Benchmarking competitiveness in transition economies

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Executive summary

This paper is one of a series resulting from a large policy research project that the Harvard Institute for International Development (HIID) is carrying out for the United States Agency for International Development (USAID). The goal of the study, which will be completed in the early autumn of 1999, is to evaluate the privatization and economic restructuring experience of countries in transition and to make recommendations on how USAID might improve the impact of its assistance to these countries. Of particular concern to USAID is (i) whether the existing reform paradigm needs adjustment and (ii) the role of competitiveness and international integration in achieving sustainable economic transition and how donor assistance can support these.

In the present paper, we focus on competitiveness. Clearly, for long-term sustainable growth, countries need to become internationally competitive. We construct a measure of competitiveness based on the Global Competitiveness Report series categories, the determinants of transition described in Sachs, Zinnes, and Eilat (1999, vol. 2), the work of Michael Porter, and other related country characteristics described in the literature. While the enabling environment is important, we stress that it is the synergies among firms and between firms, markets, and government that are key.

We first present the detailed design and motivation of our indicator. The indicator is built around seven sub-indicators, each constructed to reflect a specific area's role in competitiveness. These are openness, good government, the financial sector, infrastructure, technology, labor markets, and institutions (including markets, due process, and political). We then use the resulting measures to assess each country's standing viz. the other transition countries. We do this by examining both inter- and intra-cluster differences, where the country clustering is taken from Sachs, Zinnes, and Eilat (1999, vol. 1) and is based on the initial conditions of transition. To provide a feel for the resulting competitiveness indicator we illustrate how it correlates to standard performance measures such as foreign direct investment and GDP growth. The paper ends by comparing the transition countries' competitiveness to countries in the rest of the world.

Since our competitiveness indicator is built up from economically meaningful sub-indicators, we are also able examine the components of competitiveness. These yield insights that allow us to pinpoint where countries are most lagging behind, a key signal for the potential benefits of technical assistance. Note, however, that this paper does not examine the causality behind these rankings beyond decomposing it. That has been left to Sachs, Zinnes, and Eilat (1999, vol. 3). A brief summary of rankings follows.

- *The sub-indicators*. While in general, sub-indicator rankings were in line with the overall ranking, the sub-indicator with the fewest reversals was "institutions", reflecting its fundamental role in supporting country competitiveness.
- *Inter-cluster differences*. The EU Border States and the Baltics are the most competitive (Hungary being number 1) with the "new" states (Slovakia, Slovenia, and Croatia) at the bottom of this group; these are followed by the Balkans, the Western FSU, the Caucasus, and Central Asia. The relatively weakest (strongest) areas of the EU Border States are openness (good government); relative to the EU Border States, the Baltics weakest points were infrastructure and labor markets. Central Asia was most lagging in terms of its institutions.
- *Intra-cluster differences*. Relatively poor infrastructure followed by financial sector competitiveness and quality/effectiveness of institutions are why the Czech Republic ranks behind Hungary. While Macedonia started out with initial conditions typical for the Balkans, its competitiveness performance has fallen far behind, generally scoring as Central Asia. In the

Caucasus, Georgia had among the sample's better infrastructure while Armenia was more open and with better financial markets. Kazakhstan and Kyrgyz Republic are the best performers in Central Asia.

- *Sub-indicator decomposition*. The Czech Republic's mediocre infrastructure performance is due to poor regulation of public utilities and services, leading to higher cost service provision (a similar problem for Georgia, which is nevertheless doing very well on this indicator overall). It is a very serious lack of competition in infrastructure markets that mars Estonia's and Lithuania's otherwise decent infrastructure situation. Poland's mediocre openness (which includes compliance with international trade regime, current and capital account flows and restrictions) score is due to modest activity in its current account; Slovenia's openness is pulled down by capital account performance. A number of EU Border States and Russia are experiencing excessively restrictive labor markets, pulling down their overall labor competitiveness. Russia's financial sector performance was marred by poor investment performance due to poor access to credit.
- *Comparisons with economic performance*. Competitiveness and its underlying sub-indicators were positively correlated with GDP per capita growth over the transition period and contemporaneous foreign direct investment. Clearly, competitiveness breeds wealth creation and investors are attracted to countries that are competitive while their presence increases the latter.
- *Competitiveness comparisons with the non-transition countries*. Our competitiveness indicator perfectly matches the Global Competitiveness Report results for the six overlapping countries. As for the others, we find that the Balkans, the Caucasus, the Western FSU, and Central Asia are less competitive than the rest of the world. The EU Border States (with the exception of Croatia) and Baltics, on the other hand, are in the same league as Turkey and are more competitive than the Andean Pact countries and economic powerhouses such as Brazil, India, and South Africa.

While only indicative, these results suggest how such multi-level indicators may be used to pinpoint both where technical assistance is required *and* the likely benefits such assistance would have. Moreover, the score of the best ranking country on a sub-indicator or its input suggests the limits of feasibility for near-term reform. Thus, there is reason to believe that the better a country's rank is (i.e., the closer it is to this "envelop"), the more likely the impact of additional technical assistance is subject to diminishing returns. While this is relevant for prioritizing assistance, it also has bearing for setting aid "graduation" points. Finally, the indicator "recipes" provided in this paper make it easy to annually generate an updated "big picture" to track the concrete fruits of progress in reform in transition economies. In sum, these indicators may be seen as a complementary tool to deeper analysis.

1 Introduction

This paper develops a heuristic framework to help understand the current level of international competitiveness of countries in transition as a result of their first decade of what Sachs (1996) calls systemic transformation. By bringing to bear all the existing data on these countries, together with new survey data collected for the purpose, we are able to go beyond the mere ranking of countries to decompose the sources of competitiveness into their constituent parts.

This paper is one of a series resulting from a large policy research project that the Harvard Institute for International Development (HIID) is carrying out for the United States Agency for International Development (USAID). The goal of the study, which will be completed in the early autumn of 1999, is to evaluate the privatization and economic restructuring experience of countries in transition and to make recommendations on how USAID might improve the impact of its assistance to these countries. Of particular concern to USAID is (i) whether the existing reform paradigm needs adjustment and (ii) the role of competitiveness and international integration in achieving sustainable economic transition and how donor assistance can support these.

Since the 25 countries in our sample appear to exhibit a large variety of transition experiences, in fact, mostly because of common geographical, historical, and resource patterns there are significant similarities. Thus, in the companion paper, Sachs, Zinnes, and Eilat (1999, volume 1) we assign countries to groups based on similarity in initial conditions, in a way that minimizes within-cluster country differences and maximizes across-cluster country differences. We identify representative variables that describe the initial conditions based on economic theory and what is relevant for a country's prospects of transition performance. By considering blocks or "clusters" of countries based on their "initial condition" determinants of transition, we greatly simplify our analysis throughout the study, as well as highlight the most fundamental problems facing the various groups of transition economies. Moreover, using the cluster approach permits a more controlled basis for comparing "successful" and "failed" policies implemented during transition and thereby offers a way to assess policy effectiveness. The cluster approach allows us to identify the underlying issues in a way more parsimonious than 25 individual country assessments. Applying the methods laid out in our above-mentioned volume 1 paper, resulted in grouping the transition countries into seven clusters, summarized in Table 1.

Table 1: Summary of the geography-based typology

*Cluster name**	*Country membership*
EU-border states (1)	Poland, Hungary, Czech Republic, Slovakia, Slovenia, Croatia
The Balkans (2)	Bulgaria, Romania, Macedonia
Baltic States (3)	Estonia, Latvia, Lithuania
Albania (4)	Albania
Western FSU (5)	Moldova, Ukraine, Belarus, Russia
Caucuses (6)	Azerbaijan, Georgia, Armenia
Central Asia (7)	Turkmenistan, Tajikistan, Uzbekistan, Kazakhstan, Kyrgyz Republic

*The number in parentheses is used as a cluster identifier in the analysis in other parts of the study.

Clearly, for long-term sustainable growth, countries need to become internationally competitive. We construct a measure of competitiveness based on the determinants of transition described in Sachs, Zinnes, and Eilat (1999, vol. 2) and other related country characteristics described in the literature. We first use the measure to assess each country's standing viz. the other transition countries, examining both inter- and intra-cluster differences. We then compare the transition countries' competitiveness to countries in the rest of the world. Since our competitiveness indicator is built up from economically meaningful sub-indicators, we are also able examine the components of competitiveness. These yield insights that allow up to pinpoint where countries are most lagging behind, a key signal for the potential benefits of technical assistance.

1.1 An indicator of competitiveness

While concepts such as "profitability", "efficiency", and "productivity" have very specific meanings in the economics of the firm, the concept of "competitiveness" is rather elusive. This is all the more so at the level of a country. Until recently, economics has dealt with "competitiveness" at the country level through the notion of "comparative advantage".[1] The question focused on discovering where these advantages were and what factors of production would most benefit.

More recently, the business literature has examined the so-called competitiveness of nations through such writers as Michael Porter [REFS] and Paul Krugman [REFS]. What they stress is that competitiveness is much more than simply having efficient and low-cost firms. First, they point to a host of potential externalities between firms (both within and across sectors) and network effects that can yield competitiveness synergies. Next they point to quality of government (both its institutions as well as its laws and policies). They also point to geography and culture.]

Another source of literature on competitiveness comes from the new fashion for producing indicators, the most well known of these being the World Economic Forum's annual Global Competitiveness Report (GCR). Other groups producing indicators include the EBRD, the Heritage Foundation and Freedom House. The World Bank is also considering whether to publish indicators on the quality of country reform programs.

Taking insights from all the above sources we have crafted a competitiveness indicator for the period 1997/8 that is both easily comparable to the GCR and sensitive to transition economy peculiarities. As an example of the latter, consider investment. In non-transition countries, more investment *per se* is usually considered better. In the case of a transition economy however, central planners, in their zeal to industrialize, allocated a disproportionate share of state resources toward investment. Unfortunately, without the existence of price signals and with political criteria for investment goals, the return on these investments was typically low. These tendencies, while disappearing, still exist, making total domestic investment a poor indicator of increases in productive capital. Rather, in several transition countries – and especially at the outset of transition – what was needed was a *lower* level of (state) investment, not a higher one. Thus, for our transition indicator, we focus on *private* sector investment aggregates, alone.

The resulting competitiveness indicator contains seven sub-indicators. These are (with their weights in parentheses) openness (3/17), good government (3/17), financial sector (3/17),

[1] The theory of comparative advantage states that whether or not one of two countries is absolutely more efficient in the production of every good than the other, if each specializes in the products in which it has the greatest *relative efficiency*, trade will be mutually profitable to both countries and real incomes of productive factors will rise in both countries.

infrastructure (2/17), technology (1/17), management and labor quality (2/17), and rule-of-law institutions (3/17).[2] To construct the competitiveness indicator, we first standardize each sub-indicator, multiply it by its weight, add them all up, and then standardize again.[3] While the construction of the indicators is relatively straightforward, we did encounter a large number of methodological challenges. Before looking at the actual "recipes" for indicator construction, therefore, we highlight what some of these issues are.

