Departments

Opening Up and Geographic Diversification of Trade in Transition Economies [1]

Prepared by Oleh Havrylyshyn and Hassan Al-Atrash

February 1998

Abstract

This paper looks at the progress in transition and the geographic diversification of trade, focusing on two issues--the degree of trade openness and trade integration--for a sample of countries in transition. It concludes that about half of the group of countries sampled are becoming as open as similar market economies, but that many others remain relatively closed. Geographic diversification (to the European Union) is found to be greater the closer is geographic proximity and the more advanced the country is with reforms. The analysis is then extended, in an illustrative way, to show how much larger would be the share of exports to the EU if structural reforms were more ambitious.

SUMMARY

During the Soviet period, trade of the economies of the region was highly inward-oriented; this was particularly marked for most of the republics of the USSR, but a bit less so for Russia. Independence and transition to the market should have resulted in two changes: increased external trade relative to GDP as the central planning restrictions on foreign trade were lifted; and strong reorientation of trade to the rest of the world to achieve a more "normal" geographic distribution as central plan directives were removed, with the extent and speed of such geographic diversification affected by the degree of structural reform achieved. The paper tests these hypotheses.

For most countries in central Europe, as well as a few others, one observes a trade openness ratio similar to or at least approaching that of market economies of comparable size and level of development. Using a variant of the gravity model, the study also finds that geographic diversification to the European Union is greater the closer is geographic proximity and the more progress a country makes in structural reforms. The model is used to simulate the effects of more ambitious structural reforms. The results suggest that even for countries most advanced in reforms, one might still expect as much as an 8-10 percentage point increase in the level of exports to the European Union, and more for others.

There are several important policy implications from these results. First, much remains to be done in terms of liberalization and structural reform in most transition economies, which will in turn promote further restructuring and resource reallocation and trade diversification. Second, greater access to European Union markets may give an added boost to reorientation of trade. Third, while the results suggest the importance of differentiating competitive exchange rates, the limited period of time precludes differentiating fully the effects of exchange rate stability from those of financial stability.

I. INTRODUCTION

The process of transition from a "socialist" centrally planned economy to a "capitalist" market economy was recognized early on as a comprehensive one, requiring a long time, even if the beginning needed to be quick or shock-like. If for convenience we mark the beginning as Poland's January 1990 leap towards the market,[2] nearly a decade has passed and much has been learned, much has been achieved, and—especially in those countries which started later—much remains to be done. One of the many areas of change in the transition concerns external trading relations, that is, the shift from trading patterns established by central plan decisions to new patterns (geographical and sectoral), determined by comparative advantage decisions reacting to market signals. Our paper addresses only this last aspect of transition, but we narrow the issue somewhat, focussing on the degree of openness of trade and the geographic diversification of export patterns since 1990. A full assessment of shifts to comparative advantage trading patterns remains difficult at this stage because of data quality problems. Despite the data shortcomings, some clear trends are seen already based on an analysis of a number of transition countries, and a comparison with non-transition countries.

During the Soviet period, the economies of the region had an export-import pattern that was highly inward-oriented towards trade with each other; this was particularly marked for most of the republics of the USSR, but a bit less so for Russia. Independence and transition to market, together, should have resulted in two changes: first, increased external trade relative to GDP as the central planning restrictions on foreign trade are lifted and, second, strong reorientation of trade to the rest of the world to achieve a more "normal" geographic distribution[3] as central plan directives are removed. However, political independence alone is not enough to achieve all the expected reorientation. Rather, the extent and speed of such geographic diversification is also affected by the degree of structural reform achieved, that is the degree to which market signals are allowed by policy to work effectively. As different transition countries have achieved a varying degree of such reforms, one should expect a varying and correlated degree of geographical diversification of trade patterns. The paper tests both of these hypotheses, subject to the limited time since the transition began and the continued data shortcomings.

The paper is structured as follows: section 2 briefly outlines the macroeconomic stabilization achieved so far, while section 3 sketches out the evidence that trade of transition economies, which collapsed in the early part of the decade, has recovered to a considerable extent in all countries, even the late starters. In this section we also describe the shortcomings of the trade data. The first hypothesis that transition countries have begun to attain a degree of

---

[2]Sachs (1993); Blejer and Skreb (1997), esp. Introduction.

[3] "Normal" here is meant to convey the notion of a trade pattern that geographically reflects the effects of size and proximity (as in gravity models), and sectorally reflects the comparative advantage of the country.

overall trade openness comparable to other, market-oriented economies of similar size and level of development, is tested in section 4. In section 5 we present the basic data on how much geographical diversification had taken place between 1990 and 1996, and section 6 then goes on to test our second and central hypothesis that diversification is greater for economies which have achieved greater progress in reforms. Finally, section 7 draws some implications for trade and related policy, as well as for the broader strategy of achieving effective integration into the global economy.

II. MACROECONOMIC STABILIZATION

All transition economies to a varying degree have made strides in macroeconomic stabilization. Table 1 provides basic macroeconomic data for a sample of transition countries, including the Baltics, Russia, and other countries of the former Soviet Union (BRO). The countries are classified into five categories, namely, advanced reformers, high-intermediate reformers, low-intermediate reformers, late reformers, and others. The classification follows the liberalization index constructed by de Melo, Denizer, and Gelb,[4] but given the apparent resolution of most conflicts in the region and the record of stabilization achieved in several of these countries since 1995, we have modified the groupings somewhat, as in Odling-Smee and Zavoico (1997).

The general trend is towards much lower inflation and a very gradual resumption of growth. However, performance varies by country and differs more markedly across than within country groups. The advanced and high-intermediate reformers have attained a relatively high degree of price stability and are well on their way to economic recovery, while only some of the low-intermediate reformers have realized the growth that should ensue from price stability. The late reformers have made clear progress in price stability but have not in general seen a turnaround in economic growth. Two outliers on growth are Belarus and Uzbekistan; while they have undertaken only limited reforms, they already show positive growth in 1996. A question remains about the sustainability of this growth which apparently coincides with a rapid credit expansion and a rebound of inflation. This pattern is also very reminiscent of that for Bulgaria and Romania in 1994–96: growth followed by a rebound of inflation generated by credit expansion, and then output collapse in 1996–97.

A typical case of a late reformer is Ukraine, which since 1994 made visible progress in stabilizing its economy. Inflation has fallen from over 1,200 percent in 1992 to just over

---

[4] The index is intended to measure the duration as well as depth of reforms in transition countries. Three criteria were used to measure progress: (1) liberalization of internal markets (i.e., the degree of liberalization of domestic prices and abolition of state monopolies; (2) liberalization of external markets (i.e., the degree of liberalization of the foreign trade regime); and (3) private sector entry (i.e., privatization of small-scale and large-scale enterprises and banking reform). See "Patterns of Transition from Plan to Market," Chapter 1, in Blejer and Skreb (1997).

