European Bank
for Reconstruction and Development

How deep is your trade?

Transition and international integration in eastern Europe and the former Soviet Union

Ian Babetskii, Oxana Babetskaia-Kukharchuk and Martin Raiser

Abstract

This paper investigates the extent of integration of the transition economies into the world economy. We find that south-eastern Europe (SEE) and the Commonwealth of Independent States (CIS) trade significantly less with the world economy than the accession countries. We use a gravity model to explain why this is the case and conclude that the low quality of economic institutions in the CIS, and hence the high risks associated with trade, explain a considerable proportion of the "trade gap" compared to trade levels in industrialised countries. Moreover, the landlocked nature of many CIS countries (and hence high costs of transport and transit) is another reason for the lack of integration. In SEE these factors play a lesser role and the gravity model is unable to fully explain the lack of integration, which we suggest is a legacy of the region's recent turbulent past. The paper suggests that a combination of improved market access to western markets and efforts to reduce trade and transit barriers within the region provide the best hope to increase economic integration with the world economy in the future.

Keywords: Integration, gravity model, non-accession countries

JEL Classification Number: F13, F15, P33

Address for Correspondence: Martin Raiser, The World Bank Resident Office, International Business Center, 107 B, Amir Timur Street, Tashkent, Uzbekistan.

Phone: +998-71 138 5950; Fax: +998-71 138 5951, 138 5952; E-mail: mraiser@worldbank.org

The authors are: Ian Babetskii, graduate student at the Centre for Economic Research and Graduate Education (CERGE), Charles University, Prague; Oxana Babetskaia-Kukharchuk, graduate student at the Research Center on Transition and Development Economics (ROSES) in Paris and the State University - Higher School of Economics in Moscow; and Martin Raiser, World Bank Country Director for Uzbekistan. This paper was written while Ian Babetskii was an intern at the EBRD and Martin Raiser was in the Office of the Chief Economist of EBRD. Some of the results in this paper are published in the EBRD *Transition Report 2003.* The views in this paper are those of the authors only and not of the EBRD or the World Bank.

Working paper No. 83 **Prepared in November 2003**

INTRODUCTION

Openness is good for you. Countries that are integrated into the world economy benefit from technological linkages, access to ideas and larger markets. This is widely accepted amongst economists, although debates persist over the direction of causality between openness and economic performance (Frankel and Romer, 1999; Dollar and Kray, 2002; Rodrik, Subramanian and Trebbi, 2003). But what determines openness, and how do countries become integrated? Is trade liberalisation enough or does integration into the world economy require deeper policy changes, such as legal reforms or better governance (Berkowitz, Moenius and Pistor, 2003)? And are some countries at a geographical disadvantage, implying that they cannot benefit as much as others from international commerce because they face higher transportation costs (Limao and Venables, 2001; Gallup, Mellinger and Sachs, 1999)?

This paper attempts to answer some of these questions with reference to the transition economies of eastern Europe and the former Soviet Union. These countries are particularly striking examples of the process of growing international integration. Formerly a relatively isolated trade block, whose limited interactions with the world economy were based on state trading arrangements rather than market prices and decisions, the region now sends and receives more than two thirds of its goods and services to and from the rest of the world. However, the process of international integration has not been uniform across countries. Integration has been rapid and deep in the accession countries (ACs) of central eastern Europe and the Baltics.[1] In south-eastern Europe (SEE) and in the Commonwealth of Independent States (CIS), the degree of integration into world product and capital markets is far smaller.

The transition economies have also undergone radical policy changes, both in trade policy and in deeper institutional reform. Eight of the 27 countries in the region will join the European Union in 2004; 11 countries have joined the WTO since transition began (6 were founding members of the organisation in 1995). Eastern Europe and the former Soviet Union contain the greatest number of landlocked countries in the world. Of the 38 landlocked countries mentioned in Raballand (2003), 14 are transition economies, and 11 of these are in either SEE or the CIS. The transition economies, therefore, provide a very good opportunity to test the importance of trade policies, institutions and geography on the degree of international integration.

The paper uses a gravity model approach to examine the extent and determinants of integration in the transition economies. In this it follows Fidrmuc and Fidrmuc (2000) and Elborgh-Woytek (2003), who examine the degree of international integration of the transition economies and find that the CIS, in particular, trades far more with itself and far less with the outside world than would be predicted by the gravity relationship. However, this paper considerably expands the reference sample to include 82 countries overall. Moreover, we test a more complete set of potential determinants of the degree of integration than these papers did to investigate their relative importance. One key finding of the paper is that being landlocked and having poor institutional quality account for a large proportion of the gap between current and potential trade levels in the CIS, where trade potential is benchmarked against current levels of trade in the EU (for similar results on a more restricted sample, see Raballand, 2003). This result also applies to a number of other emerging market regions,

[1] This paper will refer throughout to the accession countries (ACs) as those eight transition economies due to acceded to the EU in May 2004. The AC group excludes Bulgaria and Romania, whose target date for accession is 2007, and Croatia. While Croatia has achieved quite high levels of economic reform and is geographically close to central Europe, its trade relations with the EU are governed by different agreements from those for the accession countries. For this reason it is analytically preferable for the purposes of this paper to treat it as belonging to the SEE group.

although it is not the case in SEE, suggesting that the negative effects of the violent break-up of former Yugoslavia are still being felt in SEE today.

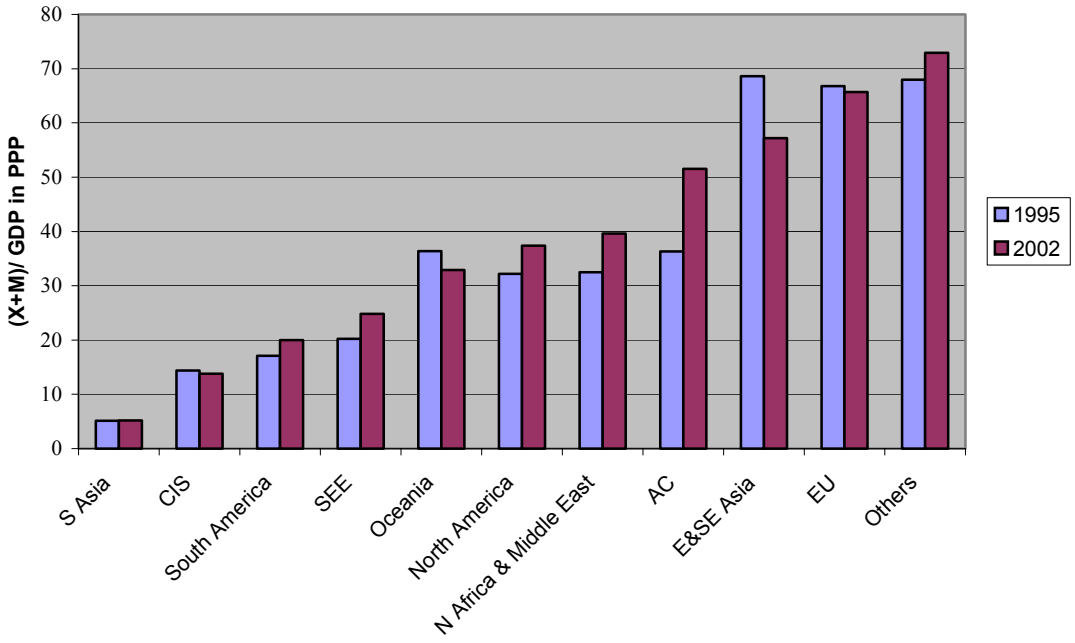
We measure the extent of integration by inserting dummy variables, to capture regional fixed effects, into a gravity model. In this, our approach follows Anderson and van Wincoop (2003), who suggest the inclusion of country fixed effects in a gravity model as measures of "multilateral resistance" – defined here as the degree of integration of a country with all other countries in the world. In our preferred estimations, we make the assumption that multilateral resistance is the same within each region. We also explore a specification where regional effects are aggregated from an estimation of country fixed effects. The country effects are strongly correlated with several of the other determinants of trade in our model and are, therefore, less easy to interpret. The qualitative results for the regional aggregates are not affected, however. The contribution of different factors to explaining the trade gap is measured by adding these factors progressively to a baseline gravity specification and each time looking at the impact this has on the multilateral resistance terms. This approach is similar to Rose (2002), who retrieves estimates of the impact of protectionist policies by looking at the country residuals of a gravity model, controlling for a host of potential determinants (but not for trade policy).