To make cross-country comparisons, we need to deflate (divide) variables of interest by another variable (the deflator). For example, Russia may have greater absolute levels of investment than Estonia but this is not really interesting. What is interesting is what happens when we "correct" for the relative sizes of the country or economy. In most cases, the obvious choice is GDP. However, there are a number of problems with using GDP. First, due to the existence of large unofficial economies, GDP can grossly under-represent the true size of a country's economic activity. Second, many of the transition economies have high inflation. This makes it necessary to first deflate the deflator if the variable to be deflated is not in local currency. Such GDP deflators are themselves problematic and are anyway published with substantial delays measured in years. Third, transition economies are experiencing great volatility in GDP as they adjust to equilibrium growth paths. This makes the deflator unreliable since GDP changes could dwarf the actual changes in the numerator that is of principal interest. Finally, there are several alternative GDP series that vary quite substantially among themselves. There is no consensus as to which is best. An alternative is to use population. The problem here is that population does not reflect the level of economic activity as accurately as GDP nor therefore the size and extent of the market. We have tried to be consistent within an indicator in the use of one or another deflator.[4]

Much of the data for transition economies suffers from a multitude of reporting biases and measurement problems, often related to the newness of government collection agencies as well as to corruption. We have addressed this problem in a number of ways. First we have used as many variables as possible to capture particular concepts. Second, we try to overcome biases by using seemly identical variables. For example for exports, we have used both figures reported via the balance of payments statistics as well as through the trade authorities. Third, for time series work we have taken advantage of dates of occurrence to create an additional series, which we call "duration". This reflects the number of years since an occurrence. For example, we measure sophistication of the revenue system by including both a dummy variable for the existence of a VAT tax *and* another variable indicating the number of years that have passed since its introduction. The latter picks up the deepening and improved experience a country acquires as it familiarizes itself over the years with a new reform instrument. Finally, we have in some cases used data for 1997 where 1998 data were not yet available; therefore, our competitiveness indicator is, strictly speaking, for the period 1997/8.

A subtler problem concerns how two standardized variables of different series length should be aggregated into the same indicator. (Recall that we scale sub-indicators to have a mean of zero and a variance of 1 prior to aggregating them into an indicator). If two series, say foreign direct investment available for only 1995 onward and foreign portfolio investment having a

[2] We set the sub-indicator weights based on the weights used in the GCR, adjusted for quantity and quality limitations of transition data.

[3] To standardize, we subtract the sample mean from each observation and then divide the result by the sample standard deviation.

[4] Nevertheless, future versions of these indicators will rely more on population as the preferred deflator.

coverage from 1990 to 1998, then, once they are each properly deflated and standardized, adding together the two series would create a big "kink" in the indicator trend. This results from one average being taken over nine years and the other average being taken over four years. To see this, consider the aggregating two *identical* series, X95 available for 1995 onward and X90 available for 1990 onward and assume that X has rising trend. Then during the standardization process we would subtract a smaller mean from each of the observations of X90 than we would from X95 since the mean of X90 would also contain earlier years and therefore smaller numbers pulling down the average which we subtract. Combining X90 and X95 and plotting the result would show a jump in the line in 1995 even though they are the *same* series by construction. To correct this we simply use a smaller mean during the standardization of X95. How much smaller? Simply the difference between the two means, i.e., X95m – X90m, where "m" refers to the variable's mean.

Openness. This indicator seeks to capture the ease in which economic activity can take advantage of the foreign sector for markets, know-how, competition, financing, investment, sources of inputs and other components linking its markets and firms to the global economy. As shown in Table 2, we group these components into three categories, the regulatory environment, current account activity, and capital account activity. The regulatory environment category captures the state of general regulations directly impacting commerce and foreign participation in the economy. The current account category captures the trade flows and direct regulatory obstacles impeding them. The capital account category captures both aggregate financial flows in and out of the country as well as various forms of foreign investment participation in the domestic economy.

Before continuing, let us explain how to read and interpret the sub-indicator tables. First note that all the categories and subcategories of the table have weights listed in the column "Weight" and competitiveness impacts listed in the column "Effect". These comprise levels. For a given level the weights add up to unity (1). Thus for example, the weights for "regulatory environment" (0.33), "current account activity" (0.33), and "capital account activity" (0.33) add to 1 as do the weights in the "regulatory environment" category for "trade" (.4), "compliance with international standards" (0.4) and "foreign ownership" (0.2). With a sub-category such as "IMF" (which provides half the total weight to the sub-category "compliance with international standards"), the weights for "existence" (0.5) and for "duration" (0.5) also must add to one.

Technology. Access and use of technology is obviously an important factor in competitiveness. Unfortunately, it is also an area where data scarcity is rather pronounced. We have imperfectly chosen three types of technology use for this indicator as presented in Table 3.[5] These include the use of vehicles, office equipment (in the form of fax machines) and internet user. With regard to the latter, we have assumed that on average Internet sites serve the same number of users.

Good government. Ironically, one of the most important inputs into competitiveness is not to be found in the private sector; it's the government. Government provides the physical and regulatory infrastructure and rules of the game for a level playing field. It also provides for orderly trading arrangements in the form of stable currency and overall macro environment as well as compliance with the international trade regimes. The government can also act as a coordinator and provider of information where private agent transactions costs would otherwise be high. Unfortunately, many of the transition countries have not been countries *per se* for many

[5] We are investigating the addition of a number of other variables here that weren't available at the time of this writing.

years and therefore did not have experience or a tradition in providing government services. Worse, corruption, rent seeking, poor training has often made governments in the region the source of the problem rather than the solution. As shown in Table 4, we have identified four key components to describe the quality of good government as it pertains to competitiveness. These include the quality of public administration, macroeconomic policy, fiscal policy, and overall policy coherence and control. Regarding fiscal policy, we focus on how revenues are raised, though we also include the expenditure side. Of particular concern are how taxes are collected, the existence and sophistication of government bond markets, and use of the inflation tax. Policy coherence and control refers to whether policies are stable and consistently enforced, thereby keeping the unofficial economy to a minimum.[6]

[6] Note that the "democratic stability" indicator is constructed to reflect the fact that neither governments that change every few months nor once every decade are good. The former will breed policy instability and the latter reduce accountability.

Table 2: Openness sub-indicator (ICO) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Regulatory environment (O.1)	Indicator	Pos	0.33	ICOre	M0V1	Computed
Trade (O.1.1)	Trade and foreign exchange liberalization index	Pos	0.4	Tfxlib	0 to 1 (1 best)	EBRD*
Compliance with international standards (O.1.2)	Indicator	Pos	0.4	Icompli	M0V1	Computed
IMF (O.1.2.1)	Indicator	Pos	0.5	Iimf	M0V1	Computed
Existence	Agreed with Article 8?	Pos	0.5	Art8	Yes=1, No=0	IFS
Duration	Years under IMF Article 8		0.5	Art8yrs	Non-Neg number	IFS
WTO (O.1.2.2)	Indicator	Pos	0.5	Iwto	M0V1	Computed
Existence	WTO member?	Pos	0.5	WTO	Yes=1, No=0	EBRD
Duration	Years as WTO member	Pos	0.5	WTOyrs	Non-Neg number	EBRD
Foreign ownership (O.1.3)	Degree of restrictions on foreign land ownership	Pos	0.2	FgnLdA25	0 (Not permitted) to 3 (no restrictions)	Survey
Current account (O.2)	Indicator	Pos	0.33	ICOcur	M0V1	Computed
Imports (O.2.1)	Indicator	Pos	0.5	Iimp	M0V1	Computed
Flows (O.2.1.1)	Indicator	Pos	0.7	ImpGdp	Decimal number	Computed
	Imports from BofP / GDP	Pos	0.5	ImpBPGdp	Decimal number	EBRD
	Imports of goods and services / GDP	Pos	0.5	ImpGSGdp	Decimal number	WDI
Tariff barriers (O.2.1.2)	Tariff revenues / Imports	Neg	0.3	TrfImp	Decimal number	EBRD
Exports (O.2.2)	Indicator	Pos	0.5	Iexp	M0V1	Computed
Flows (O.2.2.1)	Indicator	Pos	0.7	ExpGdp	Decimal number	Computed
	Exports from BofP / GDP	Pos	0.5	ExpBPGdp	Decimal number	EBRD
	Exports of goods and services/ GDP	Pos	0.5	ExpGSGdp	Decimal number	WDI
Credits (O.2.2.2)	Export credits / Exports	Pos	0.3	XcrdtExp	Decimal number	GFS, EBRD

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Capital account (O.3)	Indicator	Pos	0.33	ICOcap	M0V1	Computed
Flows (O.3.1)	Capital account: (|Credits| + |Debits|) / GDP	Pos	0.2	KacctGdp	Decimal number	IFS, WDI
Foreign investment (O.3.2)	Indicator	Pos	0.5	Fgninv	M0V1	Computed
Foreign direct investment	Foreign direct investment / GDP	Pos	0.5	FdiGdp	Decimal number	EBRD
Foreign investment	Index of foreign investment	Neg	0.5	Fgninv_H	1 to 5 (1 best)	Heritage
Foreign banks (O.3.3)	Number of foreign banks	Pos	0.3	Fgnbnk	Non-negative number	EBRD

Table notes:

Abbreviation	*Definition*
*	Standardized by Havrylyshyn (see references)
Freedom	Freedom House (see references)
GFS	IMF's Government Financial Statistics
Havrylyshyn	His paper (see references) uses IMF and national sources
Hellman	See references
Heritage	Heritage Foundation
IFS	IMF's International Financial Statistics
M0V1	Mean zero, variance 1
Survey	HIID Competitiveness in Transition Survey of Foreign Institutes
WDI	World Development Indicators, World Bank

Table 3: Technology sub-indicator (ICT) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
	Fax machines per 1000 persons	Pos	0.3	Faxm	Number	WDI
	Vehicles per 1000 persons	Pos	0.2	Vhcls	Number	WDI
	Internet host sites per 1000 persons	Pos	0.5	Internet	Number	International Telcom Database

Notes: See end of Table 2.