Table 1. Selected Economic Indicators

(in percent)

	Real GDP growth (Annual percentage change)			CPI (Period average)		
	1992	1993	1996	1992	1994	1996
Advanced reformers (average)	**-3.5**	**4.1**	**4.2**	**22.2**	**19.2**	**13.6**
Czech Republic	-6.6	2.6	4.4	11.1	10.1	8.8
Hungary	-3.1	2.9	0.3	24.7	21.2	19.8
Poland	2.6	6.0	5.5	43.0	32.2	19.9
Slovakia	-7.0	4.9	6.5	10.0	13.4	6.0
High intermediate Reformers (average) 1/	**-25.8**	**1.7**	**3.3**	**812.8**	**73.1**	**27.6**
Bulgaria	-5.6	1.8	-9.0	82.0	121.9	310.7
Estonia	-21.6	-0.1	3.1	1,069.3	47.7	23.1
Latvia	-35.2	2.1	2.5	951.3	35.9	18.7
Lithuania	-37.7	1.0	3.6	1,020.5	72.1	29.7
Romania	-8.8	3.9	4.1	210.0	136.7	38.8
Low-intermediate reformers (average)	**-26.3**	**-14.6**	**2.0**	**1,118,6**	**3,936.4**	**33.1**
Armenia	-52.3	5.4	5.8	824.5	5,273.4	18.6
Georgia	-44.8	-11.4	10.5	887.4	15,604.7	39.4
Russia	-14.5	-12.6	-2.8	1,353.0	302.0	47.8
Kazakstan	-2.9	-17.8	1.1	1,515.7	1,879.9	39.1
Kyrgyz Republic	-13.9	-20.0	5.6	854.6	228.7	30.4
Moldova	-29.1	-31.2	-8.0	1,276.4	329.6	23.5
Late reformers (average)	**-16.7**	**-15.1**	**-2.0**	**922.4**	**1,374.6**	**51.6**
Azerbaijan	-22.1	-18.1	1.3	912.6	1,664.4	19.8
Ukraine	-17.0	-22.9	-9.0	1,210.0	891.2	81.0
Uzbekistan	-11.0	-4.2	1.6	644.7	1,568.3	54.0
Others (average)	**-14.8**	**-17.6**	**-2.5**	**873.2**	**1,440.5**	**495.8**
Belarus	-10.0	-12.2	2.6	969.9	2,222.1	52.6
Turkmenistan	-5.3	-19.0	-3.1	493.0	1,748.9	992.0
Tajikistan	-29.0	-21.5	-7.0	1,156.7	350.4	442.8

Source: Data provided by the authorities and IMF staff estimates.

1/ Excluding Bulgaria.

80 percent in 1996 (and is expected to fall further to about 15 percent in 1997). However, this has not yet been translated into an economic recovery. Indeed, in 1991-96, GDP has cumulatively fallen by more than 55 percent, and is expected to fall in 1997 albeit at a lower pace.[5] One explanation for the lack of recovery is given by Kaufmann (1997): a continuation of anti-private business policies and slow progress in liberalizing the economy at the micro level. That explanation is broadly applicable to other slow reformers which have not yet seen a significant turn around in growth, a central point of the EBRD's *Transition Report for 1997*.

III. COLLAPSE AND RECOVERY OF TRADE

Foreign trade statistics in the BRO countries need to be interpreted with great caution. With the economic transformation and the elimination of the large foreign trade organizations that relied on one currency and an administratively established exchange rate, the methodology of collecting and recording data markedly changed. Even after the dissolution of the USSR, the system of collecting statistics has evolved.[6] Furthermore, trade data for the USSR were generally based on prices that deviated substantially and nonsystematically from world prices. Some partial correction for this pricing problem is provided by the 1989 special study of the USSR Statistics Committee, which recalculates trade using world prices. Nevertheless, analyzing trade behavior of each of the BRO countries—and inter-republic trade comparisons before and after the dissolution of the Soviet Union—is very difficult, and the data presented in Table 2 should be treated with large grains of salt—especially the absolute values and their comparison between 1990 and later years.

Despite these caveats about the quality of data, there is little disagreement that exports—more specifically intra regional exports—in BRO countries dramatically declined at the start of the transition.[7] This was due to several factors including the disintegration of inter-republic trade links and of the inter-republic payments system, the fall in incomes and demand throughout the BRO countries, the substantial worsening in the terms of trade, and the acute shortage of foreign exchange. The decline in trade with eastern Europe following the collapse of the CMEA also contributed, but to a much smaller degree as trade in BRO countries was more highly concentrated. As the Belkindas and Ivanova study (1995) shows, in 1990, the share of inter-republic trade was in excess of 80 percent for BRO countries, except Russia, where it was about 65 percent.

Since 1992, there has been a slow recovery in trade in all transition countries, including the slow reformers. In general, the advanced reformers—both amongst the BRO countries and the other transition economies in central and eastern Europe—have made

---

[5] The only BRO country not affected by conflict and experiencing larger collapse in GDP during the 1991-96 period is Moldova; some of that may be weather related.

[6] For a fuller discussion of statistical issues affecting the measurement of trade, see Belkindas and Ivanova (1995).

[7] See Belkindas and Ivanova (1995) for a comprehensive discussion.

Table 2. Exports of BRO and other Transition Countries

(In millions of U.S. dollars; percent in parentheses)

	1990	1992	1994	1996
Armenia	3,616	7	216	258
BRO	(97.0)	(...)	(...)	(...)
ROW	(3.0)	(...)	(...)	(...)
Azerbaijan	8,936	1,571	637	630
BRO	(91.9)	(50.7)	(44.3)	(50.2)
ROW	(8.1)	(49.3)	(55.7)	(49.8)
Belarus	31,098	3,438	2,459	5,138
BRO	(88.9)	(69.4)	(62.8)	(74.7)
ROW	(11.1)	(30.6)	(37.2)	(25.3)
Estonia	3,487	355	1,305	2,077
BRO	(94.3)	(...)	(44.0)	(39.0)
ROW	(5.7)	(...)	(56.0)	(61.0)
Georgia	5,683	77	121	322
BRO	(90.9)	(...)	(62.9)	(66.1)
ROW	(9.1)	(...)	(37.1)	(33.9)
Kazakstan	15,770	244	2,875	6,230
BRO	(88.7)	(...)	(72.2)	(58.8)
ROW	(11.3)	(...)	(27.8)	(41.2)
Kyrgyz Republic	3,339	315	281	494
BRO	(97.3)	(74.9)	(59.1)	(78.9)
ROW	(2.7)	(25.1)	(40.9)	(21.1)
Latvia	6,820	774	990	1,424
BRO	(95.5)	(48.8)	(50.1)	(47.5)
ROW	(4.5)	(51.2)	(49.9)	(52.5)
Lithuania	7,892	689	2,029	3,281
BRO	(91.4)	(...)	(57.7)	(56.8)
ROW	(8.6)	(...)	(42.3)	(43.2)
Moldova	5,389	470	565	1,140
BRO	(92.5)	(66.6)	(73.1)	(74.4)
ROW	(7.5)	(33.4)	(26.9)	(25.6)
Russia	227,083	39,742	63,078	81,438
BRO	(64.4)	(...)	(24.3)	(22.9)
ROW	(35.6)	(...)	(75.7)	(77.1)
Tajikistan	3,369	29	492	770
BRO	(81.9)	(...)	(22.4)	(45.1)

Table 2. Exports of BRO and other Transition Countries

(In millions of U.S. dollars; percent in parentheses)

	1990	1992	1994	1996
ROW	(18.1)	(...)	(77.6)	(54.9)
Turkmenistan	4,798	64	673	1,693
BRO	(95.9)	(...)	(50.8)	(...)
ROW	(4.1)	(...)	(149.2)	(...)
Ukraine	73,738	11,308	12,111	15,547
BRO	(81.8)	(53.1)	(61.6)	(56.9)
ROW	(18.2)	(46.9)	(38.4)	(43.1)
Uzbekistan	12,717	162	1,844	2,649
BRO	(89.1)	(...)	(46.6)	(4.15)
ROW	(10.9)	(...)	(53.4)	(58.5)
Other transition countries				
Poland	13,624	13,186	17,240	24,440
BRO	(15.3)	(9.2)	(9.3)	(13.9)
ROW	(84.7)	(90.8)	(90.7)	(86.1)
Hungary	9,593	10,730	10,588	13,145
BRO	(20.2)	(13.1)	(10.2)	(9.4)
ROW	(79.8)	(86.9)	(89.8)	(90.6)
Bulgaria	2,075	2,495	3,441	4,543
BRO	(47.0)	23.2	(11.8)	(20.1)
ROW	(53.0)	76.8	(88.2)	(79.9)
Czech Republic 1/	11,640	12,313	13,998	21,916
BRO	(25.9)	(10.6)	(5.7)	(5.5)
ROW	(74.1)	(89.4)	(94.3)	(94.5)
Slovakia 1/	11,640	12,313	6,691	8,831
BRO	(25.9)	(10.6)	(7.0)	(7.3)
ROW	(74.1)	(89.4)	(93.0)	(92.7)
Romania	5,867	4,367	6,160	7,645
BRO	(25.2)	(13.9)	(6.6)	(5.3)
ROW	(74.8)	(86.1)	(93.4)	(94.7)

Sources: Direction of Trade Database (IMF) for 1992–96 data on BRO countries and all data on other transition economies, and Foreign Trade Statistics in the USSR (World Bank) for 1990 data on the USSR.