The remainder of the paper is structured as follows. Section 1 motivates the empirical analysis by reporting data on the development and geographical reorientation of trade in the transition economies. Section 2 surveys the main obstacles to trade in the transition economies. Section 3 introduces the data and explains the main empirical approach. Section 4 carries results and reports different robustness checks, and Section 5 concludes with some thoughts on policies that might increase the degree of integration in SEE and in the CIS.

1. THE LEVEL OF OPENNESS IN THE TRANSITION ECONOMIES

One summary indicator that measures the extent of integration of a country into the world economy is the ratio of the sum of its exports and imports to GDP. In Chart 1, this ratio is presented for two years, 1995 and 2002, and for different regions of the world, including the ACs, SEE and the CIS. Data for earlier years are incomplete for SEE and the CIS and are, therefore, not included.

Chart 1: Openness in different regions of the world



The chart reveals clearly the different extent of integration of the three sub-regions (AC, SEE and CIS) and how this has evolved since the mid-1990s.[2] In the ACs, a clear increase in the ratio of trade to GDP can be observed and the accession countries are now considerably more open than most emerging markets (not correcting for any other factors that might affect openness, as discussed below). In SEE, there is also a rise, but it is more moderate and the openness ratio remains at much lower levels throughout. In the CIS, there is hardly any change in openness between 1995 and 2002. According to the measure used in Chart 1, openness in SEE and in the CIS is around the same level as in South America, North Africa & the Middle East or South Asia but much below levels achieved in the EU or in East & South East Asia. This suggests that the CIS and SEE are similar to the less successful of the emerging markets in the extent of their integration into the world economy. It also raises the question whether they similarly face the risk of becoming "losers" of globalisation rather than "winners".

In Chart 1, the ratio of trade to GDP is measured using Purchasing Power Parity (PPP) exchange rates. This matters for the CIS countries in particular, which have some of the highest ratios of PPP to market exchange rates in the world. The literature offers no clear guidance on this point (see e.g. the survey of Berg and Krueger, 2003). We believe PPP rates to be a more reliable guide to the level of real income, because of the large initial undervaluation of currencies in the transition economies. One way to interpret the calculations in this paper is in terms of the long-term trade potential of the region, compared to current actual trade levels. Moreover, use of PPP rates gets around the counterintuitive results that

[2] The chart presents unweighted regional averages, but results are not much affected by the use of weighted averages.

because of the impact of productivity growth differentials on the real exchange rate, a country's openness measured at market rates could in principle decline as it gains in competitiveness. However, below we present gravity estimates of integration using both PPP and nominal exchange rates and show that our results are not qualitatively affected.[3]

The results in Chart 1 can be checked more formally with the help of a regression of the ratio of trade to GDP against GDP per capita, the size of the economy measured by its population, as well as regional dummies. Richer economies may trade more, for instance because the demand for foreign goods goes up disproportionately as income rises, or because of the growing importance of intra-industry trade. Larger economies are expected to trade less, ceteris paribus. At this stage, we are not yet interested in the role of geographical and policy obstacles to trade but simply in a description of the regional patterns of openness. We use IMF Directions of Trade Statistics for export and import data (to be consistent with the gravity results below), and GDP and population data from the World Development Indicators.

We estimated the following equation:

$$(1) \qquad \ln (X+M/GDP) = \text{const.} + \alpha \ln GDPpc + \beta \ln POP + \gamma Di + e,$$

where X are exports, M imports, GDPpc is GDP per capita, POP is population and Di is a regional dummy.

We have data for 82 countries overall, and the following geographic regions:

- AC: accession countries
- SEE: south-eastern Europe
- CIS : Commonwealth of Independent States
- EU: European Union
- SAM: South America (including Argentina, Bolivia, Brazil, Ecuador, Paraguay, Uruguay and Venezuela)
- ESASIA: East and Southeast Asia including China, Korea, Japan, Indonesia, Malaysia, Thailand, Philippines, Singapore and Vietnam
- SASIA: South Asia, including Afghanistan, Bangladesh, India, Nepal and Pakistan
- NAFMEAST: North Africa and Middle Eastern countries including Algeria, Cyprus, Egypt, Iran, Morocco, Saudi Arabia, Tunisia and United Arab Emirates
- NAFTA: North American Free Trade Area – Canada, Mexico and USA
- OCE: Australia and New Zealand
- Others: Iceland, Malta, Mongolia, Norway and Switzerland

[3] It should also be noted that our calculations account neither for the existence of significant shuttle trade and smuggling, particularly in SEE, the Caucasus and in parts of Central Asia, nor for the mis-measurement of GDP as a result of the large informal sector in many transition economies (e.g. Johnson, Kaufman and Shleifer, 1999). We have no priors as to the direction in which the resulting biases go, as they are mutually offsetting.

We choose the EU as a reference category in the regressions, so that all regional dummies can be interpreted as deviations from the EU average. Results are shown in Table 1.

Table 1: Openness in transition economies and other regions

	GDP PPP 1995	GDP PPP 2002	Net trade PPP
ln GDP	0.51*	0.48*	0.71*
	(0.10)	(0.09)	(0.09)
ln Population	-0.79*	-0.72*	-0.89
	(0.11)	(0.10)	(0.09)
CIS	-0.60*	-0.65*	0.16
	(0.22)	(0.22)	(0.27)
AC	-0.44*	-0.04	0.97*
	(0.15)	(0.15)	(0.20)
SEE	-0.90*	-0.42	0.79*
	(0.44)	(0.22)	(0.25)
S America	-0.65*	-0.48	0.09
	(0.23)	(0.26)	(0.25)
E & SE Asia	0.37	0.32	1.50*
	(0.28)	(0.26)	(0.22)
S Asia	-0.73	-0.77*	na
	(0.43)	(0.33)	
N Africa & Middle East	-0.36*	-0.25	0.88*
	(0.17)	(0.21)	(0.23)
NAFTA	-0.17	-0.07	-0.33
	(0.22)	(0.27)	(0.21)
Oceania	-0.70*	-0.75*	0.09
	(0.10)	(0.12)	(0.17)
Others	-0.39	-0.20	1.36*
	(0.22)	(0.23)	(0.31)
R2	0.76	0.83	0.81
No.	82	82	61

The first column shows results for 1995, the second column for 2002. Table 1 confirms that, measured at PPP rates the CIS and SEE are considerably less integrated into the world economy than the ACs are. In 2002, the CIS, South Asia and Oceania were the least open regions in our sample. The results do not differ much between 1995 and 2002, except for the ACs and SEE where the gap with the EU in terms of average openness narrows and in the former region becomes insignificant in 2002.

The aggregate results presented so far hide the very significant geographical re-orientation of trade flows from eastern Europe and the former Soviet Union away from the members of the

former Council for Mutual Economic Assistance (CMEA) towards market economies, mainly in western Europe. The extent of this re-orientation has differed strongly across the region, with the CIS generally remaining far more dependent on trade with other CIS countries (Fidrmuc and Fidrmuc, 2000; Michalopoulos, 2003) than with the ACs or SEE. To take this effect into account, we constructed a measure of openness netting out all intra-regional trade flows from the ratio of trade to GDP used above. This obviously makes more sense for some regions (EU, South America, NAFTA, East and South East Asia) than for others.

Column 3 in Table 1 present the results of estimating equation (1) using this corrected net trade ratio for 2002. The coefficients for most developing or transition regions are positive, reflecting the fact that the EU tends to trade a lot with itself and given the size of its internal market is less dependent on trade with the outside world (the same is true for NAFTA and to a lesser extent Oceania). However, the CIS dummy is not significantly different from zero, and significantly smaller than that for most other regions except South America, reflecting the high dependence on intra-CIS trade.