Table 4: Good government sub-indicator (ICG) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Public administration (G.1)	Indicator	Pos	0.25	ICGpa	M0V1	Computed
General (G.1.1)	Public administration index	Neg	0.4	Gpa98	1 to 7 (1 best)	Freedom
Corruption (G.1.2)	Corruption index	Pos	0.4	Co98	0 to 1 (1 best)	Freedom
Civil service (G.1.3)	If civil service was reformed	Pos	0.2	CvservG9	Yes=1, No=0	Survey
Macroeconomic policy (G.2)	Indicator	Pos	.25	ICGmp	M0V1	Computed
	Macro policy index	Neg	0.5	Ma98	1 to 7 (1 best)	Freedom
	Monetary policy index	Neg	0.5	Mony_H	1 to 5 (1 best)	Heritage
Fiscal policy (G.3)	Indicator	Pos	0.25	ICGfp	M0V1	Computed
Revenues (G.3.1)	Indicator	Pos	0.9	Rev	M0V1	Computed
Taxes (G.3.1.1)	Indicator	Pos	0.5	Taxes	M0V1	Computed
General	Level of taxation index	Neg	0.3	Tax_H	1 to 5 (1 best)	Heritage
Collection	Indicator	Pos	0.3	Collect	M0V1	Computed
	Tariff revenue / total taxes	Neg	0.7	TrfTax	Decimal number	EBRD
	Tax arrears / GDP	Neg	0.3	Taxarr	Decimal number	World Bank
System reform	Indicator	Pos	0.2	Taxref	M0V1	Computed
Existence	Has there been tax administration reform	Pos	0.5	TxrefG8	Yes=1, No=0	Survey
Duration	Years since tax administrative reform	Pos	0.5	TxrefG8y	Number of years	Survey
Sophistication	Indicator	Pos	0.2	Taxsoph	M0V1	Computed
Existence	Is there a VAT	Pos	0.5	VAT	Yes=1, No=0	EBRD
Duration	Years VAT in existence	Pos	0.5	VATyrs	Number of years	EBRD
Bonds (G.3.1.2)	Indicator	Pos	0.3	Bonds	M0V1	Computed
Domestic (G.3.1.2.1)	Indicator	Pos	0.5	Bnd_dom	M0V1	Computed
Existence	Is there a Treasury bill market	Pos	0.5	Tbills	Yes=1, No=0	EBRD
Duration	Number of years with Treasury bill market	Pos	0.5	Tbillsyr	Number of years	EBRD
External (G.3.1.2.2)	International sovereign bond issue	Pos	0.5	Bnd_ext	Yes=1, No=0	Computed
Inflation (G.3.1.3)	Rate of inflation	Neg	0.2	Inflat	Percent	Havrylyshyn

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Expenditures (G.3.2)	Central government balance / GDP	Pos	0.1	Cgb	Decimal number	GFS
Policy coherence/control (G.4)	Indicator	Pos	0.25	ICGcoh	M0V1	Computed
Unofficial economy (G.4.1)	Black market index	Neg	0.4	Blkmkt_H	1 to 5 (1 best)	Heritage
Monetization (G.4.2)	Broad money / GDP	Pos	0.2	M2Gdp	Number	EBRD
Stability (G.4.3)	Indicator	Pos	0.4	Stable	M0V1	Computed
Financial stability (G.4.3.1)	Indicator	Pos	0.4	Stabfin	M0V1	Computed
Existence	Whether a BIS member	Pos	0.5	StabfinX	Yes=1, No=0	EBRD
Duration	Years as BIS member	Pos	0.5	Stabfiny	Number of years	EBRD
Democratic stability (G.4.3.2)	Average government tenure / democracy index	Pos	0.6	Stabdem	M0V1	Hellman, Freedom

Notes: See end of Table 2.

Table 5: Infrastructure sub-indicator (ICI) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	***Definition***	***Effect***	***Weight***	*Variable*	***Scoring***	***Source***
Availability (I.1)	Indicator	Pos	0.45	ICIav	M0V1	Computed
	Telephones per 1000 persons	Pos	0.125	Teleph	Number	WDI, EBRD
	Telecommunications index	Pos	0.125	Telcom	1 to 4.33 (1 worst)	EBRD
	Paved roads share of roads	Pos	0.25	Paved	Decimal number	WDI
	Railways index	Pos	0.25	Rail	1 to 4.33 (1 worst)	EBRD
	Electric power index	Pos	0.25	Electp	1 to 4.33 (1 worst)	EBRD
Regulation (I.2)	Indicator	Pos	0.25	ICIreg	M0V1	Computed
	Independent telephone regulator	Pos	0.33	Indtel	Yes=1, No=0	EBRD
	Separate freight & passenger accounts	Pos	0.33	Seprail	Yes=1, No=0	EBRD
	Independent electricity regulator	Pos	0.33	Indelec	Yes=1, No=0	EBRD
Competitive in supply (I.3)	Indicator	Pos	0.30	ICIcom	M0V1	Computed
	How competitive is the telephony sector?	Pos	0.25	ComTeE1a	0 (none) to 4 (very)	Survey
	How competitive is the energy sector?	Pos	0.25	ComEnE1c	0 (none) to 4 (very)	Survey
	How competitive is the water sector?	Pos	0.25	ComWaE1d	0 (none) to 4 (very)	Survey
	How competitive is the natural gas sector?	Pos	0.25	ComGsE1e	0 (none) to 4 (very)	Survey

Notes: See end of Table 2.

Table 6: Financial sector sub-indicator (ICF) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Investment performance (F.1)	Indicator	Pos	0.25	ICFip	M0V1	Computed
	Credit to enterprises / GDP	Pos	0.33	Creent	Decimal number	EBRD
	Domestic credit / GDP	Pos	0.33	CreddC12	Decimal number	Survey
	Private investment / GDP	Pos	0.33	PrinvGdp	Decimal number	World Bank
Banking sector (F.2)	Indicator	Pos	0.25	ICFbk	M0V1	Computed
General (F.2.1)	Indicator	Pos	0.2	Bkperf	M0V1	Computed
	Banking reform & interest rate liberalization	Pos	0.5	Bnkirlib	1 to 4.33 (1 worst)	EBRD
	Banking system index	Neg	0.5	Bank_H	1 to 5 (5 best)	Heritage
Performance (F.2.2)	Bank credit / GDP	Pos	0.2	BcrdtGdp		WDI
Competition (F.2.3)	Indicator	Pos	0.25	Bkcmp	M0V1	Computed
	Interest rate liberalization index	Pos	0.25	Intlib	0=limited *de jure* 1=limited *de facto* 2=Full	EBRD
	Degree of competition in banking sector	Pos	0.25	ComBkE1j	0 (none) to 4 (very)	Survey
	Number of banks / population	Pos	0.25	BnksPop	Decimal number	EBRD
	State bank share of banking sector assets	Neg	0.25	Asobanks	Decimal number	EBRD
Foreign Penetration (F.2.4)	Number of foreign banks (undeflated)	Pos	0.2	Fgnbnk	Number	EBRD
Regulation (F.1.5)	Is there bank deposit insurance	Pos	0.15	Depins	Yes=1, No=0	Survey
Capital markets (F.3)	Indicator	Pos	0.25	ICFkm	M0V1	Computed
Stock market (F.3.1)	Indicator	Pos	0.4	StkMkt	M0V1	Computed
Existence	Is there a stock market?	Pos	0.1	StkMktX	Yes=1, No=0	Survey
Capitalization	Stock market capitalization / GDP	Pos	0.3	SmkcGdp	Decimal number	EBRD
Performance	Indicator	Pos	0.3	Smperf	M0V1	Computed
	Value of trades / stock market capitalization	Pos	0.5	Smactv	Decimal number	Survey
	Number of stock market transactions	Pos	0.5	SmtranC2	Number	Survey

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Regulations	Indicator	Pos	0.3	Kregs	M0V1	Computed
	Shareholder protection index	Pos	0.5	Shrhdpro	0=Inefficient 1=partially efficient	EBRD
	Is there insider dealing protection	Pos	0.5	Insdrpro	Yes=1, No=0	EBRD
Securities markets (F.3.2)	Indicator	Pos	0.3	Secmkts	M0V1	Computed
	Securities market index	Pos	0.33	Securt	1 to 4.33 (1 worst)	EBRD
	Has an international corporate bond been issued	Pos	0.33	Intlcbnd	Yes=1, No=0	EBRD
	Is there a secured transaction law?	Pos	0.33	Sctrlaw	Yes=1, No=0	EBRD
General regulations/standards (F.3.3)	Indicator	Pos	0.3	Kmregs	M0V1	Computed
Oversight	Is there a securities exchange commission?	Pos	0.5	Seccom	Yes=1, No=0	EBRD
Standards	Indicator	Pos	0.5	IAS	M0V1	Computed
Existence	Is IAS in force	Pos	0.5	IASexist	Yes=1, No=0	EBRD
Duration	Years that IAS in force	Pos	0.5	IASyrs	Number	EBRD
Non-bank financial institutions (F.4)	Indicator	Pos	0.25	ICFnbf	M0V1	Computed
Pension funds (F.4.1)	Are there private pension funds?	Pos	0.35	PrpenC11	Yes=1, No=0	Survey
Insurance markets (F.4.2)	Indicator	Pos	0.65	Insmkts	M0V1	Computed
Competition	Indicator	Pos	0.6	Inscomp	M0V1	Computed
	Number of insurance firms / population	Pos	0.2	InscoPC6	Decimal number	Survey, WDI
	Private sector share of number of insurance companies	Pos	0.25	InsprC76	Decimal number	Survey
	Is government the dominant firm?	Neg	0.25	InsgvC9	Yes=1, No=0	Survey
	Number of foreign insurance companies	Pos	0.3	InsfgnC8	Number	Survey
Regulation	Indicator	Pos	0.4	InslwC16	M0V1	Computed
Existence	Is there an insurance law?	Pos	0.5	InslawX	Yes=1, No=0	Survey
Duration	Years insurance law in force	Pos	0.5	Inslawy	Number	Survey

Notes: See end of Table 2.

Table 7: Management and labor markets (ICL) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Management and labor quality (L.1)	Indicator	Pos	0.7	ICLq	M0V1	Computed
Education (L.1.1)	Indicator	Pos	0.5	Labedu	M0V1	Computed
General	Education index	Pos	0.4	Educ	0 to 1 (1 best)	UNDP
Domestic	School enrolment ratio (1995)	Pos	0.2	School95	Percent	UNDP
Foreign	Indicator	Pos	0.2	Edu_fgn	M0V1	Computed
	Scholars in the US per worker	Pos	0.5	FgnschLf	Decimal number	?
	Students in the US per worker	Pos	0.5	FgnstuLf	Decimal number	?
Skills	Physicians per 1000 persons	Pos	0.2	Phys	Decimal number	WDI
Human development (L.1.2)	Indicator	Pos	0.3	Humdev	M0V1	Computed
	Human development index (1995)	Pos	0.6	Humdev95	0 to 1 (1 best)	UNDP
	Life expectancy	Pos	0.4	Lifeexp	Years	WDI
Government commitment (L.1.3)	Budget share for education and health	Pos	0.2	EHBudF7	Decimal number	Survey
Market efficiency (L.2)	Indicator	Pos	0.3	ICLef	M0V1	Computed
Performance (L.2.1)	Unemployment rate (official)	Neg	0.1	Unemp	Decimal number	EBRD
Government restrictions (L.2.2)	Indicator	Pos	0.5	Govrestr	M0V1	Computed
	Are there restrictions on wage increases?	Neg	0.5	Wagereg	Yes=1, No=0	EBRD
	Restrictiveness of hiring and firing	Neg	0.5	HirFiE10	0=minimal 1=moderate 2=Very	Survey
Tax distortions (L.2.3)	Employer + employee tax wedge	Neg	0.4	WagtxE89	Decimal number	Survey

Notes: See end of Table 2.

Table 8: Institutions sub-indicator (ICN) for competitiveness indicator, 1998 *Source:* Authors' calculations.