1/ Prior to 1993, Czechslovakia.

significant progress in integrating their economies into the global trading system. Thus, the share of trade of Estonia, Latvia, and Lithuania—as well as Hungary, Poland, and the Czech and Slovak Republics—with the BRO countries has fallen significancy in recent years. The advanced reformers were also successful in concluding trade agreements with major trading partners/regions that have opened up their exports to new markets. The slower reformers, on the other hand, have made more modest progress in shifting trade away from the BRO countries and toward the rest of the world.

Finally, it is notable in Table 2 that trade in 1996 in all BRO countries remains smaller than in 1990—subject to the caveat of data comparability for these years. This reflects partly the fact that non-tradeable activities have gained in importance in recent years, the incomplete process of structural reform and resource reallocation, as well as the still-lagging recovery of these economies.

IV. TRADE OPENNESS

The most commonly used measure of trade openness is the ratio of exports and imports to GDP (henceforth TOR). Because the Soviet period data for both trade and GDP are not readily comparable to the measure in a market economy, it is a questionable exercise to analyze changes in this ratio, as not only the numerator is subject to uncertain data problems but so too is the denominator. We, therefore, pose the question differently: how did this ratio in 1995 compare to that in other, more established market economies? But comparing such a ratio across countries can also be very misleading unless one controls for the effect of an economy's size and its level of development, as it is a well known "stylized fact" that larger countries generally have lower TOR, and more developed ones generally have a higher TOR. Thus, following a procedure which is not clearly founded in theory but is commonly practiced, we have done a regression analysis for 131 countries with TOR as dependent variable, GDP and GDP per capita (GDPPC) as independent variables, in order to test whether the transition economies are as open as comparable market economies. Given the significant misalignment in the exchange rates, we have adjusted all variables for purchasing power parity. The results shown in Box 1 are fairly similar to other such regressions for the TOR.[8] As expected, TOR is lower the larger the size of the economy (GDP) and higher the greater the level of development (GDPPC) and both variables are statistically significant at the 1 percent level.

There are some necessary qualifications to the above method of comparison. As noted, the regression specification while often used as a rule of thumb adjustor to the simple TOR measure, has little basis in theory, and therefore it may not be at all superior to a "good-judgment" qualitative analysis of the TOR itself. Further, as Pritchett (1991) notes, the results of such regressions are not always very robust, that is changes in time period, definition of independent variables, sample coverage, etc., can lead to significant differences in results, with the same country changing from positive residuals to negative ones in different regression analyses. For this reason, we have done the regressions with numerous specifications of the

---

[8] See Pritchett (1991), Balassa and Bauwens (1986), Havrylyshyn and Kunzel (1997) for comparisons.

model to test for robustness of results.[9] While the results and fit do vary marginally, they are surprisingly robust to the different specifications.[10] The results shown in Box 1 and used to calculate column 3 values in Table 3 are for a specification in logs with PPP adjustment, which gave the best overall fit.

Box 1: Regression Results of Trade Openness Ratio 1/ 2/

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	-1.426448	0.463291	-3.078949	0.0025
GDP	-0.279838	0.027722	-10.09435	0.0000
GDPPC	0.719820	0.060773	11.84446	0.0000

R-squared	0.554583	Mean dependent variable	3.605558
Adjusted R-squared	0.547623	S.D. dependent variable	0.932905
S.E. of regression	0.627462	Akaike info criterion	-0.909510
Sum squared residual	50.39470	Schwartz criterion	-0.843666
Log likelihood	-123.3080	F-statistic	79.68551

1/ All variables were logged and adjusted for purchasing power parity.
2/ The number of observations was 131 (countries).

The values in the last column of Table 3 suggest that many countries, especially in central Europe and the Baltics, have economies that are as open as similar (in the sense of size and per capita income) market economies, that is they have positive values of deviation of residual. In this region, only Bulgaria, Romania, and Poland, the last being somewhat surprising, show TOR values far below the cross-country norm (negative residuals beyond one standard deviation). Nevertheless, for the countries that appear more "open", none have positive residuals close to or beyond one standard deviation; that is there are no instances of highly open economies as can be found in East Asia.

---

[9] For example, in one specification, official exchange rate dollar value was used; in another specification, the variables were adjusted for PPP with linear and log formulation; in yet another, population was used instead of GDP as proxy for size; and, finally, dummy variables were used for transition countries. Moreover, the sample of countries used was changed to test for differences in overall fit.

[10] In the sense that the relative position of countries above or below the line does not change.

Table 3. Trade Openness Ratios for Selected Group of Transition Countries

	TOR 1/	TOR 2/	Deviation of residual in percentage of STD
Albania	47.75	60.23	0.88
Armenia	77.58	11.80	-2.72
Azerbaijan	76.31	18.27	-1.44
Belarus	90.38	19.11	-2.04
Bulgaria	100.95	27.62	-1.55
Croatia	91.81	78.28	0.03
Czech Republic	117.08	67.85	0.37
Estonia	160.72	71.62	0.81
Georgia	43.67	14.56	-1.97
Hungary	69.69	47.85	0.74
Kazakstan	71.15	26.37	0.88
Kyrgyz Republic	82.03	15.55	-1.96
Latvia	96.12	53.71	0.71
Lithuania	69.81	48.14	0.65
Moldova	110.57	26.95	-1.06
Poland	50.79	24.21	-1.25
Romania	57.53	24.73	-1.06
Russia	43.60	27.79	0.14
Slovak Republic	126.08	58.91	0.76
Slovenia	103.58	89.31	0.86
Ukraine	94.65	23.42	0.59
Uzbekistan	77.12	14.79	-1.61

Source: World Economic Outlook data base.

1/ TOR calculated using GDP based on official exchange rate.

2/ Calculated using GDP based on purchasing power parity exchange rate.

The results also suggest that most BRO countries remain relatively closed compared to other economies of similar size and level of development. Indeed, for Armenia, Azerbaijan, Belarus, Georgia, Kyrgyz Republic, Moldova, and Uzbekistan, the absolute deviation of the residual in percentage of standard deviation exceeds one. The main exceptions are the Baltic countries, Kazakhstan, Russia, and Ukraine which are shown to be relatively open. The results for Russia and Ukraine are somewhat surprising. Their trade openness ratios at 23-28 percent are as high or higher than for many transition economies of a much smaller size (Caucasian, Central Asian, and several central European ones like Poland and Romania). Indeed, the ratios are higher than or comparable to those of several medium-sized developing countries, such as Argentina: 20 percent; Brazil: 11 percent; Chile: 27 percent; and Colombia: 13 percent, though much lower than those for more advanced emerging economies or industrial countries, such as Austria: 122 percent; Finland: 94 percent; Hong Kong: 284 percent; Korea: 57 percent.

We do not have a good answer to the surprising results for Russia and Ukraine. One possibility would be that incomplete confidence in a country's macroeconomic stability puts a premium on external trading activities which are a vehicle for capital flight and substitution into hard currencies. But this should also result in much higher trading ratios for other BRO countries. For Russia, the revival of natural resource exports may be part of the explanation, and one possible explanation for Ukraine's high ratio is strong continuation of previous BRO links. Finally, for both countries, it's quite possible that the Soviet period TOR for these two republics was in fact not out of line with that of similar market economies; since Russia and Ukraine were the leading republics in trading then—both for external and internal trade—they have reestablished the old trading links earlier than the others.