2. OBSTACLES TO TRADE IN TRANSITION ECONOMIES

What are some of the main obstacles that may keep trade in the CIS and in SEE below its long-term potential? Here we consider four sets of factors that present obstacles to trade. First, several of the CIS countries (as well as several of the other regions listed above) are located relatively far from their major potential trading partners in western Europe, North America and in East Asia. The geographical distance to these markets may increase transportation costs. This is particularly so in many CIS countries which are landlocked. Estimates for landlocked countries around the world suggest that transport costs may be up to 75 per cent higher than in countries with open access to seaports (Raballand, 2003, quoting Stone, 2001). Moreover, overland transport costs increase with distance and with the ratio of volume to value of goods shipped. Since many CIS countries have export structures concentrated in bulky commodities such as cotton, minerals or processed metal, the distance to markets and the lack of access to seaports are likely to reduce export competitiveness considerably.

Second, transport costs can increase as a result of inadequate transport infrastructure. Most centrally planned economies were relatively well endowed with rail and road networks, although some of these are now in significant disrepair. In SEE, moreover, the violent break-up of former Yugoslavia has led to the interruption of many transit routes and the destruction of roads, bridges and railway lines.

Third, borders tend to increase the costs of trade. With the disintegration of the former Soviet Union, Yugoslavia and of Czechoslovakia, numerous new borders have appeared on the territory of the transition economies. Djankov and Freund (2000) document the impact of these new borders on trade within the CIS. Between 1994 and 1997, trade among adjacent regions in Russia and neighbouring CIS republics fell considerably below trade of neighbouring regions within Russia. Grafe, Raiser and Sakatsume (2003) use price data to examine the degree of market integration in Central Asia, and find a high degree of disintegration. Borders do not just reduce trade between neighbouring countries, however. They also reduce trade in transit from one country to a destination market in a third country. The disintegration of the former Soviet Union, for instance, has led transit traffic to fall by some 70-90 per cent, much more than the falls in GDP across the region. Cumbersome customs procedures, corruption, non-harmonised transit regulations and difficulties in enforcing international conventions such as the TIR convention are major reasons for the high costs of crossing borders in the CIS and in SEE (for the CIS see Ojala and Molnar, 2003). For the ACs, on the other hand, accession should provide a significant additional boost to trade, as it will lead to the elimination of numerous national borders at least for the transit of goods and capital by May 2004.

Finally, trade policies and the quality of governance may also affect trade levels. Trade taxes discourage trade directly, both at home and in partner countries.[4] The quality of institutions also matters, particularly for trade across long distances and in complex products (Greif, 1993; Berkowitz, Moenius and Pistor, 2003). When two businesses that have no prior knowledge of each other trade, they will often require recourse to a third party to give them assurances that their contracts will be enforced. Trade policies and institutional quality vary significantly around the world and across the transition economies. In general the transition

[4] Wang (2001) presents results using aggregate trade by sectors to estimate the impact of tariff and non-tariff barriers on import shares. His estimates suggest that a 1 per cent increase in tariffs of the home country reduces import shares in the home country by around 2 per cent. The quantitative results for non-tariff barriers are somewhat smaller but nonetheless highly significant. ITC (2003) provides gravity estimates of the impact of market access barriers on bilateral trade flows which are considerably lower but nonetheless quantitatively important. Subramanian and Wei (2003) show that WTO membership significantly boosts trade at least in the industrialised countries and those countries that joined after the Uruguay round, as these countries have undertaken the greatest liberalisation efforts under the WTO.

economies belong to the countries with relatively open trade regimes. For instance most of the ACs and several SEE and CIS countries have an IMF rating for trade restrictiveness that is better than that for the EU. However, the CIS also includes three countries with highly restrictive trade policies: Belarus, Turkmenistan and Uzbekistan. Institutional quality in the ACs is generally good, and better than for countries with similar income levels, whereas the CIS countries score worse than countries at similar levels of income on some measures of economic governance (Weder, 2001).

We now turn to a more formal investigation of the impact of these factors on trade flows to and from the transition economies, relative to a set of industrialised and developing countries. This allows us to test whether the lower degree of openness in the CIS and in SEE is primarily due to higher transport costs, worse trade policies and lower institutional quality, or whether other factors are at work.

3. ACCOUNTING FOR THE TRADE GAP: A GRAVITY APPROACH

In principle, it would be possible to define variables for each of the obstacles to trade listed above and to introduce these directly as additional regressors into equation (1) and see what impact they have on the regional dummies. However, the trade barriers, and transport and transit obstacles faced by traders depend very much on the trade route chosen and on the trading partner for the specific transaction. An aggregation to the level of a country's total trade misses this important variation. Alternatively, one can use a gravity model to explain the degree of bilateral trade between two countries, taking into account their location relative to each other, the nature of the trade route (i.e. how many borders need to be crossed), and trade policies and institutional quality in both the home and the sending country. This is the approach pursued in this paper.

The gravity model is consistent with different classes of models of international trade, such as trade based on differences in factor endowments or technologies, as well as trade based on product specialisation resulting from imperfect competition and increasing returns to scale.[5] As such, the gravity model is quite flexible, and has seen numerous empirical applications to test for border effects (McCallum, 1995; Anderson and van Wincoop, 2003), the impact of regional trade blocks (for a summary see Schiff and Winters, 2003), or the impact of a common currency on bilateral trade flows (Frankel and Rose, 1997). Recently, researchers have also looked at which kinds of institutions promote international trade and at the impact of protectionism on trade flows in the context of a gravity model (Koukhartchouk and Maurel, 2003; Rose, 2002; Subramanian and Wei, 2003). These latter papers are most closely related to this paper.

The basic gravity relationship makes the level of bilateral trade between two countries a function of their respective levels of income, a vector of transport and trade costs between them, and a measure of each country's propensity of trade with all other countries (Anderson and van Wincoop (2003) call this "multilateral resistance"). In log-linear form, the model becomes:

$$(2) \qquad \ln X_{ij} = \alpha + \beta \ln Y_i + \gamma \ln Y_j + \delta \ln Dist_{ij} + \zeta C_i + \eta C_j + \varepsilon_{ij,}$$

where Xij are exports from country i to country j, Yi is GDP in country i. Distij is a vector of bilateral transport and trade obstacles, and Ci, Cj are the multilateral resistance terms.

The model proposed by Anderson and van Wincoop (2003) imposes the constraint, $\beta=\gamma=1$, but in many empirical applications this is relaxed. Moreover, allowing for non-homothetic preferences (an assumption of the theoretical gravity model) additionally introduces the size of both countries' population into (2).[6] For our purposes, the interest lies mainly in defining the vector Distij and the country specific constants Ci and Cj. Many researchers have tried to approximate the terms Ci, Cj with measures of a country's remoteness from world markets, using a trade-weighted average distance measure. As Anderson and van Wincoop (2003) argue this is largely ad hoc. Instead, they suggest estimating (2) with non-linear methods, thereby expressing Ci, Cj as non-linear combinations of Yi, Yj, and Distij, or replacing these terms simply with fixed country effects. Following the above discussion, geographical distance, the quality of infrastructure, border effects, trade policies and the quality of institutions all enter as elements of Distij. The constant terms Ci, Cj can then be interpreted as measures of the unexplained multilateral resistance or trade gap.

[5] Deardorff (1998) surveys the theoretical foundations of the gravity model. A recent contribution includes Anderson and van Wincoop (2003).

[6] As the estimates in the previous section showed that openness is positively associated with GDP per capita, we would expect the impact of the size of a country's population on trade to be negative.

The approach in this paper is to estimate several specifications of (2), adding progressively more components of Distij to our model and analysing the impact this has on the multilateral resistance terms Ci, Cj. Because these terms can be thought of as a non-linear combination of all obstacles to trade, introducing more elements of the vector Distij should affect the estimates of the unexplained trade gap. In concrete terms, while developing or transition economies may be trading a lot less than industrialised economies if we account only for the size of their economies (as in the previous section), this may no longer be the case, once we take into account factors such as distance, being landlocked or restrictive trade policies. We impose that Ci = Cj for each country. In other words, we do not distinguish between exports and imports from country i and to country i. (we plan to relax this assumption in future work). If a country's trade is balanced this assumption will hold – if on the other hand it exports far more goods to all other countries in the sample than it imports from them, the trade gap Ci would be smaller than the trade gap Cj. The trade gap can be defined relative to the sample average or relative to a specific region. Below we report trade gaps relative to the EU.