Category	*Definition*	*Effect*	*Weight*	*Variable*	*Scoring*	*Source*
Political environment (N.1)	Indicator	Pos	0.3	ICNpol	M0V1	Computed
Democracy (N.1.1)	Indicator	Pos	0.5	Democrcy	M0V1	Computed
	Democracy index	Neg	0.5	Democ_fh	1 to 7 (1 best)	Freedom
	Political process index	Neg	0.5	Polproc	1 to 7 (1 best)	Freedom
Civil society (N.1.2)	Indicator	Pos	0.5	Civilsoc	M0V1	Computed
	Independent media	Neg	0.5	IndMedia	1 to 7 (1 best)	Freedom
	Civil society index	Neg	0.5	Civil_fh	1 to 7 (1 best)	Freedom
Rule of law (N.2)	Indicator	Pos	0.4	ICNrul	M0V1	Computed
Due process (N.2.1)	Indicator	Pos	0.6	Idueproc	M0V1	Computed
General	Indicator	Pos	0.85	Dueprgen	M0V1	Computed
	Rule of law index	Neg	0.4	RoL	1 to 7 (1 best)	Freedom
	Legal system effectiveness & extensiveness	Pos	0.4	Leg	0 to 1 (1 best)	EBRD
	Corporate governance index	Pos	0.2	govent	1 to 4.33 (1 worst)	EBRD
Bankruptcy	Indicator	Pos	0.15	Bnkrptcy	M0V1	Computed
	Effectiveness of bankruptcy proceedings	Pos	0.6	Bkrptpro	0=ineffective 1=partially effective 2=Effective	EBRD
	Are there bankruptcy courts?	Pos	0.4	BktyctB9	Yes=1, No=0	Survey
Corruption (N.2.2)	Corruption index	Pos	0.2	Co98	0 to 1 (1 best)	Freedom
Property rights (N.2.3)	Property rights index	Neg	0.2	Prorgt_H	1 to 5 (1 best)	Heritage
Competition in markets (N.3)	Indicator	Pos	0.3	ICNcom	M0V1	Computed
Regulation (N.3.1)	Indicator	Pos	0.8	Compreg	M0V1	Computed
General	Competiton policy index	Pos	0.5	Comppol	1 to 4.33 (1 worst)	EBRD
Implementation	Indicator	Pos	0.5	Compimpl	M0V1	Computed
	Is there a competition law?	Pos	0.3	CmplwXE6	Yes=1, No=0	Survey
	Is there a competition office?	Pos	0.4	CcomXE12	Yes=1, No=0	Survey
	Years competition office operating	Pos	0.3	CcomYE12	Integer	Survey
Performance (N.3.2)	Average competition score in eleven strategic and infrastructure sectors	Pos	0.2	CompetE1	0 to 4 (4 best)	Survey

Notes: See end of Table 2.

Infrastructure. While it is probably obvious that the availability of infrastructure is important, it is only one aspect of infrastructure quality necessary for country competitiveness. Good regulation of infrastructure – and especially those provided through monopoly supply – is another important aspect. Good regulation ensures good accountability of the provider to the beneficiary and also helps to keep operating and capital costs down. For infrastructure that is provided by the market, it is important that competition among firms is maintained. These three aspects make up the sub-indicators for the infrastructure indicator, whose design is given in Table 5.

Financial sector. Table 6 shows how we capture this sector through a general investment indicator as well as indicators for each major financial sub-sector. The latter includes the banking sector, the capital markets (including stock market and securities markets), and the non-bank financial institutions (including pension funds, insurance). In each case we have emphasized the regulatory environment for orderly and transparent transactions and for the presence of internationally accepted standards of accounting and conduct. We have also placed importance on the degree of competition in each market component, as well as whether there is a foreign presence.

Management and labor markets. This indicator comprises two sub-indicators, one for quality and one for degree of market efficiency. In the former, we try to capture the degree of preparedness and qualifications for an efficient workforce; in the latter we look for the presence of market distortions in the form of taxation and quantitative restrictions. Unfortunately, together with the technology indicator, data scarcity was most severe for this indicator. The full indicator design is shown in Table 7.

Institutions. Table 8, in presenting the institutional software inputs, provides what might be called the enabling environment for competitiveness. It stresses the need for orderly and stable institutional arrangements to ensure accountable government ("Political environment"), a transparent and level playing field ("Rule of law") in business activity, and an honest degree of competition ("competition in markets"). In turn, the "Political environment" captures both the democratic process as well as the functioning civil society. "Rule of law" captures the quality of due process in law (including bankruptcy), the degree of corruption, and the existence and enforcement of property rights.

1.2 A comparison among transition countries

Table 9 presents the results of the indicator and sub-indicator "recipes" given in section 1.1. We begin this section by describing these results at the cluster level. We then examine the within-cluster performance differences. We end the section by comparing indicator performance to intermediate outcomes such as GDP growth and foreign direct investment.

1.2.1 Cluster-level comparisons

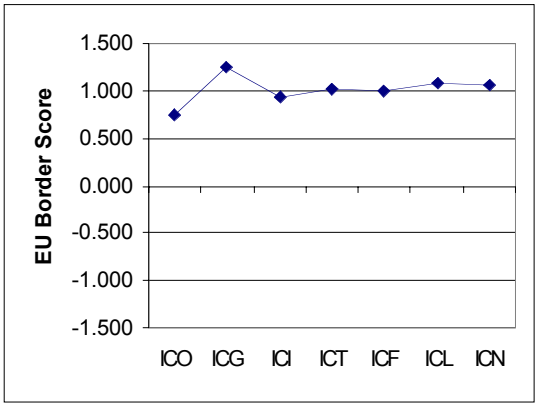
Looking first at the competitiveness indicator column in Table 9 immediately reveals the strength of the cluster notion and the similarity of within cluster performance. The EU border States and the Baltics stand squarely at the top with the Baltics tightly grouped together and the "new" states falling at the end of the group. The Balkans come next followed by the Caucasus and Central Asia. The Western FSU pepper the lower half of the ranking, with Russia best at rank 11. Kazakhstan and Kyrgyz Republic are the top performers of the Central Asia group. As we show in Sachs, Zinnes, Eilat (1999, vol. 1) Albania fits neatly into Central Asia ranking range.

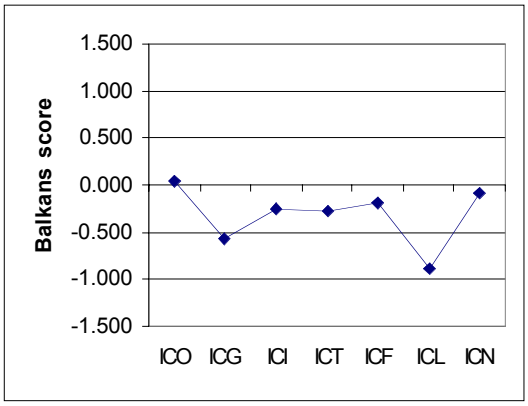
Table 9: Summary of competitiveness indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

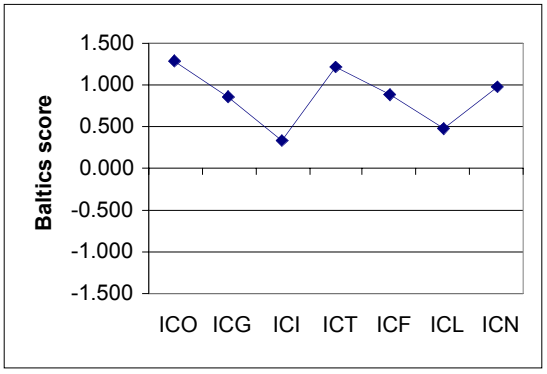
Country	Competitiveness	Openness	Good government	Infrastructure	Technology	Financial sector	Management and Labor	Institutions
Hungary	1.984	**1**	3	**1**	3	**1**	3	2
Czech Rep.	1.787	5	**1**	6	4	2	**1**	3
Poland	1.521	7	2	2	8	6	4	**1**
Estonia	1.400	2	4	8	**1**	3	7	4
Latvia	0.822	3	5	13	6	5	14	7
Slovenia	0.784	9	6	4	2	13	2	6
Lithuania	0.776	4	9	5	9	8	6	5
Slovakia	0.709	6	8	17	5	4	5	8
Croatia	0.108	17	7	**12**	7	9	15	14
Bulgaria	0.045	8	13	7	10	18	18	9
Russia	0.031	16	**12**	14	**12**	7	**12**	11
Romania	-0.122	11	19	11	11	10	19	**12**
Moldova	-0.156	10	10	19	18	**12**	21	10
Kazakhstan	-0.254	13	11	9	17	11	20	17
Kyrgyz Rep.	-0.279	**12**	15	16	19	14	13	16
Georgia	-0.397	21	14	3	16	22	10	13
Ukraine	-0.474	23	18	10	15	19	11	15
Armenia	-0.492	20	16	18	22	17	8	20
Azerbaijan	-0.541	14	17	20	20	15	17	24
Macedonia	-0.929	19	21	22	13	20	23	19
Belarus	-1.000	22	**25**	23	14	16	16	21
Albania	-1.050	18	20	21	21	23	24	18
Tajikistan	-1.262	15	22	**25**	23	21	**25**	22
Uzbekistan	-1.492	**25**	23	15	**25**	24	22	23
Turkmenistan	-1.519	24	24	24	24	**25**	9	**25**

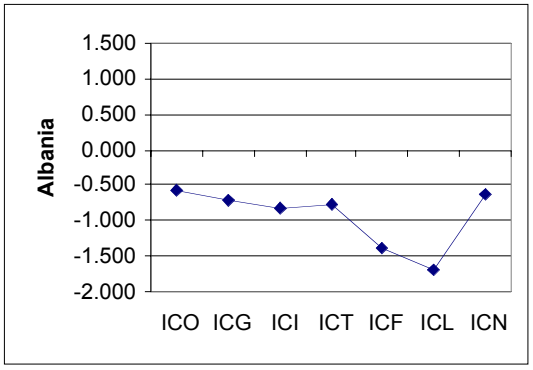
While countries for the most part respect their competitiveness position across the sub-indicators, there are some notable exceptions. Georgia, for example, with a competitiveness rank of 16 is ranked number 3 on infrastructure. Armenia with a competitiveness rank of 18 scores 8th in terms of labor quality. Latvia, on the other hand, with a competitiveness rank of 5, ranks 14 in terms of labor quality. For ease of charting these differences, we have highlighted where rank 1, 12, and 25 are for each sub-indicator.

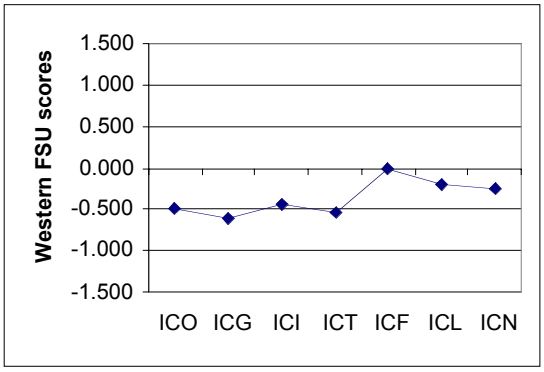
Figure 1: Competitiveness patterns for 1998. *Source:* Authors' calculations.