One final possibility is of course that the regression, notwithstanding its robustness, produces some anomalies; this could be the explanation not only for Russia and Ukraine but perhaps also for Poland. As shown in the Appendix, there are a handful of individual cases which appear to be far out of line with common perceptions: Australia and the U.S. are shown to be relatively closed, while India is shown to be relatively open. While outside the transition group only these three cases seem to fit very poorly, this is enough to suggest some caution, and we therefore consider it of value to provide the reader with the unadjusted TOR, which is shown in Table 3, and a full set of data for all 131 countries in the Appendix, allowing for a more qualitative individual judgment.

V. DIVERSIFICATION IN GEOGRAPHIC PATTERNS OF TRADE: 1990-96

A simple comparison of trade direction shifts is difficult because of the data problems described in Section 3. Thus, the evolution since 1990 shown in Table 4 must be highly qualified, as the data for 1990 are not comparable with later years. With this strong proviso, we can nevertheless conclude from the orders of magnitude, that diversification of exports to new markets outside the BRO countries did take place. Indeed, even if we take 1992 as a starting point, this trend is evident. There was a high degree of regional interdependence in the Soviet Union, rooted in the centralized state planning system. In 1990, inter-republic trade accounted for well over 80 percent of all trade of each republic, except for Russia where this

Table 4. Share of Exports to BRO of Selected Transition Countries

(In percent)

	1990	1992	1994	1996
Advanced reformers (average)	**21.8**	**10.9**	**8.1**	**9.0**
Czech Republic 1/	25.9	10.6	5.7	5.5
Hungary	20.2	13.1	10.2	9.4
Poland	15.3	9.2	9.3	13.9
Slovakia 1/	25.9	10.6	7.0	7.3
High intermediate reformers (average)	**70.7**	**28.6**	**34.2**	**33.7**
Bulgaria	47.1	23.2	11.8	20.1
Estonia	94.3	...	44.0	39.0
Latvia	95.5	48.8	50.8	47.5
Lithuania	91.4	...	57.7	56.8
Romania	25.2	13.9	6.6	5.3
Low intermediate reformers (average)	**88.5**	**70.8**	**58.3**	**55.6**
Armenia	97.0	...	...	...
Georgia	90.9	...	62.8	66.1
Russia	64.4	...	24.3	22.9
Kazakstan	88.7	...	72.2	58.8
Kyrgyz Republic	97.3	74.9	59.1	...
Moldova	92.5	66.6	73.1	74.4
Late reformers (average)	**87.6**	**51.9**	**43.1**	**44.9**
Azerbaijan	91.9	50.7	44.3	50.2
Ukraine	81.8	53.1	38.4	43.1
Uzbekistan	89.1	...	46.6	41.5
Others (average)	**88.9**	**69.4**	**45.3**	**59.9**
Belarus	88.9	69.4	62.8	74.7
Turkmenistan	95.9	...	50.8	...
Tajikistan	81.9	...	22.4	45.1

Source: Table 2.

1/ Prior to 1993, Czechoslovakia

was about 65 percent. Central European transition economies generally had a more diversified pattern of trade as they relied less on the trade and payments system of the CMEA and they began diversifying away from the USSR before 1990. Thus, the share of exports with the USSR in 1990 was already as low as 20 percent for Hungary and 15 percent for Poland.[11] Since 1990, there has been a noticeable shift in the geographic pattern of trade, particularly for the BRO countries. By 1996, the share of exports to the states comprising the former USSR had declined to less than 60 percent, except for Belarus (75 percent), Georgia (66 percent), and Moldova (77 percent).

Table 4, which groups countries again by degree of progress in reforms, also suggests that the advanced reformers—both amongst the 15 BRO states and the other transition economies in central Europe—have generally made the most progress in diversifying exports. By 1996, the share of exports to the BRO states by most non-BRO advanced reformers was in the single-digits. The advanced BRO reformers (Estonia, Latvia, and Lithuania) probably made the most progress in shifting trade away from the BRO states, reducing the share of exports from about 94 percent in 1990 to 48 percent in 1996. Low-intermediate and late reformers made much less progress, with the export share falling from 89 percent and 88 percent in 1990 to 56 percent and 45 percent in 1996, respectively. For the others, the decline is least, from 89 percent to 60 percent.[12]

Clearly, there has been a noticeable shift in the geographic pattern of trade towards the rest of the world. The advanced reforms among the BRO countries have the highest share of trade to the EU, averaging around 45 percent for Estonia, Latvia, and Lithuania in 1996. These reformers as well as other transition countries in central and eastern Europe also concluded trade agreements with major trading partners which have helped open new markets. The share of trade to the EU for the late reformers, on the other hand, was still only about 10 percent in 1996. Some BRO economies have increasingly redirected their trade not to industrial countries, but to neighboring developing countries. For example, the share of Azerbaijan's trade with the Middle East and Asia has increased from 15 percent in 1992 to over 30 percent in 1996. Similarly, the share of Turkmenistan's trade with the Middle East and Asia has increased from 1 percent in 1992 to 10 percent in 1996.

Despite its shortcomings, the data suggest two conclusions: first, almost all the transition economies have been redirecting their exports from old markets within the USSR,

---

[11] Rosati (1993) argues that by the early nineties the diversification to new markets in Europe and elsewhere had been essentially completed for the central European transition economies.

[12] The shares to the BRO countries may in fact be higher for slower reformers because the data source used does not include unrecorded barter trade, which is likely to be mostly within BRO countries, and becomes relatively less important as reforms advance. It would have been possible in some cases to search out individual country studies which give better estimates of trade including barter effects. But to maintain consistency, we have used one source for all countries, the IMF's *Direction of Trade Statistics*. As an example of alternate values, MacArthur (1997) estimates the share of Ukraine's exports to other BRO countries at 58 percent in 1996, compared to our estimates of 43 percent.

and second, more advanced reformers have achieved a great degree of such geographic diversification. Section 6 attempts to test more precisely the second conclusion.

VI. AN ECONOMETRIC ANALYSIS OF TRADE DIVERSIFICATION

In this last section we ask the question: what factors explain the different degree of trade diversification achieved by different transition countries? We use a variant of the gravity model, in effect a "disequilibrium gravity model" reflecting the assumption that the diversification process is not complete and that the trade with new markets is not yet at the equilibrium level predicted by a gravity model. Consider a standard gravity model formulation[13] with the dependent variable X^*_{ij} being the equilibrium level of exports of i to j as a share of total exports (this share formulation allows us to drop GDPi from the model and gain a degree of freedom), Y_j is GDP of destination j, Dij is distance from i to j. Thus, we have in log linear form the equation:

$$X^*_{ij} = a_1 + b_1 Y_j + c_1 D_{ij} \quad (1)$$
$$(b_1 > o;\ c_1 < o)$$

If, further, X^d_{ij} is the actual (still-disequilibrium) level of exports, and the extent it approaches equilibrium is positively related to progress in structural transformation (INDEX $_i$) and negatively related to the change in the real effective exchange rate (REER$_i$), we can posit

$$X^*_{ij} - X^d_{ij} = a_2 + b_2 INDEX_i + c_2 REER_i \quad (2)$$
$$(b_2 < o\ ;\ c_2 > o)$$

We simplify to one major new destination, Europe, so that

$$Y_j = Y_E, \quad (3)$$

and substitute (1) and (3) into (2), to obtain an equation for the actual or disequilibria export share:

$$X^d_{iE} = \lambda + \beta_1 INDEX_i + \beta_2 DIST_{iE} + \beta_3 REER \quad (4)$$

where $\lambda = (a_1 - a_2 + b_1 Y_E)$; $\beta_1 = -b_2,\ > o$; $\beta_2 = C_1,\ < o$; $\beta_3 = -c_2,\ < o$

Equation 4 is estimated in an OLS regression pooled for the two years 1995 and 1996 using the sample of seventeen countries of Table 4 (excluding countries in conflict); the source for the share of exports to the EU in total exports is the same as that for Tables 1 and 4; INDEX is taken from the EBRD indices on transition progress (EBRD (1995), EBRD (1996)); DIST is the road distance from each country to the "middle" of Europe (Frankfurt); and REER is for the BRO countries a dollar-based index and for central Europe a trade weighted index with 1994 as the base year.[14] While a 1994 based REER is perhaps too recent to reflect changes in competitiveness, a longer period is not available, and an absolute level estimate is not easily doable within any degree of accuracy.