Our approach faces one difficulty: because the Ci, Cj are highly correlated with some of the determinants of trade we want to include in the model, this leads to unreliable estimates with some right hand side variables assuming the wrong sign. We, therefore, proceed initially on the assumption that the multilateral resistance terms are constant across major geographical areas around the world. This is a strong assumption and we test the robustness of the calculated trade gaps against an alternative procedure, whereby we calculate regional average trade gaps from the estimates of individual country effects Ci, Cj.

The elements of Distij are defined and the sources of data given in Table 2. The elements are grouped in the following way:

Distance/baseline – this element has two components: a) geographical distance between countries i and j (DISTij), and b) exchange rate volatility between countries i and j, measured on the basis of monthly data (erv1). These two components together with GDP and population in country i and j form our basic group of control variables, to which we successively add border effects, infrastructure, trade policies and institutions.

i) Border effect – this has two components: a) a dummy for the existence of a common border between two countries, a variable used in many other studies (CommonBord), and b) the number of borders a country needs to cross to reach a partner country (nborders_ij). In constructing nborders_ij, we took the minimum number of borders that goods would need to cross, assuming that shippers would always prefer to ship over a longer distance by sea than take a direct overland route if the latter involved crossing more borders. However, the number of border crossings within the EU was set to zero. We also experimented with dummies for landlocked countries, but these worked less well than the two variables retained above.

ii) Infrastructure – this is measured by the road and rail density in both the home and the partner country (DnRoutei; DnRoutej). In principle it might be possible to create a variable that measures the quality of infrastructure for each trade route DnRouteij, but this is beyond the scope of this paper.

iii) Trade Policy - measured by WTO membership and a trade restrictiveness index constructed by the IMF. WTO membership is entered only when both countries are members (following Rose, 2003). Trade policies are entered both for home (imf_ori) and partner country (imf_orj). In addition, we control for the effect of Free Trade Agreements on bilateral trade flows, using the same set of FTAs as reported in Subramanian and Wei (2003).

iv) Institutions - measured by the average of the World Bank's governance indicators for rule of law, the extent of corruption and the quality of regulation.[7] The institution scores are entered separately for country i (WBi) and country j (WBj). We also experimented with entering infrastructure, institutions and trade policies as a product of country i and country j on the basis that improvements in one country may be less effective in supporting trade if not accompanied by similar improvements in their trading partners. Results do not change much and we prefer the additive representation for ease of interpretation.

Table 2: Data description and sources

Time period: 1997-2002, annual

Group	Variable	Description	Formulas	Source
	LnTrade ij	Log of bilateral trade (export of country i to country j), Exports - US$ million		IMF-DOTS
Baseline model	LnGDPi	LnGDP for country i, GDP in PPP or nominal, US$ million		GDP in PPP - CHELEM-CEPII, Nominal GDP - WDI
	LnGDPj	LnGDP for country j, GDP in PPP or nominal, US$ million		GDP in PPP - CHELEM-CEPII, Nominal GDP - WDI
	LnPOPi	Log of population in country i, POP - million of people		CHELEM-CEPII
	LnPOPj	Log of population in country j, POP - million of people		CHELEM-CEPII
	Erv1	Bilateral exchange rate volatility	$erv1 = \sigma\left[\frac{e_{ij} - e_{avg}}{e_{avg}}\right]$	Authors calculation using Bloomberg Exchange rate data
	LnDISTij	Log of bilateral distance		www.cepii.fr
Border effects	Common Bord	Dummy for common border	1 if common border; 0 other wise	Authors calculation using World Factbook 2002
	NBorders ij	Number of borders to cross to reach partner country	equal to [0, 1, 2, or 3]	Authors calculation using World Factbook 2002
Infrastructure	DnRoute i	Density of roads and railroads per 1 km in country i	DnRoutei=(dnraili+dnroadi) /1000	Authors calculation using World Factbook 2002

[7] The indicators can be found on www.worldbank.org/governance.

	DnRoute j	Density of roads and railroads per 1 km in country j	DnRoutej=(dnrailj+dnroadj) /1000	Authors calculation using World Factbook 2002
Trade policy	WTO	Dummy for WTO membership (both are WTO members)	1 if both are WTO member; 0 otherwise	Authors calculation using WTO Web site
	FTA	Dummy for FTA	1 if there is a FTA between couple of countries; 0 otherwise	Authors calculation using WTO Web site
	IMF_OR i	IMF Trade Restrictiveness index. Country's i Overall Rating	ranges from 1 to 10	IMF Trade Restrictiveness index
	IMF_OR j	IMF Trade Restrictiveness index. Country's j Overall Rating	ranges from 1 to 10	IMF Trade Restrictiveness index
Institutions	WB I	Average of WB inst. (corruption, rule of law, regulation quality) for *i*	wbi=(wb_cci+wb_rli+wb_rqi)/3; ranges from [-2,5; +2,5]	Authors calculation using WB Indicators
	WB j	Average of WB inst. (corruption, rule of law, regulation quality) for *j*	wbj=(wb_ccj+wb_rlj+wb_rqj)/3; ranges from [-2,5; +2,5]	Authors calculation using WB Indicators

Before proceeding to results, one caveat is in order. We have found that the gravity estimates are quite sensitive to specification. Because of collinearity between the country specific variables (e.g. GDPi, Popi, DnRoutei, imf_ori, WBi) and the regional or country dummies, some specifications yielded implausibly signed coefficients. The specifications presented below are those that appeared most plausible. However, in all the different models run, the ranking of the country or regional effects remained relatively unaffected. This is one of the reasons why we believe our approach of measuring trade gaps is potentially more robust than the alternative of calculating potential trade using the coefficient estimates from a gravity equation and simulating over parameter values for a different country or region.

4. RESULTS

We have data for 82 countries and for six years (1997-2002), yielding 39,852 potential observations. We exclude countries from Sub-Saharan Africa because of incomplete data on trade and several other variables used in our estimations. The sample represents roughly 95 per cent of total worldwide trade flows, and includes all major economies in emerging Asia, Latin America, as well as all OECD countries, in addition to the 27 countries of eastern Europe and the former Soviet Union.

In estimating the gravity model as in equation (2) we start with a baseline specification including just the elements of Distij listed in block i) above. We then add progressively the variables in the other blocks. We are interested in what impact this has had on the trade gap for each country. The econometric specification for the full model is:

$$(3) \quad \ln X_{ijt} = \alpha_1 \ln(GDP)_{it} + \alpha_2 \ln(GDP)_{jt} + \alpha_3 \ln(Pop)_{it} + \alpha_4 \ln(Pop)_{jt} + \alpha_5 erv1_{ijt} + \alpha_6 \ln(Dist)_{ij} + \alpha_7 DnRoute_i + \alpha_8 DnRoute_j + \alpha_9 CommonBord_{ij} + \alpha_{10} nborders_{ij} + \alpha_{11} FTA_{ijt} + \alpha_{12} WTO_{ijt} + \alpha_{13} imf\_or_{it} + \alpha_{14} imf\_or_{jt} + \alpha_{15} WB_{it} + \alpha_{16} WB_{jt} + \alpha_{17} C_i + \varepsilon_{ijt},$$

where ln stands for the log operator, the t subscript indicates time and all variables are defined as in Table 2. Note that the infrastructure and border effects are constant over time, whereas trade policy and institutional quality varies over time. In the majority of estimations presented below the Ci are captured by regional dummies, but we also present the results of including country specific effects and averaging these for each region.

In estimating (3) we face the choice between a panel estimator or the use of a "between" estimator on period averages. In the case of a panel estimator εijt can be divided up into a fixed bilateral effect, a time varying bilateral effect and white noise. In our estimations it was not possible to reject the hypothesis of correlation between the fixed bilateral effect and the other regressors, implying that a fixed effects estimator should be used. This has the disadvantage that all time invariant variables are dropped from the model.[8] At the same time, analysis of variance indicated that the contribution of within country variation over time was minimal compared to cross-country variation. We, therefore, selected period average estimates of (3) by the between estimator as our preferred model.[9]

[8] We tried to apply a Hausman Taylor estimator, but failed to obtain sufficiently strong instruments among the set of regressors. See Carrere (2003) for details on the Hausman-Taylor method in the context of a gravity panel estimation.