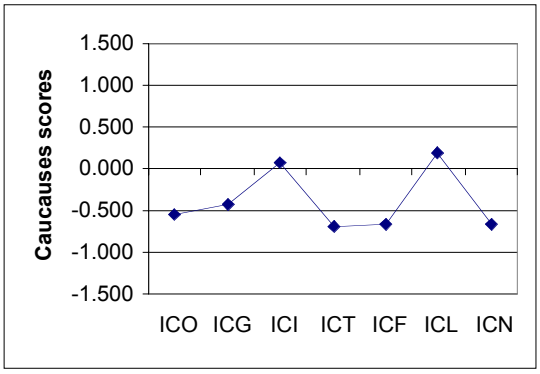


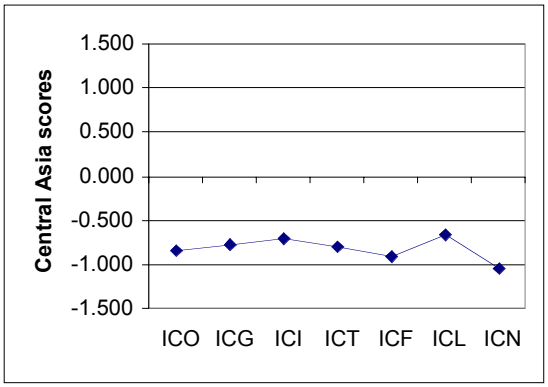












Notes:

1. ICO-Openness, ICG-Government, ICI-Infrastructure, ICT-Technology, ICF-Financial sector, ICL-Management/labor quality, ICN-Institutions.
2. Higher scores are better.
3. The horizontal zero axis represents the (standardized) average value for all transition countries. The further below (above) this line worse (better) the cluster is than the transition country average.

Figure 1 provides a simple way to chart each cluster's relative performance and to make inter-cluster comparisons. Each graphic can be considered the cluster's pattern of competitiveness for 1998. While the EU Border States and the Baltics still come out on top (average competitiveness scores of 1.15 and 1.0, respectively), a number of differences become evident. First, while EU Border States are tops, they would do even better if they were relatively more open, say as the Baltics were. We see, however, that this cluster's highest performance is in the quality of its governments. The Baltics on the other hand have two glaring weak points keeping them from the level of competitiveness found in the EU Border States, namely, their infrastructure and the quality of their labor markets.

Turning next to the Balkans (average competitiveness score of -0.34), we see that they nominally edge out the Western FSU (average competitiveness score of -0.40) for next in line. While they are below average for all sub-indicators except openness where they are average, they are even relatively weaker in good government and in particular labor market quality. (Note how the Balkan country, Albania fits this latter point as well). Note that the relatively strong (in fact, "average") performance of the Western FSU financial sector is driven by Russia's score.

Finally Central Asia (average competitiveness score of –0.96) is generally worst on each sub-indicator, the notable exception being its labor markets. Perhaps not surprisingly, it is most behind in its institutions; rule of law, the political process, and civil society are simply least developed in this part of the world.

1.2.2 Within-cluster differences of competitiveness

These are illustrated in eight graphs contained in Figure 2 through Figure 5. As shown in Table 9, we see that Hungary/Czech/Poland tend to do the best and the "new" states the worst in the EU Border States. For competitiveness, the spread is substantial between Hungary and Croatia – 2 standard deviations. Finally we see that while the Czech Republic excels in its labor markets, it does relatively poorly in its infrastructure.

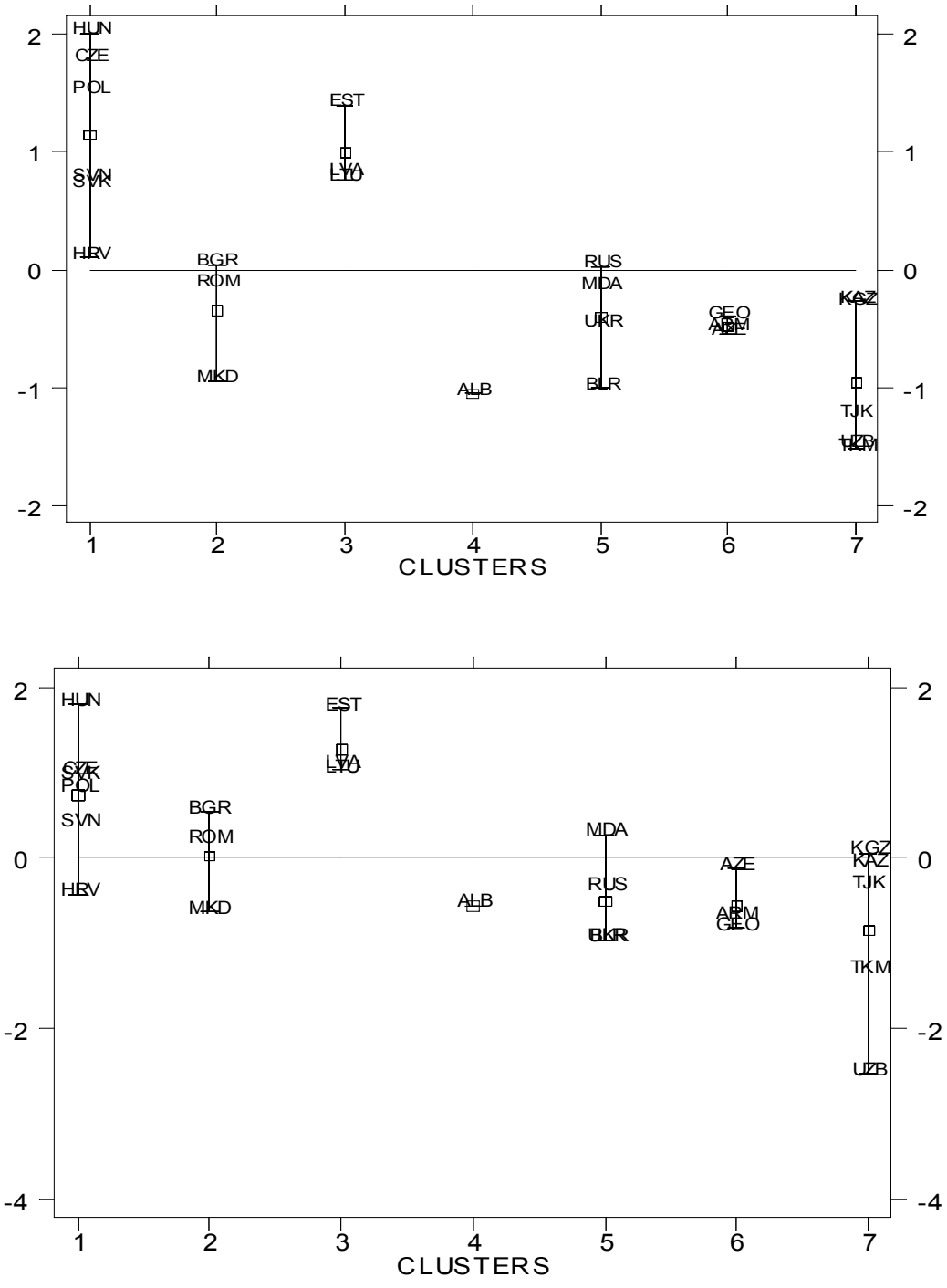
In the Balkans we find that Macedonia is uniformly and significantly behind Romania and Bulgaria. In the case of the Baltics, we find performance at the sub-indicator level broadly in line with the competitiveness scores.

The Western FSU presents more diversity at the country level. While Russia is overall the most competitive and has the best financial sector, Moldova is the most open and has the best government – with Belarus having by far the worst (as is its score on institutions). Moldova, on the other hand has by far the weakest management and labor markets. Ukraine has the best infrastructure with, again, Belarus having the worst.

The Caucasus, whose countries competitiveness scores were very close, showed Armenia to be rather more open. Georgia, on the other hand, while having an financial sector way less developed than the rest of the cluster scored much better in terms of infrastructure and institutions.

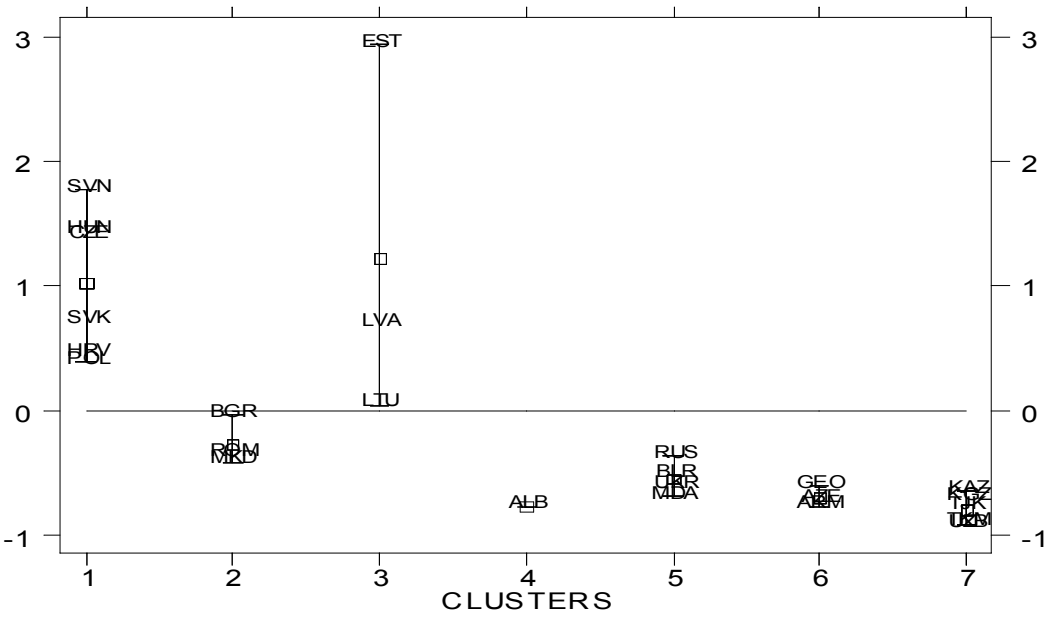
Finally, with the exception of labor markets, the pattern is fairly constant across sub-indicators. Kazakhstan and the Kyrgyz Republic do the best – often by a wide margin – and Turkmenistan does the worst, again by far. In the case of labor markets Turkmenistan surprisingly substantially exceeds its other cluster members, with scores at the level of those of the Baltics. Finally, regarding Uzbekistan, it distinguishes itself by being by far the least open.