---

[13] For a review and a clear theoretical basis of such models see Asilis and Rivera (1994).

[14] An increase in REER reflects an appreciation in the real exchange rate while a decrease means a depreciation in the real rate.

The results are shown in Box 2. First, we can see that the explanatory power for a cross-country regression is quite high, with R²=0.706. Further, the T-statistics show high levels of significance for the coefficient estimates of all three explanatory variables. Finally, and most important, the positive sign of the INDEX coefficient confirms our prior hypothesis: that *transition countries which have made the most progress in structural reforms have also gone farthest in diversifying their exports to new destinations*. The negative sign for the real effective exchange rate coefficient supports this conclusion, suggesting that the exchange rate also contributed to effective export diversification. However, the short time period and the coincidence of timing with stabilization efforts could mean the exchange rate index is in fact a proxy for early success in stabilization: late reformers experienced a post-stabilization real appreciation in 1994-96, and slower reforms as reflected in the "Index" variable lead to limited trade diversification.

Box 2: Regression Results of the Determinants of Exports to the EU 1/ 2/

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	18.15961	13.26594	1.368889	0.1812
Index	15.82445	3.303587	4.790082	0.0000
Distance	-0.00913	0.002446	-3.73178	0.0008
REER	-0.11888	0.027876	-4.26449	0.0002

R-squared	0.706363	Mean dependent variable	33.69706
Adjusted R-squared	0.677000	S.D. dependent variable	20.63638
S.E. of regression	11.72830	Akaike info criterion	5.034140
Sum squared residual	4126.590	Schwartz criterion	5.213712
Log likelihood	-129.824	F-statistic	24.05570

1/ The White procedure was used to correct for the hetroskedacity of the panel data.
2/ The number of observations was 34.

There are some caveats, as always. Our model is incomplete in a number of respects: first, demand-side constraints such as EU import barriers are not included; second, exchange rate volatility effects, are not analyzed; and third, diversification outside of the EU is also not analyzed. On the first, any bias comes only from possible differential treatment by the EU of imports from different countries; this is probably relevant for the central European vs. other cases, and may even be relevant for individual BRO cases. But the extent of such differential treatment is by no means easy to quantify, and for the present paper we have not attempted to

obtain such information. On the second, volatility of exchange rates is also not so easy to quantify for transition countries given the very short period of time.

The last caveat could be dealt with in an expanded analysis using a full-blown gravity model with all destinations for exports. We have not attempted such a large research exercise , but we have undertaken a crude version of this (see Box 3) which gives us reason to doubt that there would be much more information provided by full-blown gravity regressions. In Box 3, we present the result of a regression in which the independent variables are the same, but the dependent variable is exports shown to all non-BRO destinations, rather than the EU. The formulation is, at best, a conceptual short cut, because the distance variable should reflect distances to all other non-European destinations as well. But the general results of the regression are not dramatically changed—i.e., that the overall explanatory power, the coefficient signs (but not coefficient values) and statistical significance are similar—which strongly suggests that actual global diversification of transition countries is dominated by diversification towards European markets. Recall further from Section 5 the finding that, with the few exceptions of some Central Asian economies' expansion of exports to Asia and Middle East regions, the bulk of new, non-BRO market penetration has been in Europe.

Box 3: Regression Results of the Determinants of Exports to Non–BRO Countries 1/ 2/

Variable	Coefficient	Std. Error	T -Statistic	Prob.
C	84.00973	18.29481	4.591999	0.0001
Index	8.880586	4.231688	2.098592	0.0444
Distance	-0.01615	0.003098	-5.212453	0.0000
REER	-0.211353	0.034374	-6.148679	0.0000

R-squared	0.663534	Mean dependent variable	60.09412
Adjusted R-squared	0.629887	S.D. dependent variable	26.42697
S.E. of regression	16.07735	Akaike info criterion	5.664954
Sum squared residual	7754.440	Schwartz criterion	5.844526
Log likelihood	-140.5481	F–statistic	19.72065

1/ The White procedure was used to correct for the hetroskedacity of the panel data.
2/ The number of observations was 34.

Subject to the incomplete specification and partial global coverage of our disequilibrium gravity model, we extend the analysis in an illustrative way to ask the question:

Table 5. Simulated Share of Exports to the EU for Selected Transition Countries, 1996

(In percent)

	Actual share	Fitted share (Actual index)	Fitted share (Index=4.0) 1/
Advanced reformers			
Czech Republic	58	56	65
Hungary	63	55	65
Poland	66	51	62
Slovakia	41	53	66
High intermediate reformers			
Bulgaria	40	44	66
Estonia	51	44	57
Latvia	44	44	59
Lithuania	33	40	57
Romania	56	42	64
Low intermediate reformers			
Russia	33	34	51
Kazakstan	18	14	36
Kyrgyz Republic	3	20	41
Moldova	10	37	58
Late reformers			
Ukraine	10	23	48
Uzbekistan	24	19	45
Others			
Belarus	10	2	37
Turkmenistan	5	0	46

Source: Simulations based on regression coefficients of Box 2.

1/ Assumes liberalization index equals 4.0.

what would be the share of exports to EU if progress in structural reforms was more ambitious? Specifically, what would be the share of exports to EU if the EBRD index showed maximum reform (i.e. index = 4.0)? Table 5 summarizes the results of such a simulation for 1996. What is most striking in the results is the magnitude of potential diversification still in the future. Even for countries very advanced in reforms (Poland, Czech Republic) one might still expect as much as 8–10 percentage points increase in the levels of exports to EU to 65 percent or so of total exports. For those least advanced in reforms, generally further east, one might expect more than a doubling, from magnitudes of 10–20 percent to 40-50 percent. While this simulation exercise is very tentative—and for many countries the actual 1996 values are far below the fitted ones with present levels of the INDEX variable—the orders of magnitude of the values in column 3 are not far out of line with other similar analyses.[15] Thus the earlier study cited for Ukraine gave a value of all non-COMECON of 82 percent; it would not be unreasonable to have 48 percent of this go to Europe. Similarly, earlier work by Rosati (1993), Wang and Winters (1991), Collins and Rodrik (1991), and Havrylyshyn and Pritchett (1991), suggest a broad order of magnitude with the share of exports of central European economies to western Europe of one half to two thirds.

VII. CONCLUSIONS AND POLICY IMPLICATIONS

The evidence of trade patterns and changes over the last seven years, despite data shortcomings, clearly shows that many transition countries especially in central Europe and the Baltics, have trade to GDP ratios not dissimilar to those of market economies of comparable size and level of development. But many others, especially in the BRO group, appear to be far less open. Further, all transition economies in the former COMECON bloc have broken out of their intra-regional orientation, and have began to diversify their exports geographically to western Europe and other regions of the world. But the evidence also shows clearly that the degree of diversification varies considerably, and appears in particular to be closely associated with the degree of liberalization and reforms achieved. That is, the more advanced are reforms, the more this geographic diversification. Finally, it appears from analytical studies based on gravity models, that many countries are still far from achieving the geographic pattern of trade that might be considered "natural," i.e., the pattern expected when a more fully functioning market economy is in place.

There are several important policy implications from these results. The most direct one is that, to the extent expanding trade in new directions based on comparative advantage is an important element of successful restructuring and resource reallocation, much remains to be done in terms of liberalization and reform in some transition economies. Secondly, greater access to EU markets—via association agreements, or other arrangements—may give an added boost to reorientation of trade. Third, the model broadly confirms the importance of a competitive exchange rate in achieving diversification of the new markets in Europe. Fourth,

---

[15] The fitted share value for Belarus and Turkmenistan merit some explanation. Technically, this reflects the very sharp appreciation of (REER) in 1996 which the model translated into a strong loss of competitiveness. The values are not very realistic and reflect the model's limitations especially in cases of little progress in reforms.

our model confirms the simple message of gravity models: for the transition economies of the former-COMECON group relatively close to western Europe the huge size and proximity of these markets implies a dominant share of exports will in the longer term go to those markets.