[9] Because we have an unbalanced panel, we chose a weighted least squares estimator for the period average OLS specification, where weights are constructed in a way to correct for the absence of observations for some years in several countries. Two stage fixed effects estimates, where the country fixed effects are first retrieved from a baseline gravity estimation and then regression in a second stage against time-invariant elements of DISTij are available from the authors upon request.

Table 3: Regression results full model

	Reg 1	Reg 2	Reg 3
LnGDPPi	1.62***	0.45***	0.65***
	(0.06)	(0.12)	(0.03)
LnGDPPj	1.13***	-0.02	0.56***
	(0.06)	(0.12)	(0.03)
LnPOPi	-0.46***	0.75***	0.49***
	(0.06)	(0.12)	(0.04)
LnPOPj	-0.17***	1.01***	0.39***
	(0.06)	(0.12)	(0.04)
erv1	2.71***	3.18***	7.60***
	(0.46)	(0.79)	(0.47)
LnDISTij	-1.41***	-1.47***	-1.46***
	(0.04)	(0.04)	(0.04)
Common_Bord	0.12	0.77***	0.15
	(0.12)	(0.14)	(0.12)
nborders_ij	-0.18***	0.34***	-0.31***
	(0.05)	(0.11)	(0.05)
DnRoutei	0.12***	0.31***	0.18***
	(0.03)	(0.03)	(0.03)
DnRoutej	0.14***	0.31***	0.18***
	(0.03)	(0.03)	(0.03)
WTO	0.24***	0.99***	0.02
	(0.07)	(0.13)	(0.07)
FTA	0.23***	0.55***	0.36***
	(0.08)	(0.08)	(0.08)
imf_ori	-0.03**	0.51***	-0.01
	(0.01)	(0.06)	(0.01)
imf_orj	-0.08***	0.47***	-0.07***
	(0.01)	(0.06)	(0.01)
wbi	0.12**	0.82***	0.57***
	(0.06)	(0.10)	(0.06)
wbj	0.10*	0.81***	0.31***
	(0.06)	(0.11)	(0.05)
eu_world	-0.24***		-0.17**
	(0.08)		(0.08)
ac_world	-0.57***		-0.29***
	(0.08)		(0.08)
see_world	-1.18***		-0.70***
	(0.10)		(0.10)
cis_world	-0.71***		-0.53***
	(0.10)		(0.10)

	Reg 1	Reg 2	Reg 3
nafta_world	-0.32**		0.03
	(0.12)		(0.13)
sam_world	-0.06		-0.03
	(0.11)		(0.11)
eseasia_world	0.16		0.26**
	(0.10)		(0.10)
sasia_world	-0.91***		-1.14***
	(0.12)		(0.12)
nafmeast_world	-0.49***		-0.44***
	(0.08)		(0.09)
oce_world	0.35**		0.62***
	(0.14)		(0.14)
constant	-15.50***	-1.97	-1.00*
	(0.84)	(1.87)	(0.52)
Number of obstacles	33802	33802	33802
Number of groups	6138	6138	6138
R-sq: within	0.01	0.00	0.00
Between	0.76	0.8	0.75
Overall	0.72	0.74	0.69
F test	744	299	701
Prob > F	0.000	0.000	0.000

Note: in Reg 1 and 2 we use GDP in PPP, in Reg 3 nominal GDP is used. We estimate Reg 2 using country dummies; country dummies are not reported. Standard errors are in brackets.

*, **, *** define 1per cent, 5 per cent and 10 per cent significance level respectively.

Table 3, column 1 reports the basic regression results of the full model in (3) for the period average 1997-2002. The results conform mostly with prior expectations. The elasticity of bilateral trade with respect to GDP is quite high in the between specification, confirming results in ITC (2003) for a sample of developing and transition economies. The impact of a country's size in terms of population is negative. By and large these results are consistent with those in Section 2. The impact of exchange rate volatility is positive in our estimation – possibly because our period of investigation includes the Asian crisis, where there was significant exchange rate volatility in some of the most open countries in the sample. Indeed,

estimating (3) year by year yields a positive coefficient for erv1 in 1997 and in 2000 and insignificant coefficients in all other years.[10]

Turning to the various trade and transport obstacles, geographical distance exerts a strongly negative effect on bilateral trade flows, which is exacerbated if the density of transport infrastructure in either trading partner is low. A 1 per cent increase in distance reduces trade by around 1.4 per cent in our estimations. A common border increases bilateral trade by around 15 per cent, and for each additional border that goods need to cross trade declines by another 15 per cent. Road and rail density varies in our sample between a low of around 0.5 in North Africa and the Middle East and a high of around 1.2 in the EU. This difference accounts for less than 10 per cent difference in total trade of country i or country j. The impact of infrastructure on trade is, therefore, significant but quantitatively not so important.

More liberal trade policies by and large contribute to greater integration. Trade between two WTO members is, other things being equal, around 25 per cent higher than trade between non-members.[11] An FTA also boosts trade by around 25 per cent in our sample, which is considerably lower than estimates in Subramanian and Wei (2003) of around 80 per cent, but nonetheless quantitatively important. Trade liberalisation, measured by the IMF index has a significant positive effect on trade flows. The IMF index ranges from 1 (fully liberal) to 10 (fully restrictive). According to our estimates, the difference between a fully liberal and a fully restrictive trade regime would account for around 25 per cent difference in trade by country i and around 70 per cent difference of trade in country j. This asymmetry is interesting, because it suggests that exports from country i to country j benefit more from liberalisation in country j than in the exporting country.

The impact of institutional quality on trade flows is also sizeable. A one point increase in the average governance score (which ranges from –2.5 to +2.5) leads to a 10 per cent increase in exports from country i and imports into country j. The governance scores are highly correlated (correlation coefficient of 0.87) with GDP per capita. Collinearity with $GDPi_{,}j$ and $Popi_{,}j$ thus reduces the impact of $WBi_{,}j$. As we shall see below, however, the inclusion of WBi and WBj affects significantly the estimated trade gap for several regions and in particular for the CIS.

Table 3 also reports the coefficients for 10 regional dummies, where the group of "other" countries (Iceland, Malta, Mongolia and Norway) is subsumed in the constant. Comparing the results in column1 of Table 3 to the regression results in Table 1 yields some interesting changes in regional rankings in terms of openness and integration. For instance, South America, which was among the less open regions in Table 1, trades no less than the EU, once other factors than the size of the economy are taken into account. The same is true for Oceania, which now has a significant positive coefficient. In both instances, geographic distance to major markets is the key factor explaining lower openness and once this is controlled for the trade gap vanishes. The CIS still has a negative coefficient in Table 3 but it is now much closer to the coefficient for the ACs and significantly higher than that for South Asia. SEE by contrast remains among the least integrated regions in our sample, even once geographical and policy factors are taken into account.

The coefficient estimates for the regional dummies can be converted into estimates of "trade gaps" relative to the EU by taking the difference in the dummy coefficients between region i and the EU and taking exponents. Table 4 reports the estimated trade gaps for the different

[10] Results available upon request. These estimates also confirm that the trade gaps between the ACs and the EU narrow over time, whereas there is little change over time in the trade gaps for SEE or for the CIS.

[11] Note that when we introduce a dummy for WTO membership for each trading partner separately this turns out to be negative, although it is relatively highly correlated with GDP per capita and the extent of trade liberalisation and this may account for this unexpected result.

regions all relative to the EU. A number below one indicates that a particular region is less integrated into the world economy than the EU. The table shows the calculated trade gaps for five different specifications (regression results are shown in Annex Table A.1). Model 1 only contains GDP, geographical distance and exchange rate volatility. Model 2 adds the border effect (common border dummy and number of borders to cross), model 3 adds the density of the road and rail networks, model 4 adds all trade policy and market access related variables and model 5 adds the World Bank governance scores.