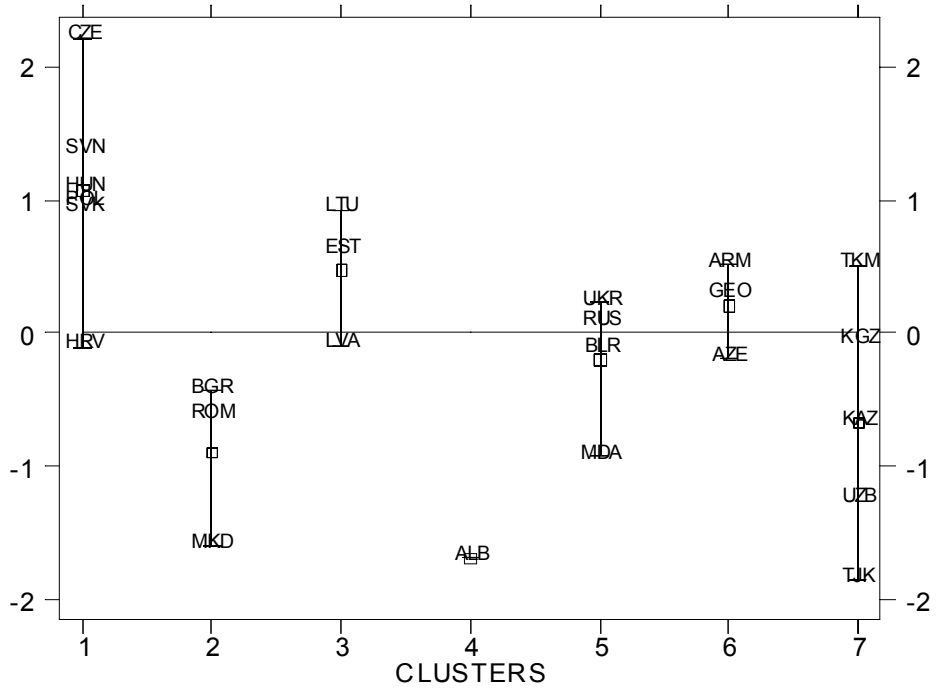
Figure 2: Intra-cluster differences in competitiveness and its sub-components. *Source:* Authors' calculations.



Notes: The cluster numbers are: 1-EU Border States, 2-Baltics, 3-Balkans, 4-Albania, 5-Western FSU, 6-Caucasus, 7-Central Asia. Hollow squares refer to each cluster's average and the horizontal line is the average (zero) for the entire transition countries

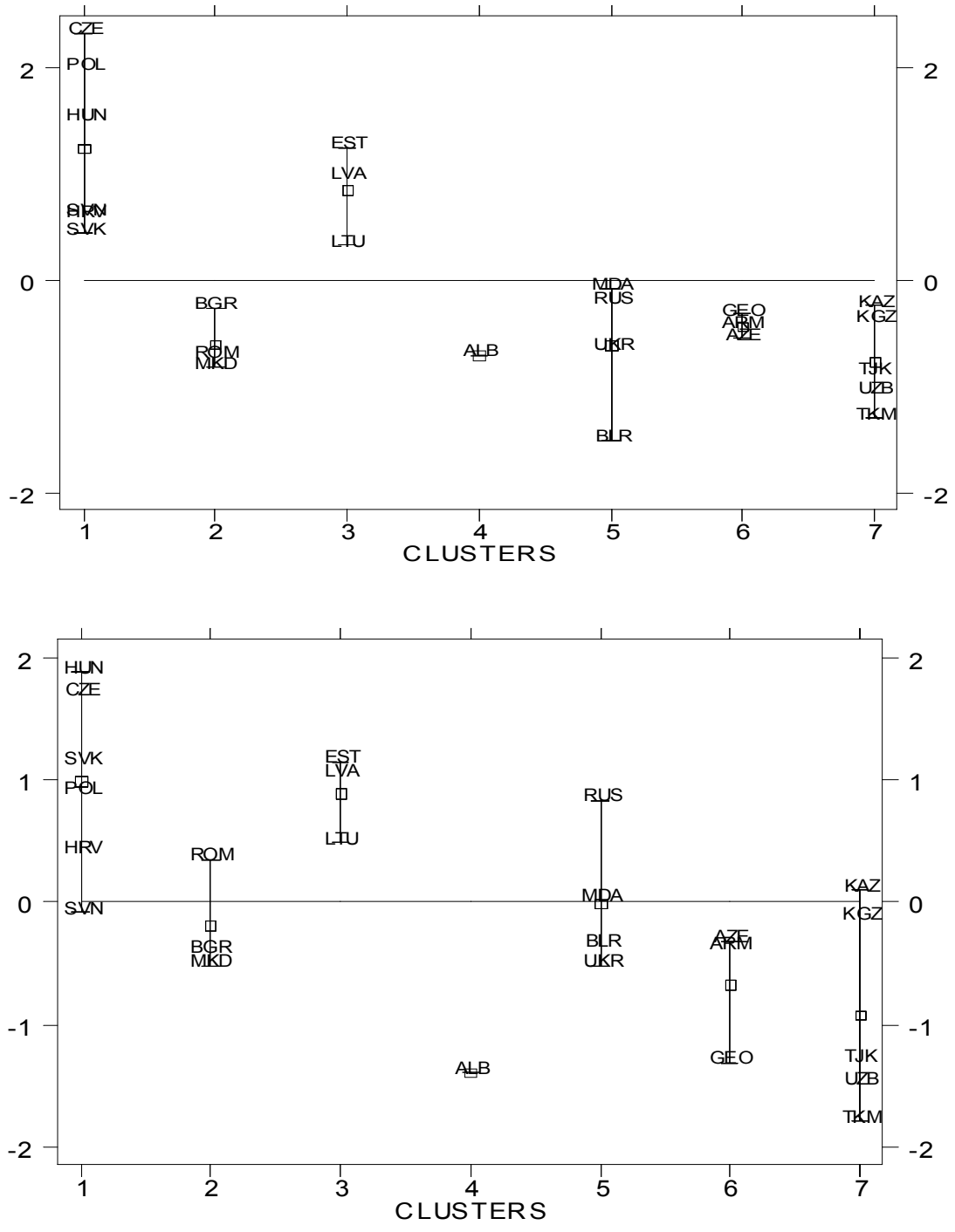
Figure 3: Intra-cluster differences in competitiveness and its sub-components. Source: Authors' calculations





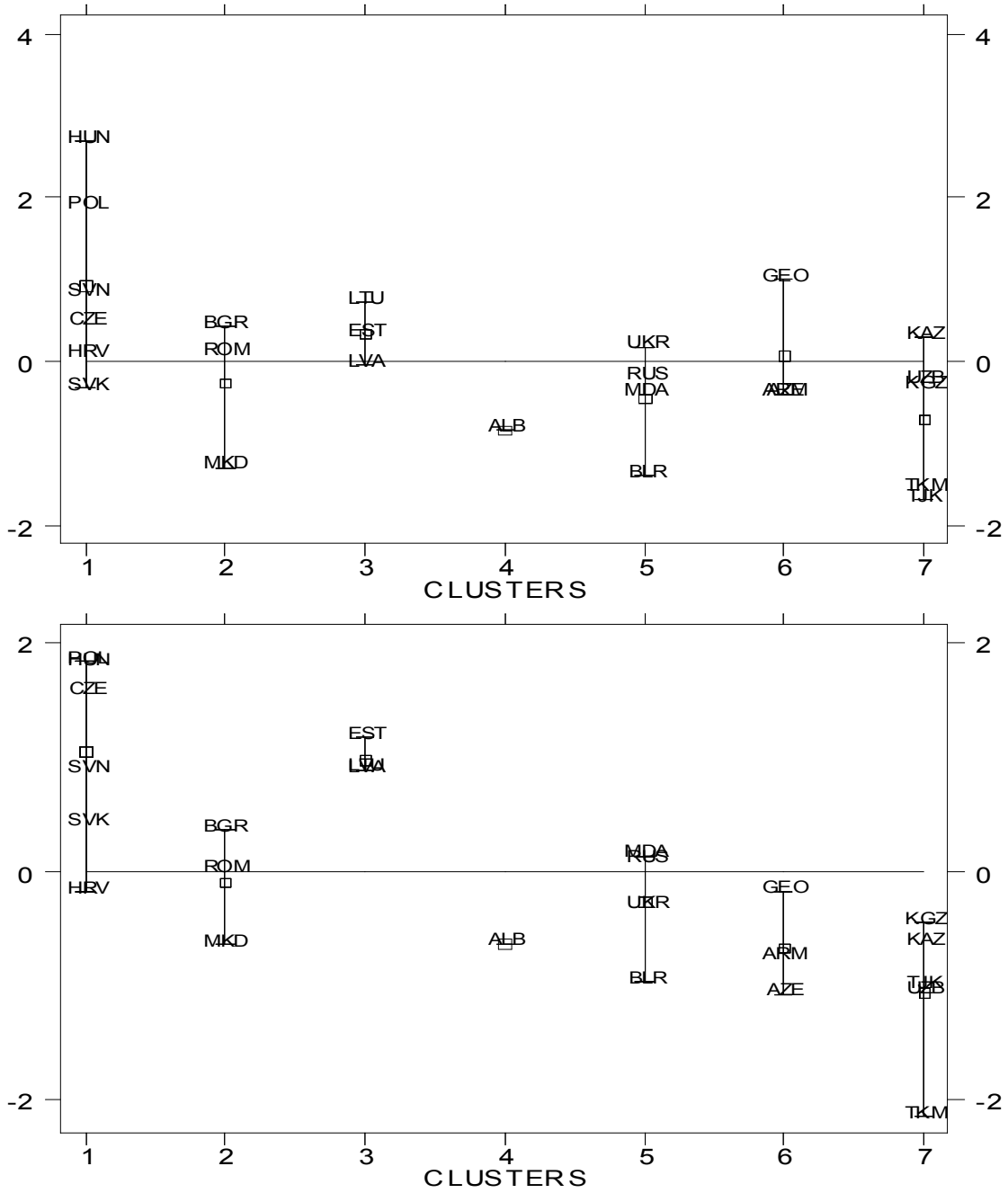
Notes: The cluster numbers are: 1-EU Border States, 2-Baltics, 3-Balkans, 4-Albania, 5-Western FSU, 6-Caucasus, 7-Central Asia. Hollow squares refer to each cluster's average and the horizontal line is the average (zero) for the entire transition countries

Figure 4: Intra-cluster differences in competitiveness and its sub-components. Source: Authors' calculations.



Notes: The cluster numbers are: 1-EU Border States, 2-Baltics, 3-Balkans, 4-Albania, 5-Western FSU, 6-Caucasus, 7-Central Asia. Hollow squares refer to each cluster's average and the horizontal line is the average (zero) for the entire transition countries

Figure 5: Intra-cluster differences in competitiveness and its sub-components. Source: Authors' calculations.



***Notes**:* The cluster numbers are: 1-EU Border States, 2-Baltics, 3-Balkans, 4-Albania, 5-Western FSU, 6-Caucasus, 7-Central Asia. Hollow squares refer to each cluster's average and the horizontal line is the average (zero) for the entire transition countries

1.2.3 The components of the sub-indicators

As a final comparison of the clusters and countries we may drop down by one level to decompose sub-indicator performance. For this purpose we calculate the "sub-sub-indicators" described in Table 2 through Table 8 containing the design of each sub-indicator. The results are given in Table 10 through Table 15. Let us identify from these tables some of the main weaknesses – and strengths – of the countries at this lower level of disaggregation. At the same time we use these tables for explanations regarding the within-cluster observations made in conjunction with our discussion of Figure 2 through Figure 5.

Openness. While Hungary is number one in openness, it achieves this standing due to its favorable international regulatory environment and open capital account but in spite of a relatively weak performance of its current account, where it ranks 12th. Estonia on the other hand achieves high scores on openness (2nd) with improvements still required regarding its compliance with international regulation. Poland, the least open of the "mature" EU Border States (ranked 7th), is among the worst countries in terms of its current account openness, ranking 23rd out of all the countries. Slovenia, 8th in openness, ranks 24th overall in its capital account. The opposite pattern is found in Central Asia. Tajikistan, ranked 15th overall in openness, ranks 1st in its current account; Belarus and Turkmenistan also chime in for a spectacular 4th and 8th on this component in spite of an overall openness ranking of 22rd and 24th, respectively. With Azerbaijan, ranked 14th overall in openness achieves a rank of 2nd place in terms of its capital account openness.