Results of Trade Openness Regression

	Pop. 1/	GDP 2/	GDPPC	GDPPC 3/	GDP 3/	Imports 2/	Exports 2/	TOR 3/	TOR 4/	RESID	Dev. from ST	In % STD
Albania	3.45	2.38	690.76	547.57	1.89	0.86	0.28	60.23	47.75	1.163937	0.543702	0.88
Argentina	34.40	280.00	8,139.44	6,806.52	234.15	23.78	23.85	20.34	17.01	-0.38705	-1.00729	-1.62
Armenia	3.73	1.29	344.91	2,268.45	8.46	0.80	0.20	11.80	77.58	-1.06985	-1.69008	-2.72
Australia	18.20	350.55	19,256.84	19,700.19	358.62	72.92	68.89	39.54	40.45	-0.36802	-0.98825	-1.59
Austria	8.53	233.23	27,349.09	19,074.60	162.67	100.33	98.81	122.42	85.38	0.564133	0.056103	0.09
Azerbaijan	7.43	2.78	373.78	1,560.80	11.60	1.27	0.85	18.27	76.31	-0.27521	-0.89545	-1.44
Bangladesh	120.38	32.29	268.21	1,489.65	179.33	7.32	4.52	6.60	36.66	-0.49356	-1.11380	-1.80
Belarus	10.11	10.39	1,027	4,858	49.14088	4.81	4.58	19.11	90.38	-0.64357	-1.26380	-2.04
Belgium	9.97	269.20	27,011.70	19,678.58	199.09	176.76	188.16	183.30	135.56	1.001897	0.381661	0.62
Belize	0.21	0.59	2,765.75	2,509.51	0.54	0.32	0.29	114.14	104.02	0.356802	0.263434	0.42
Benin	5.45	2.05	376.06	1,750.58	9.54	0.71	0.50	12.65	58.88	-0.78013	-1.40036	-2.26
Bhutan	0.67	0.30	452.48	920.58	0.61	0.18	0.13	49.19	100.07	0.271049	0.349196	0.56
Bolivia	6.79	6.02	886.13	2,121.86	17.95	1.63	1.25	16.02	47.77	-0.50552	-1.12575	-1.82
Brazil	164.08	716.98	4,369.81	6,226.68	1,021.64	61.73	52.69	11.20	15.96	-0.50738	-1.12761	-1.82
Bulgaria	9.03	12.97	1,437.38	5,253.05	47.41	6.62	6.48	27.62	100.95	-0.34155	-0.96179	-1.55
Burkina Faso	11.00	2.33	211.84	733.52	8.07	0.68	0.34	12.65	43.79	-0.20082	-0.82106	-1.32
Canada	29.38	565.63	19,249.47	21,419.32	629.39	197.67	211.54	65.02	72.35	0.226545	0.393690	0.63
Chile	13.83	67.30	4,867.54	9,854.40	139.93	18.41	19.69	27.23	56.61	-0.50575	-1.12598	-1.82
China	1,208.07	697.62	577.47	2,866.36	3,501.03	135.28	147.24	8.07	40.50	0.067962	0.552274	0.89
Colombia	36.29	79.32	2,205.17	6,554.83	235.76	16.43	13.68	12.77	37.96	-0.82350	-1.44374	-2.33
Costa Rica	3.56	8.96	2,516.16	6,752.91	21.21	4.04	3.93	37.56	88.89	-0.44004	-1.06027	-1.71
Cote d'Ivoire	14.22	10.08	708.83	1,857.09	26.41	3.59	4.45	30.47	79.82	0.341389	0.278847	0.45
Croatia	4.80	16.63	3,465.05	4,063.73	19.50	8.61	6.66	78.28	91.81	0.636371	0.016136	0.03
Cyprus	0.62	8.64	14,038.24	15,418.31	9.48	4.47	4.27	92.14	101.20	-0.36229	-0.98252	-1.58
Czech Rep	10.32	49.70	4,816	8,311	85.76776	30.02	28.18	67.85	117.08	0.392866	0.227369	0.37
Denmark	5.23	172.73	33,034.06	20,635.31	107.90	57.31	64.73	113.10	70.65	0.313458	0.306778	0.49
Djibouti	0.62	0.50	799.42	988.68	0.61	0.29	0.20	79.63	98.49	0.701369	0.081133	0.13
Dominica	0.07	0.22	2,898.15	2,849.71	0.21	0.15	0.10	119.71	117.70	0.048642	0.571594	0.92
Dominican Republic	7.92	12.06	1,522.28	3,918.13	31.03	3.27	3.29	21.16	54.45	-0.51555	-1.13578	-1.83
Ecuador	11.76	17.43	1,482.70	4,932.24	56.52	5.34	5.27	18.77	60.85	-0.63329	-1.25352	-2.02
Egypt	58.92	58.94	1,000.45	4,051.04	238.68	18.16	14.93	13.86	56.14	-0.39175	-1.01199	-1.63
El Salvador	5.89	9.30	1,578.86	2,881.55	16.62	3.62	2.05	34.11	60.94	0.008404	0.611831	0.99
Estonia	1.55	3.60	2,328	5,224	8.081232	3.05	2.74	71.62	160.72	0.120161	0.500074	0.81
Fiji	0.82	1.99	2,422.66	6,322.14	4.95	1.21	1.13	47.29	117.77	-0.56942	-1.18965	-1.92
Finland	5.07	124.98	24,669.71	17,624.44	89.29	36.89	47.46	94.47	67.49	0.194018	0.426218	0.69
France	57.36	1,538.80	26,828.50	20,974.27	1,203.02	324.98	360.89	57.01	44.57	0.291481	0.328755	0.53
Gabon	1.06	5.11	4,805.38	4,328.04	4.60	1.85	2.96	104.61	94.21	0.476774	0.143462	0.23
Gambia	1.11	0.36	326.28	977.53	1.09	0.21	0.16	33.69	100.94	0.011782	0.608454	0.98
Georgia	5.41	2.89	533.21	1,598.91	8.65	0.79	0.47	14.56	43.67	-0.60168	-1.22191	-1.97
Germany	81.60	2,412.48	29,565.02	19,587.71	1,598.34	549.96	570.19	70.08	46.43	0.626634	0.006398	0.01
Ghana	17.38	6.32	363.29	2,108.91	36.66	2.12	1.58	10.09	58.57	-0.76357	-1.38381	-2.23
Greece	10.44	114.32	10,947.48	8,931.07	93.27	30.76	18.83	53.17	43.37	0.120732	0.499504	0.81
Grenada	0.12	0.30	3,150.48	4,477.51	0.43	0.21	0.17	88.97	126.45	-0.37283	-0.99306	-1.60
Guatemala	10.62	14.78	1,392.44	3,781.84	40.16	3.72	2.80	16.24	44.11	-0.68252	-1.30276	-2.10
Guinea	6.68	3.67	549.76	702.87	4.70	0.96	0.80	37.44	47.87	0.763709	0.143473	0.23