Table 4. Trade gaps to the EU by region (between estimations, GDP in PPP)

Model	1		2		3		4		5	
	baseline model		baseline model +border effect		baseline model +border effect +infrastructure		baseline model +border effect +infrastructure +trade policy		baseline model +border effect +infrastructure +trade policy +institutions	
eu_world	100	-	100	-	100	-	100	-	100	-
ac_world	67	***	71	***	73	***	68	***	72	***
see_world	31	***	32	***	34	***	36	***	39	***
cis_world	42	***	46	***	48	***	56	***	63	***
nafta_world	78	**	80	**	92		92		93	
sam_world	106		104		126		123		128	*
eseasia_world	155	***	152	***	126	***	123	***	128	***
sasia_world	51	***	51	***	46	***	51	***	51	***
nafmeast_world	60	***	59	***	65	***	74	***	79	***
oce_world	168	***	163	***	191	***	184	***	181	***

Notes:

F test : Ho=eu_world - xxx_world=0, for more details see Table A2

*** - difference to the EU is significant at 1per cent, ** - 5 per cent, * - 10per cent,

- insignificant: there is no difference in coefficients.

Table 4 provide an intuitive summary of the impact of different trade obstacles on the residual trade gap by region. For instance, in the base case, the trade gap between the EU and the CIS is around 60 per cent. In the final model, the gap has narrowed to 37 per cent. The biggest impact in the CIS comes from controlling for institutional quality, which reduces the trade gap by 7 percentage points. The border effect is also large for the CIS countries, narrowing the gap to the EU by 4 points. The only other region among the developing and transition economies where border effects are similarly important are the ACs, and the impact of institutional quality is smaller in all other regions. The impact of trade liberalisation and WTO membership is largest in North Africa & the Middle East, but also notably large in South Asia and the CIS. The combined results suggest, however, that for the CIS in particular, further trade liberalisation will be insufficient to close the trade gap and that it needs to be accompanied by further efforts in institutional reforms. This conclusion applies also to SEE, although it is clear from Table 4 that other factors account primarily for the low degree of integration of SEE into the world economy. Political instability and ethnic conflict are

perhaps among the more important of these factors, but SEE has recently made progress on both fronts and may in time benefit through increased integration.

To check the robustness of our results, we turn to estimates of (3) using country dummies rather than regional dummies. We set the country effects for all EU members equal to each other for ease of interpretation. The parameter coefficients for the full model estimated for period averages are in column 2 of Table 3. Clearly parameter estimates are affected by the inclusion of country fixed effects instead of regional dummies. The elasticities of trade with respect to GDP drop significantly, becoming insignificant in the case of GDPj and the coefficients on population change sign. The number of borders that trade flows need to cross now also has an unexpected positive sign. Moreover, the IMF trade liberalisation index has the wrong sign and the coefficient is very large, implying a 450 per cent increase in trade if either country i or country j were to move from a fully liberal to a totally restrictive trade regime.

The sensitivity of our results to the inclusion of country rather than regional dummies results from the strong correlation between the country fixed effects and the vector of trade and transport obstacles, which makes an interpretation of coefficient estimates difficult. However, as shown in Table 5, the average trade gaps by region and the ranking of regions in terms of their trade gaps to the EU are not significantly changed. Table 5 presents average regional trade gaps derived from the country fixed effect estimates in Annex Table A.2, calculated again for five different specifications adding progressively more controls. Significant trade gaps (at a 5 per cent level or better) are shown in bold. The last column of the table shows that when all controls are included only Oceania and South Asia retain a significant trade gap to the EU. For the CIS, once more the impact of institutional quality dominates the impact of all other factors. The trade gaps with the EU for South America, North Africa & Middle East and East & South East Asia are insignificant in most cases.

Table 5: Trade gaps to the EU by region
(between estimations, average country effects, GDP in PPP)

Model	1	2	3	4	5
	baseline model	baseline model +border effect	baseline model +border effect +infrastructure	baseline model +border effect +infrastructure +trade policy	baseline model +border effect +infrastructure +trade policy +institutions
eu_world	100 -	100 -	100 -	100 -	100 -
ac_world	**74** **	**62** ***	**67** ***	139	220 *
see_world	**33** ***	**31** ***	**33** ***	**50** **	117
cis_world	**49** ***	**42** ***	**43** ***	**41** ***	98
nafta_world	88	77	**85** *	96	109
sam_world	130	110	125	86	144
eseasia_world	238	210	170	250	185
sasia_world	**29** ***	**29** ***	**28** ***	**5** ***	**6** ***
nafmeast_world	82	74	91	206	489
oce_world	**269** ***	**221** ***	**273** ***	**578** **	624 *

An examination of the trade gaps for individual transition economies in Table A.2 shows that within the CIS, Russia is clearly much more integrated into the world economy than the other former Soviet Republics. The Caucasus, Moldova, Belarus and Uzbekistan in particular appear to conduct very little trade with the world economy. The same is true for Albania and Serbia and Montenegro, whereas Croatia and Bulgaria are clearly much more integrated into world markets.

Finally, we return to the issue of the choice of exchange rates to calculate the degree of integration. We repeated the entire empirical exercise reported above using GDP in current US dollars. The basic regression results are in column 3 of Table 3. The implied trade gaps are shown in Table 6 below.

Table 6: Trade gaps for regional blocks (between estimations, GDP in current US$)

Model	1	2	3	4	5
	baseline model	baseline model +border effect	baseline model +border effect +infrastructure	baseline model +border effect +infrastructure +trade policy	baseline model +border effect +infrastructure +trade policy +institutions
eu_world	100	100	100	100	100
ac_world	62	70	72	71	88
see_world	36	38	40	42	59
cis_world	26	32	34	42	70
nafta_world	100	100	100	125	118
sam_world	58	58	66	70	118
eseasia_world	133	129	100	127	153
sasia_world	28	29	25	33	38
nafmeast_world	42	42	48	58	76
oce_world	223	208	255	255	219

Interestingly, the results hardly change at all. The trade gap for the CIS is now 30 for the full model, and 74 for the baseline specification. For SEE, the trade gaps are slightly smaller than in the PPP case, but again not very different from the results in Table 4. What accounts for this similarity, when we indicated above that the choice of exchange rates matters for the calculation of openness? The reason is that the major difference between the two sets of gravity result is in the estimates income elasticity of trade. In the nominal GDP case, this is much lower at around 0.6 for both lnGDPi and lnGDPj for the full model against 1.6 and 1.1 for lnGDPi and lnGDPj (see Table 3, column 3 for regression results). Moreover, the impact of the size of the population of a country and its trading partner is now positive. As mentioned above, the literature provides little guidance on the choice of exchange rates. However, we show here that if the degree of integration of an economy is measured using a gravity approach, this choice does not matter.

7. CONCLUSION

This paper has argued that the integration of the transition economies into the world economy remains incomplete. Although trade has been significantly reoriented away from the CMEA and towards western market economies over the past decade, the transition economies as a group still trade less than one might predict given their income levels and geographical location. This is true in particular for SEE and for the CIS. While in the former, the reasons need to be sought largely in the enduring legacy of regional conflict in the Balkans, in the CIS, the main reason for the lack of integration is the weakness of economic institutions. Moreover, the lack of regional cooperation, particularly in the Caucasus and in Central Asia, greatly increases transport and transit costs to world markets and is an obstacle to international integration.

What could be done to increase international integration in the non-accession countries? The results in this paper suggest that institutional reforms would be key. Indeed, one of the most important benefits of the accession process has been that it has provided an anchor for institution building in the candidate countries, which have consequently outperformed the non-accession transition economies by a wide margin in this area (Di Tommaso, Raiser and Weeks, 2001). Could a similar external anchor be applied to SEE and the CIS? The European Commission has developed a vision of deeper integration with its future neighbours through the Stabilisation and Association process in the western Balkans and through its Communication on a Wider Europe in the western CIS (European Commission, 2003). The idea of the EU's external commercial policy is to link improved market access to institutional reforms in the area of competition policy and state aid, investment policy and government procurement and to support such institution building through technical assistance and grant funding (CARDS and TACIS).

The explicit link between market access and institutional reforms is consistent with the view that only countries characterised by the operation of competitive markets at home should be allowed free access to the EU's common market in order to prevent competition in the EU to be distorted. It is also consistent with the EU's push to integrate issues related to competition policy, investment regulation and government procurement into international trade negotiations (the so-called Singapore issues). In principle, improved market access might provide incentives sufficient to increase reform momentum in the non-accession countries, and – if supported with significant financial assistance – could make a valuable contribution.