Good government. Here Hungary gets clobbered, ranking 21st in the quality of its fiscal policy. Tajikistan, ranked 22nd in terms of good government overall, achieves 4th best performance in terms of its macro policy environment. Slovenia, ranked 6th in overall good government, needs to work on its fiscal policy side where it comes in 19th. Interestingly, both Romania and Macedonia, while not doing well overall on this sub-indicator – 19th and 21st, respectively, manage good scores in terms of government policy stability.[7]

Management and labor markets. Here Slovenia, Hungary and Poland are all pulled down by labor market inefficiencies due to wage controls and tax distortions. Albania, on the other hand, while ranking 24th overall in terms of labor quality, has achieved a very free – and therefore efficient – labor market, scoring 2nd on market efficiency. Romania and Azerbaijan also do well on labor market efficiency in spite of a poor overall showing on the sub-indicator. Russia on the other hand scores very poorly on market efficiency (22nd) but has a high level of human capital (scoring 6th on this component); Belarus has a similar problem with the respective ranks of 25th on efficiency and 7th on quality for an overall sub-indicator score of 16th.

Financial sector. The Czech Republic's overall sector score of 2nd is blemished by a relatively poor score of 10th for non-bank financial institutions; the same for Poland where the figures are 6th and 15th, respectively. Slovakia, scoring 4th overall on this sub-indicator, needs to do serious work on its capital markets where it scores 18th if it wants a more competitive financial sector. Russia, with an overall financial sector score of 7th, would have done even better if it weren't for its very poor investment performance scored of 21st overall, due to poor access of the private sector to credit.

[7] Note that stable policy does not mean that what has been maintained is necessarily good policy.

Table 10: Summary of openness indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	***Openness***	*Regulatory environment*	*Current account*	*Capital account*	*Competitive-ness rank*
Hungary	1	2	12	1	1
Estonia	2	10	2	5	4
Latvia	3	8	10	4	5
Lithuania	4	9	7	7	7
Czech Rep.	5	6	6	11	2
Slovakia	6	7	5	13	8
Poland	7	1	23	3	3
Bulgaria	8	14	11	9	10
Slovenia	9	3	3	24	6
Moldova	10	11	9	16	13
Romania	11	5	21	12	12
Kyrgyz Rep.	12	4	14	17	15
Kazakhstan	13	17	17	6	14
Azerbaijan	14	20	22	2	19
Tajikistan	15	23	1	23	23
Russia	16	19	20	10	11
Croatia	17	12	18	20	9
Albania	18	16	24	8	22
Macedonia	19	15	13	22	20
Armenia	20	18	16	19	18
Georgia	21	13	25	14	16
Belarus	22	24	4	21	21
Ukraine	23	21	15	18	17
Turkmenistan	24	25	8	15	25
Uzbekistan	25	22	19	25	24

Table 11: Summary of good government indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	***Good government***	*Public administration*	*Macro policy*	*Fiscal policy*	*Policy/-political coherence*	*Competitiveness rank*
Czech Rep.	1	4	1	3	1	2
Poland	2	1	5	2	2	3
Hungary	3	2	2	21	3	1
Estonia	4	5	3	12	5	4
Latvia	5	6	7	1	10	5
Slovenia	6	3	6	19	9	6
Croatia	7	9	11	7	4	9
Slovakia	8	8	10	5	8	8
Lithuania	9	7	8	15	12	7
Moldova	10	11	14	6	13	13
Kazakhstan	11	17	17	4	17	14
Russia	12	13	15	8	14	11
Bulgaria	13	10	12	13	20	10
Georgia	14	12	13	11	18	16
Kyrgyz Rep.	15	14	9	18	16	15
Armenia	16	15	16	10	23	18
Azerbaijan	17	21	21	16	11	19
Ukraine	18	24	19	9	21	17
Romania	19	19	18	24	6	12
Albania	20	16	20	17	19	22
Macedonia	21	20	22	23	7	20
Tajikistan	22	25	4	25	15	23
Uzbekistan	23	22	24	14	24	24
Turkmenistan	24	23	25	20	22	25
Belarus	25	18	23	22	25	21

Table 12: Summary of management/labor indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	***Management/-labor***	*Quality*	*Market efficiency*	*Competitiveness rank*
Czech Rep.	1	2	1	2
Slovenia	2	1	17	6
Hungary	3	3	19	1
Poland	4	4	14	3
Slovakia	5	5	10	8
Lithuania	6	9	4	7
Estonia	7	10	9	4
Armenia	8	11	11	18
Turkmenistan	9	8	15	25
Georgia	10	15	3	16
Ukraine	11	13	7	17
Russia	12	6	22	11
Kyrgyz Rep.	13	16	8	15
Latvia	14	14	12	5
Croatia	15	12	18	9
Belarus	16	7	25	21
Azerbaijan	17	19	5	19
Bulgaria	18	17	16	10
Romania	19	21	6	12
Kazakhstan	20	18	20	14
Moldova	21	22	13	13
Uzbekistan	22	20	24	24
Macedonia	23	23	23	20
Albania	24	25	2	22
Tajikistan	25	24	21	23

Table 13: Summary of financial sector indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	***Financial sector***	*Investment performance*	*Banking*	*Capital markets*	*Non-bank financial*	*Competitiveness rank*
Hungary	1	3	1	1	3	1
Czech Rep.	2	2	2	6	10	2
Estonia	3	4	5	7	4	4
Slovakia	4	1	6	18	7	8
Latvia	5	9	4	9	1	5
Poland	6	8	3	3	15	3
Russia	7	21	7	2	2	11
Lithuania	8	13	11	5	6	7
Croatia	9	7	8	4	21	9
Romania	10	5	16	11	13	12
Kazakhstan	11	14	15	13	5	14
Moldova	12	12	13	15	11	13
Slovenia	13	11	9	12	20	6
Kyrgyz Rep.	14	19	18	10	9	15
Azerbaijan	15	6	20	22	14	19
Belarus	16	17	21	17	8	21
Armenia	17	18	19	8	16	18
Bulgaria	18	15	14	14	19	10
Ukraine	19	24	17	21	12	17
Macedonia	20	16	10	16	23	20
Tajikistan	21	23	23	23	17	23
Georgia	22	25	12	25	18	16
Albania	23	22	22	19	24	22
Uzbekistan	24	10	25	20	25	24
Turkmenistan	25	20	24	24	22	25

Table 14: Summary of infrastructure indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	***Infrastructure***	*Availability*	*Regulatory quality*	*Degree of competition*	*Competitiveness rank*
Hungary	1	1	1	2	1
Poland	2	3	6	1	3
Georgia	3	9	12	3	16
Slovenia	4	2	8	11	6
Lithuania	5	7	2	22	7
Czech Rep.	6	4	19	7	2
Bulgaria	7	5	9	14	10
Estonia	8	6	7	24	4
Kazakhstan	9	12	13	10	14
Ukraine	10	16	16	5	17
Romania	11	10	10	13	12
Croatia	12	11	11	15	9
Latvia	13	14	3	23	5
Russia	14	13	14	17	11
Uzbekistan	15	18	22	4	24
Kyrgyz Rep.	16	19	4	16	15
Slovakia	17	8	20	19	8
Armenia	18	20	17	9	18
Moldova	19	15	15	18	13
Azerbaijan	20	17	21	6	19
Albania	21	25	5	8	22
Macedonia	22	21	18	25	20
Belarus	23	23	24	12	21
Turkmenistan	24	22	23	20	25
Tajikistan	25	24	25	21	23

Table 15: Summary of institutions indicator and its sub-indicators, best to worst, 1998. *Source*: authors' calculations

Country	*Institutions*	*Political environment*	*Rule of law*	*Competition in markets*	*Competitiveness rank*
Poland	1	1	2	1	3
Hungary	2	3	1	2	1
Czech Rep.	3	2	3	3	2
Estonia	4	6	4	6	4
Lithuania	5	4	6	8	7
Latvia	6	7	7	5	5
Slovenia	7	5	5	10	6
Slovakia	8	9	10	4	8
Bulgaria	9	8	8	12	10
Moldova	10	12	9	13	13
Russia	11	13	14	7	11
Romania	12	10	11	18	12
Georgia	13	16	16	15	16
Croatia	14	15	12	19	9
Ukraine	15	14	18	9	17
Kyrgyz Rep.	16	19	17	16	15
Kazakhstan	17	20	22	11	14
Albania	18	17	21	20	22
Macedonia	19	11	13	24	20
Armenia	20	18	15	23	18
Belarus	21	23	24	14	21
Tajikistan	22	22	19	21	23
Uzbekistan	23	24	23	17	24
Azerbaijan	24	21	20	22	19
Turkmenistan	25	25	25	25	25

Infrastructure. We can now see why the Czech Republic did less well than its neighbors on infrastructure: its public services are not as well regulated as theirs, leading to lower accountability to beneficiaries and higher costs of service provision. For Lithuania ranked 5th on infrastructure, the problem is a lack of competition in the strategic sectors where it comes in 22nd overall, a problem share by 8th place Estonia, which scores an abysmal 24th on this component. Interestingly, Ukraine, Uzbekistan, and Moldova, while in the bottom half of infrastructure overall, have very competitive sectors. Finally, note how well Georgia on infrastructure, scoring 3rd overall; it would do even better if it received technical assistance to improve the quality of its infrastructure regulation

Institutions. Here is that there are few "reversals". For the most part sub-indicator scores respect the component scores. Perhaps the biggest result is that scores on this sub-indicator are the best predictors of scores on competitiveness – in spite of receiving the lowest weight in the overall indicator! This underscores one of our major policy conclusions: though hard to build and improve, institutions and rule of law matter most in the transition process.

1.2.4 Intermediate outcome comparisons

Though we hope the preceding discussion provided a feel for the nature and power of the competitiveness indicator and its sub-indicators, we round this out by comparing these indicators to better known performance measures.

Figure 8 relates competitiveness in 1998 to the cumulative growth in per capita GDP over the transition period. As is seen, the more competitive the country by our indicator, the higher was its growth in per capita GDP. Turning to foreign direct investment in Figure 9 reveals a similar picture, this time from the point of view of the investor. More competitive countries clearly attracted more foreign direct investment in 1998. This should not be surprising. A competitive economy provides a strong base for exports as well as offering lower production – and transactions – costs to the investor.

Figure 6 and Figure 7 provide a similar message from the sub-indicator level. The former suggests how good government considerations that raise competitiveness are also correlated with cumulative GDP growth over the transition period. The same holds for openness: increasing a country's global integration (which our openness measure captures) is correlated to GDP growth.

Figure 6: The importance of good government for economic growth. *Source:* Authors' calculations and Havrylyshyn (1998).