Results of Trade Openness Regression

	Pop. 1/	GDP 2/	GDPPC	GDPPC 3/	GDP 3/	Imports 2/	Exports 2/	TOR 3/	TOR 4/	RESID	Dev. from ST	In % STD
Guinea-Bissau	1.08	0.25	234.25	759.31	0.82	0.09	0.04	15.71	50.93	-0.64893	-1.26917	-2.05
Guyana	0.75	0.63	833.48	2,668.75	2.01	0.44	0.53	47.96	153.55	-0.18675	-0.80698	-1.30
Honduras	5.96	3.71	621.87	2,082.14	12.39	1.58	1.56	25.32	84.63	-0.13789	-0.75813	-1.22
Hong Kong	6.12	143.25	23,421	24,500	149.8521	213.98	211.19	283.73	296.80	1.201548	0.581313	0.94
Hungary	10.21	44.44	4,353.58	6,340.67	64.73	16.36	14.61	47.85	69.69	0.159667	0.460569	0.74
Iceland	0.28	7.04	25,596.71	18,924.04	5.20	2.24	2.47	90.51	66.92	-0.69566	-1.31590	-2.12
India	934.36	322.44	345.09	1,433.26	1,339.18	45.94	37.92	6.26	26.01	0.043966	0.576270	0.93
Indonesia	194.54	201.18	1,034.16	4,091.61	795.97	56.61	53.27	13.80	54.62	-0.06621	-0.68645	-1.11
Ireland	3.58	61.93	17,284.49	15,897.29	56.91	40.84	48.14	156.34	143.67	0.645966	0.025730	0.04
Italy	56.26	1,087.18	19,324.88	19,948.43	1,122.26	255.09	300.84	49.54	51.13	0.167685	-0.452551	0.73
Japan	125.14	5,134.30	41,027.43	21,454.70	2,684.91	420.01	494.71	34.07	17.82	-0.01497	-0.63521	-1.02
Jordan	4.58	6.56	1,432.80	4,942.45	22.65	4.81	3.43	36.40	125.56	-0.22836	-0.84860	-1.37
Kazakstan	16.60	16.72	1,007.02	2,717.54	45.11	6.16	5.73	26.37	71.15	0.072640	0.547595	0.88
Kenya	30.17	9.10	301.53	1,331.11	40.16	3.54	2.97	16.20	71.52	0.066644	0.553592	0.89
Korea	44.89	455.47	10,146	11,867	532.7005	156.05	150.06	57.47	67.21	0.481516	0.13872	0.22
Kyrgyz Rep	4.69	1.49	319	1,681	7.881476	0.79	0.44	15.55	82.03	-0.59797	-1.21821	-1.96
Lao, P.D.R.	4.57	1.52	331.92	2,332.50	11.38	0.66	0.44	9.71	72.90	-1.20186	-1.82209	-2.94
Latvia	2.59	4.73	1,828	3,272	8.461314	2.39	2.16	53.71	96.12	0.182024	0.438212	0.71
Lebanon	3.13	10.99	3,510.45	3,281.33	9.86	6.35	2.69	91.68	82.21	0.757490	0.137254	0.22
Lesotho	1.99	1.06	532.94	2,493.30	4.95	1.11	0.20	26.38	123.41	-0.48335	-1.10359	-1.78
Liberia	2.76	2.31	836.23	886.72	2.45	0.78	0.81	64.94	68.86	0.964870	0.344634	0.56
Lithuania	3.76	7.77	2,068.24	2,999.21	11.27	2.85	2.58	48.14	69.81	0.215413	0.404823	0.65
Luxembourg	0.40	19.29	48,230.03	35,912.25	14.36	13.08	19.15	224.40	167.09	0.035416	0.584820	0.94
Madagascar	13.13	3.20	243.61	750.93	9.86	0.99	0.75	17.58	54.19	0.167460	0.452776	0.73
Malawi	9.79	1.47	149.65	795.42	7.79	0.58	0.42	12.91	68.60	-0.24867	-0.86891	-1.40
Malaysia	20.17	87.33	4,330.55	10,363.12	208.24	86.72	83.43	81.71	194.84	0.668128	0.047892	0.08
Mexico	94.84	286.30	3,164.26	7,732.97	699.68	55.26	67.49	17.54	42.87	-0.32069	-0.94092	-1.52
Moldova	4.40	1.70	386	1,585	6.977343	1.02	0.86	26.95	110.57	-0.03982	-0.66005	-1.06
Morocco	27.14	32.42	1,194.44	3,466.96	93.99	11.33	8.89	21.52	62.38	-0.10049	-0.72073	-1.16
Mozambique	17.42	1.48	85.17	807.93	14.08	0.96	0.41	9.78	92.73	-0.37193	-0.99216	-1.60
Nepal	23.21	4.79	206.57	1,214.30	26.61	1.74	1.15	10.85	60.25	-0.38327	-1.00350	-1.62
Netherlands	15.46	395.47	25,585.21	19,474.02	300.87	200.17	223.08	140.67	107.02	0.860262	0.240026	0.39
Netherland Antilles	0.23	2.23	9,750.18	2,147.95	0.43	1.29	1.37	612.28	119.00	2.084808	1.464573	2.36
New Zealand	3.52	58.56	16,650.05	16,335.73	57.83	17.18	17.79	60.47	59.72	-0.391902	-0.93925	-1.51
Nicaragua	4.53	1.77	390.90	2,172.63	9.86	0.73	0.33	10.78	60.10	-1.08633	-1.70657	-2.75
Niger	8.92	1.89	211.57	788.44	7.03	0.38	0.29	9.54	35.55	-0.57356	-1.1938	-1.92
Nigeria	97.22	67.32	692.43	1,540.35	149.76	9.69	10.75	13.64	30.35	0.157860	0.462375	0.75
Norway	4.36	146.15	33,489.85	21,308.96	92.99	47.25	56.04	111.08	70.68	0.230697	0.389539	0.63
Pakistan	127.75	60.38	472.61	2,238.86	291.61	12.74	9.86	7.75	37.44	-0.49016	-1.110390	-1.79
Panama	2.68	8.23	3,072.86	6,041.21	16.18	2.88	2.83	35.31	69.41	-0.49739	-1.11763	-1.80
Papua New Guinea	4.10	5.48	1,334.04	2,376.97	9.76	1.81	3.08	50.10	89.27	0.382440	0.237796	0.38
Paraguay	4.91	9.37	1,908.58	3,879.74	19.05	2.62	2.22	25.38	51.60	-0.46314	-1.08338	-1.75
Peru	24.94	58.94	2,363.42	3,973.38	99.09	12.11	7.38	19.68	33.08	-0.27323	-0.89346	-1.44
Philippines	69.14	74.15	1,072.45	2,813.39	194.51	34.06	21.33	28.47	74.70	0.533262	0.086973	0.14