Yet, there are doubts whether the EU's approach of linking market access to progress on deeper integration (i.e. involving the gradual harmonisation of rules and regulations with those of the common market) can work effectively in the non-accession countries. These countries would be asked to take over a body of laws and regulations over which they have no direct political say, because as non-members they would not participate in the policy-making process in the Commission and other European institutions (see also Hamilton, 2003). At the very least, the process could be politically complex and unpopular at home and this could lead to severe delays in institutional harmonisation, and as a consequence also in improved market access. Indeed, the reluctance of several developing countries to engage in negotiations over the Singapore issues because they had not been granted improved market access in key sensitive sectors, such as agriculture, was probably one reason for the recent failure of trade talks at Cancun.

If the EU is likely to have more limited leverage over institutional reforms in the non-accession countries, would other external anchors work better? For those CIS countries not yet WTO members, this could clearly provide an important potential boost to institution building as well as international integration. In particular, if Russia were to join the WTO this could provide a significant boost to those CIS countries which are already WTO members but have reaped limited benefits so far, because of remaining market access restrictions and transit obstacles in and through Russia. Nonetheless, the role of the WTO is also naturally

limited, not least because it has few resources at its disposal to support the process of institution building and membership conditions on small developing or transition economies, which tend to be relatively non-onerous given the limited interest these countries present in world trade (see also Subramanian and Wei, 2003).

The role of external anchors is, therefore, likely to be limited in promoting institutional reform and thereby facilitating international integration of the non-accession countries. However, there is arguably a less ambitious but potentially potent way for external actors to positively influence international integration of these countries. This – quite simply – is through granting improved market access without heavy institution building conditionality. Free trade access to the EU market and to the markets of industrialised countries more generally, against limited liberalisation of trade regimes in the non-accession countries themselves, could provide a significant boost to competition in SEE and in the CIS, attract investment flows and ultimately shift economic opportunities in favour of pro-reform constituencies. This may well be the most effective and most feasible way to support reform and integration in the non-accession countries (as elsewhere).

Negotiations over a free trade agreement should not be conducted bilaterally with individual countries. Already the EU has offered free trade to all members of the Stability Pact for South East Europe against these countries' agreement to conclude free trade agreements among themselves. This is a good example of limited reciprocity in trade negotiations that could have a significant impact on the development of commerce in SEE. A similar approach might be adopted with the CIS. This also suggests that closer regional integration between the CIS countries – not least to overcome the significant barriers to transit trade – could be a complement to integration with the world economy rather than a substitute. Far from locking the CIS into non-competitive trade patterns, a reduction of intra-CIS trade and transit barriers would be the best guarantee that those countries located on the periphery of the CIS would truly benefit from improved market access to the EU. Similarly western CIS countries would then be able to benefit from the proximity of their Central Asian republics to the Chinese and South Asian markets.

Transition and integration have gone hand in hand over the past decade. Yet, both remain very incomplete, particularly in SEE and in the CIS. Improved market access to the industrialised countries, made conditional on reduced trade barriers within the region offers the best chance to make progress in both areas.

REFERENCES

D. Acemoglu, S. Johnson and J. A. Robinson (2001), "The colonial origins of comparative development: An empirical investigation", *American Economic Review*, Vol. 91, No. 5, pp. 1,369-1,401.

F. Alcalá and A. Ciccone (2002), "Trade and productivity", Centre for Economic Policy Research Discussion Paper 3,095.

J. E. Anderson and E. van Wincoop (2003), "Gravity with gravitas: a solution to the border puzzle", *American Economic Review*, Vol. 93, No. 1, pp. 170-192.

A. Berg and A. Krueger (2003), "Trade, growth and poverty: A selective survey", IMF Working Paper No. 30.

D. Berkowitz, J. Moenius and K. Pistor (2003), "Trade, law and product complexity", University of Columbia Law School, mimeo.

O. Blanchard and M. Kremer (1997), "Disorganisation", *Quarterly Journal of Economics,* Vol. 111, No. 4, pp. 1,091-1,126.

A. Bouët, L. Fontagné, M. Mimouni and X. Pichot (2001), "Market access maps: A bilateral and disaggregated measure of market access", CEPII Working Paper No. 2001-18.

C. Carrere (2002), "Revisiting regional trading agreements with proper specification of the gravity model", Centre d'Etudes et de Recherches sur le Development International (CERDI), Working Paper No. 10, 2002.

A. Deardorff (1998), "Determinants of bilateral trade: does gravity work in a neoclassical world?", in J. A. Frankel (ed.), *The regionalisation of the world economy*, University of Chicago Press, Chicago, pp. 7-32.

C. Denizer, A. Gelb and M. de Melo (1996), "From plan to market: Patterns of transition", Policy Research Working Paper No. 1564, World Bank.

M. L. Di Tommaso, M. Raiser and M. Weeks (2001), "The measurement and determinants of institutional change: Evidence from the transition economies", EBRD Working Paper No. 60.

S. Djankov and C. Freund (2000), "Disintegration", Centre for Economic Policy Research Discussion Paper 2,545.

D. Dollar and A. Kraay (2002), "Institutions, trade and growth", paper prepared for the Carnegie-Rochester Conference Series on Public Policy, World Bank.

K. Elborgh-Woytek (2003), "Of openness and distance. Trade developments in the Commonwealth of Independent States, 1993-2002", IMF Working Paper, forthcoming.

J. Firdmuc and J. Firdmuc (2000), "Disintegration and trade", Centre for Economic Policy Research Discussion Paper 2641

European Commission (2003), "Wider Europe – neighbourhood: A new framework for relations with our eastern and southern neighbours", COM(2003) 104 final.

J. A. Frankel and D. Romer (1999), "Does trade cause growth?", *The American Economic Review*, Vol. 89, No. 3, pp. 379-99.

J. A. Frankel and A. Rose (2000), "Estimating the effect of currency unions on trade and output", National Bureau of Economic Research Working Paper 7,857.

J. Gallezot (2003), "Real access to the EU's agricultural market", INRA (Institut National de la Recherche Agronomique), mimeo, July 2003.

J.L. Gallup, A.D. Mellinger and J. D. Sachs (1999), "Geography and economic development", *International Regional Science Review,* Vol. 22, No. 2, pp. 179-232.

A. Greif (1993), "Contract enforceability and economic institutions in early trade: the Maghribi Traders' Coalition", *American Economic Review*, Vol. 83, No. 3, pp. 525-548.

C. Grafe, M. Raiser and T. Sakatsume (2003), "The importance of good neighbours: regional trade in Central Asia", forthcoming in R. Auty [ed.], *Energy wealth, governance and welfare in the Caspian Region*, University of Washington Press, Seattle.

C. A. Hamilton (2003), "Russia's European economic integration: Escapism and realities", Centre for Economic Policy Research Discussion Paper 3,840.

B. Hoekman, C. Michalopoulos and A. Winters (2003), "More favorable and differential treatment of developing countries: Toward a new approach in the World Trade Organization", World Bank Working Paper No. 3,107.

International Trade Centre (ITC) (2003), "TradeSim (second version), a gravity model for the calculation of trade potentials for developing countries and economies in transition", International Trade Centre Geneva, Market Analysis Section. Available on: www.intracen.org.

S. Johnson, D. Kaufman and A. Shleifer (1997), "The unofficial economy in transition", *Brookings Papers on Economic Activity*, No. 2, 1997, pp. 159-239.

O. Koukhartchouk and M. Maurel (2003), "Accession to the WTO and EU enlargement: what potential for trade increase?", Centre for Economic Policy Research Discussion Paper 3,944.

N. Limao and A. J. Venables (2001), "Infrastructure, geographical disadvantage and transport costs", *World Bank Economic Review*, Vol. 15, No. 3, pp. 451-479.

P. A. Messerlin (2001), *Measuring the costs of protection in Europe: European Commercial Policy in the 2000s*, Institute for International Economics, Washington D.C.