Results of Trade Openness Regression

	Pop. 1/	GDP 2/	GDPPC	GDPPC 3/	GDP 3/	Imports 2/	Exports 2/	TOR 3/	TOR 4/	RESID	Dev. from ST	In % STD
Poland	38.65	118.29	3,060.79	6,429.82	248.13	27.75	32.33	24.21	50.79	-0.15566	-0.77590	-1.25
Portugal	9.38	102.74	10,952.95	11,105.49	109.97	43.33	35.90	72.05	77.11	0.313838	0.306398	0.49
Romania	22.71	35.69	1,571.67	3,656.40	83.03	11.20	9.33	24.73	57.53	-0.03445	-0.65468	-1.06
Russia	148.69	408.60	2,748.01	4,311.69	641.10	84.20	93.94	27.79	43.60	0.535531	0.084705	0.14
Sao Tome & Principe	0.13	0.05	356.79	515.96	0.07	0.05	0.01	83.59	120.88	0.612192	0.008044	0.01
Senegal	8.52	4.87	571.52	1,802.48	15.35	1.80	1.54	21.74	68.55	-0.12656	-0.74680	-1.20
Seychelles	0.08	0.53	6,961.69	5,689.53	0.43	0.29	0.28	132.49	108.28	-0.14706	-0.76730	-1.24
Singapore	2.97	85.12	28,705	22,714	67.3566	133.93	149.30	420.49	332.74	1.425659	0.805423	1.30
Slovak Republic	5.35	17.32	3,238.64	6,915.29	37.07	10.63	11.20	58.91	126.08	0.149175	0.47106	0.76
Slovenia	2.00	18.91	9,458.66	10,969.26	21.93	9.81	9.78	89.31	103.58	0.086279	0.533957	0.86
Solomon Islands	0.38	0.32	831.82	2,289.81	0.88	0.26	0.22	55.19	150.95	-0.16723	-0.78747	-1.27
South Africa	42.47	133.93	3,153.45	4,112.22	174.65	32.29	32.01	36.82	48.01	0.487090	0.133146	0.21
Spain	38.69	559.62	14,464.98	14,500.15	560.98	132.33	132.45	47.20	47.31	0.154871	0.465365	0.75
Sri Lanka	18.61	13.00	698.83	3,479.51	62.93	6.46	4.88	18.02	87.19	-0.39285	-1.01309	-1.63
St. Kitts and Nevis	0.04	0.23	5,308.16	4,821.73	0.21	0.15	0.13	136.35	123.83	-0.19977	-0.82001	-1.32
St. Lucia	0.16	0.56	3,555.99	3,419.27	0.54	0.39	0.38	142.27	136.79	0.354434	0.265802	0.43
St. Vincent	0.11	0.26	2,345.38	2,317.77	0.26	0.18	0.13	118.84	117.42	0.249837	0.370399	0.60
Sudan	26.47	5.02	189.66	1,498.64	44.55	0.93	0.68	3.61	32.03	-1.49096	-2.11120	-3.40
Swaziland	0.91	1.15	1,263.38	4,012.44	3.64	1.03	0.90	52.97	168.21	-0.21474	-0.83498	-1.35
Sweden	8.85	230.61	26,070.11	19,022.67	168.27	79.79	94.35	103.49	75.51	0.407584	0.212652	0.34
Switzerland	7.06	306.14	43,391.25	23,405.53	165.14	97.10	110.53	125.73	67.82	0.447743	0.172493	0.28
Syria	14.36	47.57	3,312.62	5,809.70	83.14	6.61	4.75	13.66	23.88	-0.96094	-1.58117	-2.55
Taiwan, P. of China	21.41	257.63	12,035	15,701	336.1099	121.11	125.97	73.51	95.90	0.39728	0.222956	0.36
Tanzania	29.20	4.26	145.84	651.16	19.01	2.19	1.10	17.33	77.39	0.439460	0.180775	0.29
Thailand	59.67	162.76	2,727.78	7,849.51	468.35	82.67	71.11	32.84	94.49	0.183382	0.436854	0.70
Togo	4.12	1.30	314.83	1,236.05	5.09	0.50	0.45	18.70	73.40	-0.31454	-0.93478	-1.51
Tonga	0.10	0.16	1,682.92	1,469.78	0.15	0.11	0.04	105.99	94.71	0.309353	0.310883	0.50
Trinidad	1.35	5.12	3,777.81	8,930.90	12.10	1.90	2.11	33.12	78.29	-0.92412	-1.54436	-2.49
Tunisia	8.82	18.13	2,055.56	5,483.56	49.21	8.68	8.04	33.99	92.29	-0.15451	-0.77475	-1.25
Turkey	62.06	167.33	2,696.03	5,614.27	346.06	40.21	34.72	21.65	44.78	-0.0767	-0.69694	-1.12
Uganda	19.90	6.00	301.76	1,398.47	27.83	1.55	0.70	8.11	37.57	-0.76344	-1.38367	-2.23
Ukraine	51.70	36.01	696.41	2,814.49	145.52	17.64	16.44	23.42	94.65	0.256520	0.363716	0.59
United Kingdom	58.21	1,105.12	18,985.92	19,043.37	1,108.46	321.77	314.34	57.39	57.56	0.344734	0.275501	0.44
United States	263.07	7,253.77	27,573.82	26,429.36	6,952.70	902.05	807.35	24.59	23.57	-0.22490	-0.84513	-1.36
Uruguay	2.34	17.86	5,598.47	8,533.63	27.22	3.53	3.25	24.92	37.99	-0.94896	-1.56919	-2.53
Uzbekistan	22.50	10.67	474	2,473	55.63923	4.14	4.09	14.79	77.12	-0.37905	-0.99929	-1.61
Vanuatu	0.17	0.23	1,361.63	2,266.20	0.37	0.13	0.10	61.01	99.78	-0.30197	-0.92221	-1.49
Vietnam	74.35	20.19	271.57	186.50	13.82	9.00	6.94	115.31	78.94	3.145428	2.525193	4.07
Western Samoa	0.18	0.15	823.49	2,180.57	0.35	0.10	0.06	45.95	106.99	-0.57328	-1.19352	-1.92

Results of Trade Openness Regression

	Pop. 1/	GDP 2/	GDPPC	GDPPC 3/	GDP 3/	Imports 2/	Exports 2/	TOR 3/	TOR 4/	RESID	Dev. from ST	In % STD
Yemen	16.77	10.72	639.31	1,812.35	27.76	2.62	2.21	17.41	45.08	-0.18680	-0.80704	-1.30
Zambia	9.69	4.07	419.70	783.46	7.59	1.60	1.30	38.23	71.37	0.840572	0.220336	0.36
Zimbabwe	11.40	6.17	541.26	1,465.76	16.70	2.88	2.74	33.63	91.07	0.482142	0.138094	0.22

Source: Box 1.

1/ In millions of U.S.dollars.
2/ In billions of U.S. dollars.
3/ Adjusted for purchasing power parity.
4/ Not adjusted for PPP.

REFERENCES

Asilis, Carlos, M., and Luis Rivera-Batiz, 1994, "Geographic Trade Patterns and Economic Policy," Washington: *IMF Working Paper*. WP/97/16.

Balassa, Bela, and Luc Bauwens, 1988, *Changing Trade Patterns in Manufactured Goods: An Econometric Investigation*: Amsterdam: Elsevier Publishers.

Belkindas, Misha, and Olga Ivanova, eds., 1995, *Foreign Trade Statistics in the USSR and Successive States*, Washington: World Bank.

Blejer, Mario, and Marko Skreb, eds. 1997, *Macroeconomic Stablilzation in Transition Economies*, Cambridge, U.K. Cambridge University Press.

Collins, Susan, and Dani Rodrik, 1991, *Eastern Europe and the Soviet Union in the World Economy*, Washington: Institute for International Economics.

European Bank for Reconstruction and Development, *Transition Report 1997* (various pages).

Havrylyshyn, Oleh, and Lant Pritchett, 1991, "European Trade Patterns after the Transition," Washington: *World Bank Working Papers on Trade Policy*, WPS 748.

Havrylyshyn, Oleh, and Peter Kunzel, 1997, "Intra-Industry Trade of Arab Countries," Washington: *IMF Working Paper*, WP/97/47.

Kaufmann, Daniel, 1997 "The Missing Pillar of a Growth Strategy for Ukraine," Chapter 15 in Peter K. Cornelius and Patrick Lenain, (eds.) *Ukraine: Accelerating the Transition Market*, Washington: International Monetary Fund.

MacArthur, Alan, 1997, "Current Trade Policies and Proposals for Reform," Chapter 13 in Cornelius and Lenain (eds.), ibid.

Odling-Smee, John and Basil Zavoico, 1997 "External Borrowing in the Baltics and CIS Region—Financing the Transition to a Market Economy," Conference paper delivered at Dubrovnik Conference on Transition Economies, June 25-27, 1997.

Pritchett, Lant, 1991, "Measuring Outward Orientation: Can it Be done?," World Bank PRE-Working Paper. WPS 566, January 1991.

Rosati, Dariusz, 1993 "Problems of Post CMEA Trade and Payment." Chapter 5 in John Flemming and J. McRollo (eds.), *Trade Payments and Adjustment in Central and Eastern Europe*, London: Royal Institute for International Affairs and The European Bank for Reconstruction and Development.

Sachs, Jeffrey, 1993, *Poland's Jump to the Market Economy*, Cambridge, Massachusetts. The MIT Press.

Ukrainian—European Policy and Legal Advice Centre, 1997, *Ukrainian Economic Trends*, June 1997, Kyiv: Tacis Services.

Wang, Z. K. and Alan Winters, 1992 "The Trading Potential of Eastern Europe," *The Journal of Economic Integration*, Vol. 7, Issue, pp. 133-136.