C. Michalopoulos (2003), "The integration of low-income CIS members in the world trading system", paper prepared for the Conference on Low Income CIS Countries: Progress and Challenges in Transition, Lucerne, January 2003. Available at: www.cis7.org

E. Molnar and L. Ojala (2003), "Transport and trade facilitation issues in the CIS7, Kazakhstan and Turkmenistan", paper prepared for the Conference on Low Income CIS Countries: Progress and Challenges in Transition, Lucerne, January 2003. Available at: www.cis7.org

R. Pomfret (2003), "An assessment of regional organisations in Central Asia", paper prepared for the Asian Development Bank, mimeo.

G. Raballand (2003), "The determinants of the negative impact of land-lockedness on trade: an empirical investigation through the Central Asian case". ROSES, University of Paris 1, mimeo May 2003.

D. Rodrik, A. Subramanian and F. Trebbi (2002), "Institutions rule: The primacy of institutions over geography and integration in economic development", National Bureau of Economic Research Working Paper 9,305, Cambridge, MA.

A. Rose (2003), "Which international institutions promote international trade?" Centre for Economic Policy Research Working Paper No. 3,764.

A. Rose (2002), "Estimating protectionism through residuals from the gravity model". Background paper for the Fall 2002 World Economic Outlook, mimeo, University of California at Berkeley.

M. Schiff and A. Winters (2003), *Regional integration and development,* Oxford University Press for the World Bank.

A. Subramanian and S-J. Wei (2003), "The WTO promotes trade, strongly but unevenly", National Bureau of Economic Research Working Paper 10,024, Cambridge, MA.

S. Thacker (2000), *Big business, the state and free trade: constructing coalitions in Mexico*, Cambridge University Press, Cambridge.

Q. Wang (2001), "Import reducing effect of trade barriers: a cross country investigation". IMF Working Paper No. 216, 2001.

ANNEX

Table A.1: Betweeen regression, by group, regional dummies, GDP in PPP

LnTradeij	1	2	3	4	5
LnGDPPi	1.84***	1.81***	1.75 ***	1.70***	1.62***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)
LnGDPPj	1.35***	1.32***	1.25***	1.20***	1.13***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)
LnPOPi	-0.69***	-0.68***	-0.61***	-0.54***	-0.46***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)
LnPOPj	-0.43***	-0.42***	-0.33***	-0.24***	-0.17***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)
erv1	1.40***	1.45***	1.59***	2.47***	2.71***
	(0.45)	(0.45)	(0.45)	(0.44)	(0.46)
LnDISTij	-1.48***	-1.45***	-1.43***	-1.40***	-1.41***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Common_Bord		0.14	0.19	0.13	0.12
		(0.12)	(0.12)	(0.12)	(0.12)
nborders_ij		-0.17***	-0.15***	-0.18***	-0.18***
		(0.05)	(0.05)	(0.05)	(0.05)
DnRoutei			0.11***	0.12***	0.12***
			(0.02)	(0.03)	(0.03)
DnRoutej			0.15***	0.14***	0.14***
			(0.03)	(0.03)	(0.03)
WTO				0.28***	0.24***
				(0.07)	(0.07)
FTA				0.22***	0.23***
				(0.08)	(0.08)
imf_ori				-0.04***	-0.03**
				(0.01)	(0.01)
imf_orj				-0.08***	-0.08***
				(0.01)	(0.01)
wbi					0.12**
					(0.06)
wbj					0.10*
					(0.06)
eu_world	-0.22***	-0.21***	-0.23***	-0.21***	-0.24***
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
ac_world	-0.63***	-0.56***	-0.54***	-0.60***	-0.57***
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
see_world	-1.38***	-1.35***	-1.31***	-1.24***	-1.18***
	(0.08)	(0.08)	(0.08)	(0.09)	(0.10)
cis_world	-1.08***	-0.99***	-0.97***	-0.79***	-0.71***
	(0.08)	(0.09)	(0.08)	(0.10)	(0.10)

nafta_world	-0.46***	-0.43***	-0.31***	-0.30**	-0.32**
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
sam_world	-0.017	-0.018	-0.12	-0.13	-0.06
			(0.10)	(0.11)	(0.11)
eseasia_world	0.21**	0.21**	0.14	0.15	0.16
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
sasia_world	-0.90***	-0.89***	-1.00***	-0.89***	-0.91***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
nafmeast_world	-0.74***	-0.74***	-0.65***	-0.51***	-0.49***
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
oce_world	0.29**	0.27**	0.42***	0.40***	0.35**
	(0.13)	(0.13)	(0.13)	(0.14)	(0.14)
_cons	-18.60***	-18.14***	-17.37***	-16.68***	-15.50***
	(0.61)	(0.65)	(0.66)	(0.67)	(0.84)
Nber of obs	34138	34138	34138	33898	33802
Nber of groups	6153	6153	6153	6138	6138
R-sq: within	0.01	0.01	0.01	0.01	0.01
between	0.75	0.76	0.76	0.76	0.76
overal	0.72	0.72	0.72	0.72	0.72
F test	1177	1050	955	806	744
Prob > F	0	0	0	0	0

Table A.2: Trade gaps for countries (between estimations, GDP in PPP), %

		1	2	3	4	5
		country size	country size +border	country size +border +infrastructure	country size +border +infrastructure +institutions	country size +border +infrastructure +institutions +policy
EU_world		100	100	100	100	100
AC_world	CZE_world	63	46	50	119	267
	EST_world	136	122	140	395	507
	HUN_world	62	45	39	14	18
	LVA_world	77	77	76	193	306
	LTU_world	64	59	76	227	392
	POL_world	44	42	42	54	58
	SVK_world	42	31	36	54	154
	SVN_world	100	77	76	54	58
SEE_world	BGR_world	68	77	76	37	58
	ROM_world	31	29	32	21	42
	BIH_world	14	11	12	54	198
	HRV_world	49	46	54	167	363
	ALB_world	10	9	10	11	24

		1	2	3	4	5
		country size	country size +border	country size +border +infrastructure	country size +border +infrastructure +institutions	country size +border +infrastructure +institutions +policy
	MKD_world	45	33	37	54	122
	YUG_world	13	13	13	6	15
CIS_world	ARM_world	14	11	11	29	58
	AZE_world	37	28	29	25	58
	BLR_world	16	12	12	2	10
	GEO_world	32	30	33	36	83
	KAZ_world	66	49	55	54	130
	KGZ_world	46	34	37	54	108
	MDA_world	34	26	26	54	58
	RUS_world	71	77	76	83	328
	TJK_world	100	77	76	84	178
	TKM_world	61	45	51	10	58
	UKR_world	64	77	76	54	109
	UZB_world	46	35	37	2	3
NAFTA_world	CAN_world	100	77	104	126	127
	USA_world	100	77	76	144	165
	MEX_world	63	77	76	19	36
S.America_world	ARG_world	100	77	107	54	141
	BRA_world	100	77	76	36	58
	PRY_world	59	41	45	10	32
	URY_world	253	211	258	393	621
	BOL_world	100	77	76	27	37
	ECU_world	232	212	237	54	58
	VEN_world	66	77	76	24	58
E.S-E.Asia_world	IDN_world	100	77	76	30	58
	MYS_world	287	257	304	201	272
	PHL_world	61	77	76	22	27
	SGP_world	1141	967	538	1726	833
	THA_world	140	132	153	36	58
	VNM_world	100	110	118	10	12
	JPN_world	100	77	56	54	58
	CHN_world	42	42	46	18	23
	KOR_world	167	151	166	156	324
S.Asia_world	IND_world	24	25	23	1	1
	PAK_world	41	42	45	4	4
	NPL_world	17	13	14	16	17
	BGD_world	36	36	32	2	1

		1	2	3	4	5
		country size	country size +border	country size +border +infrastructure	country size +border +infrastructure +institutions	country size +border +infrastructure +institutions +policy
N.Africa & M.East_world	DZA_world	17	17	20	7	19
	EGY_world	28	28	33	2	2
	MAR_world	60	77	76	6	6
	TUN_world	29	27	33	3	4
	IRN_world	23	22	25	2	7
	ARE_world	317	272	363	1539	3992
	SAU_world	60	56	76	89	173
	TUR_world	54	52	76	20	32
	ISR_world	132	118	137	127	199
	CYP_world	100	77	76	260	454
OCE_World	AUS_world	194	163	207	860	1041
	NZL_world	344	279	339	295	207