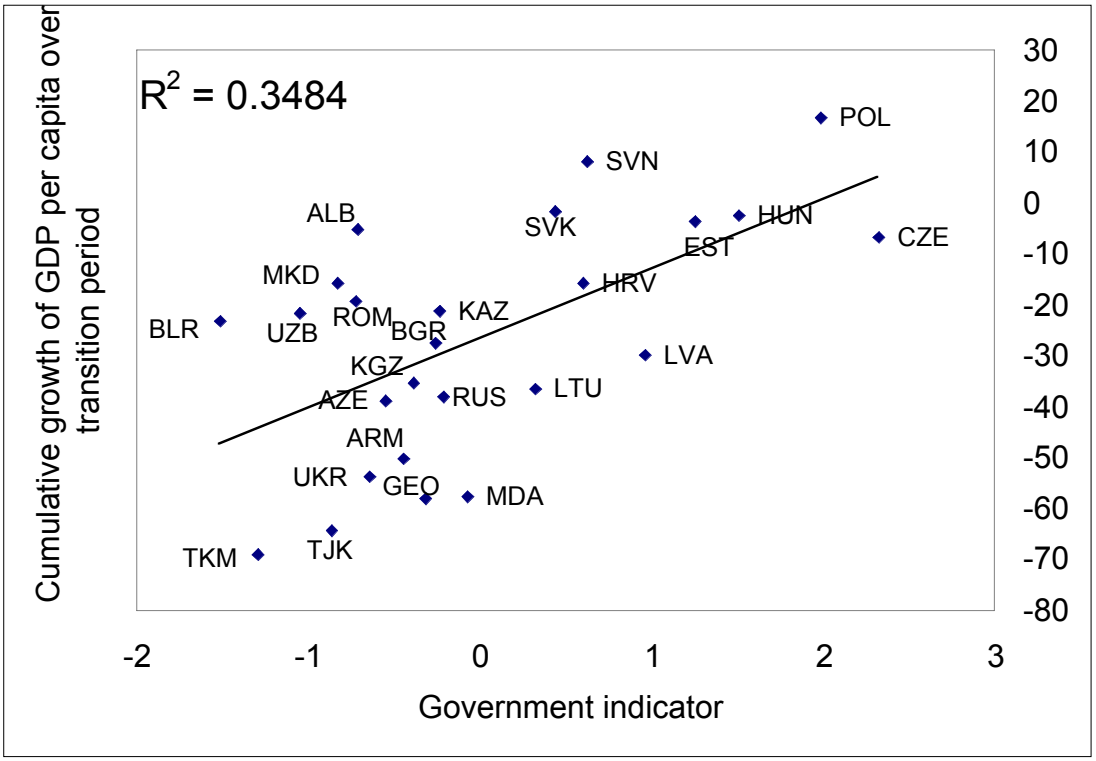


Figure 7: The importance of openness for economic growth. *Source:* Authors' calculations and Havrylyshyn (1998).

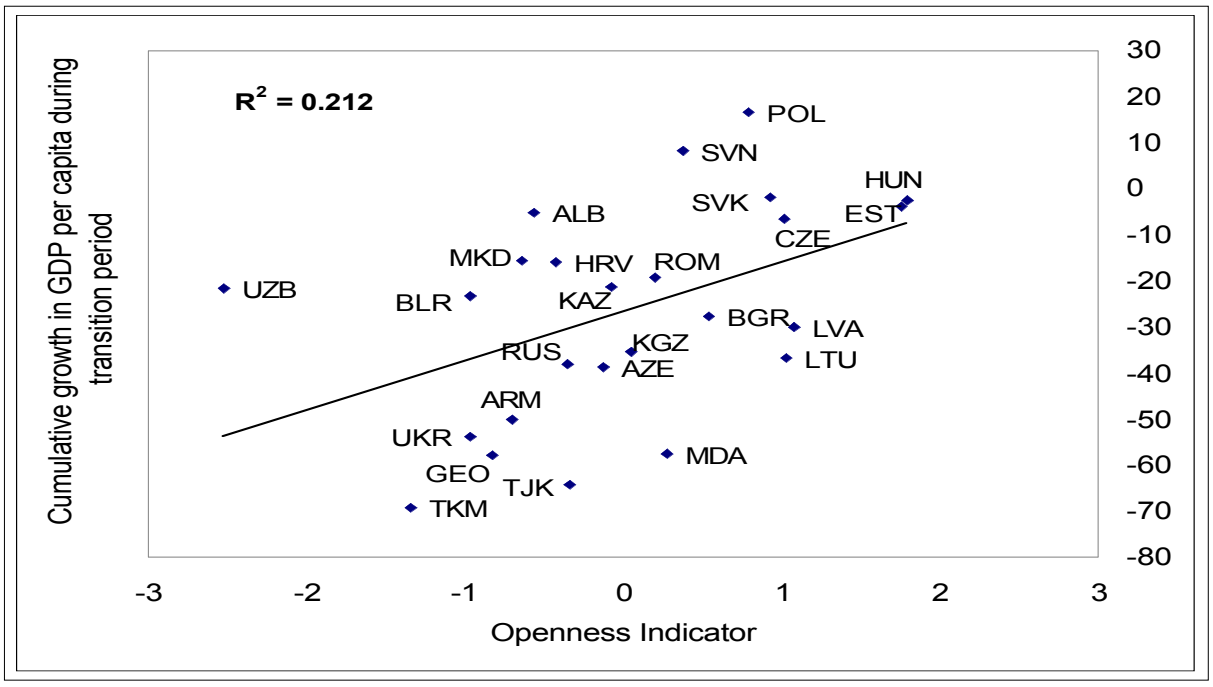


Figure 8: Competitiveness promotes per capita economic growth. *Source:* Author's calculations and WDI.

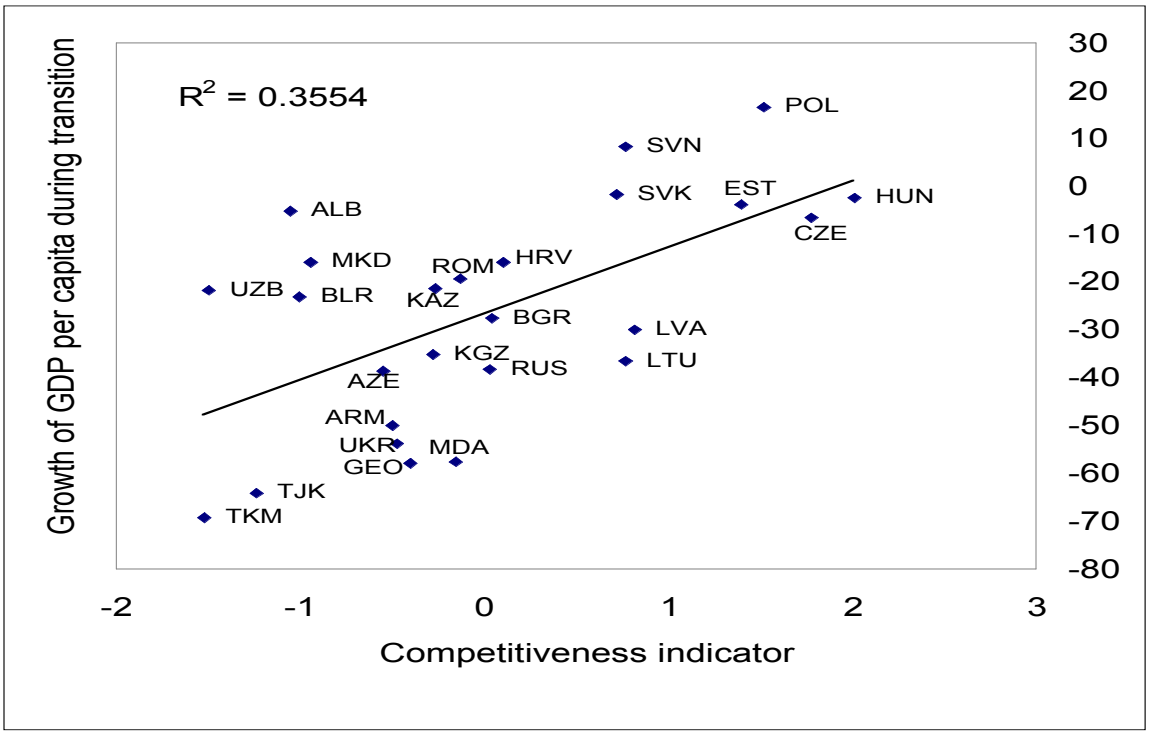
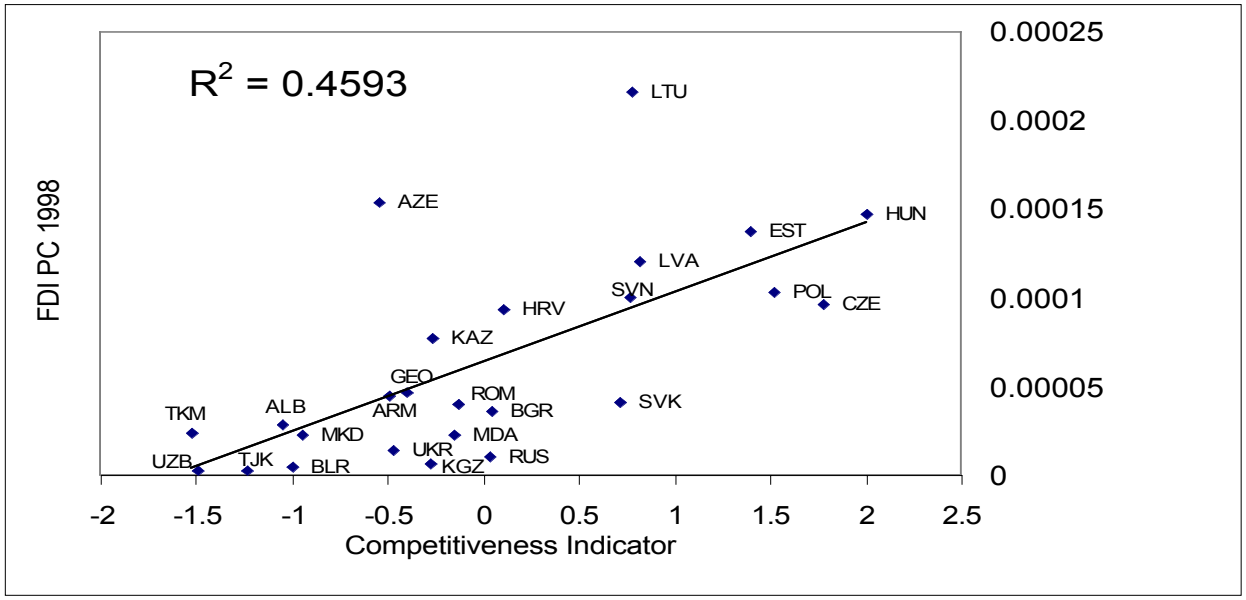


Figure 9: Competitiveness attracts foreign direct investment. *Source:* Author's calculations and EBRD.



1.3 Comparisons outside the transition region

While the previous sections describe in detail how the transition countries compare among themselves and between clusters, international competitiveness requires that transition economies are able to compete in the world as a whole. It is thus interesting to compare the competitiveness of transition countries to the non-transition countries.

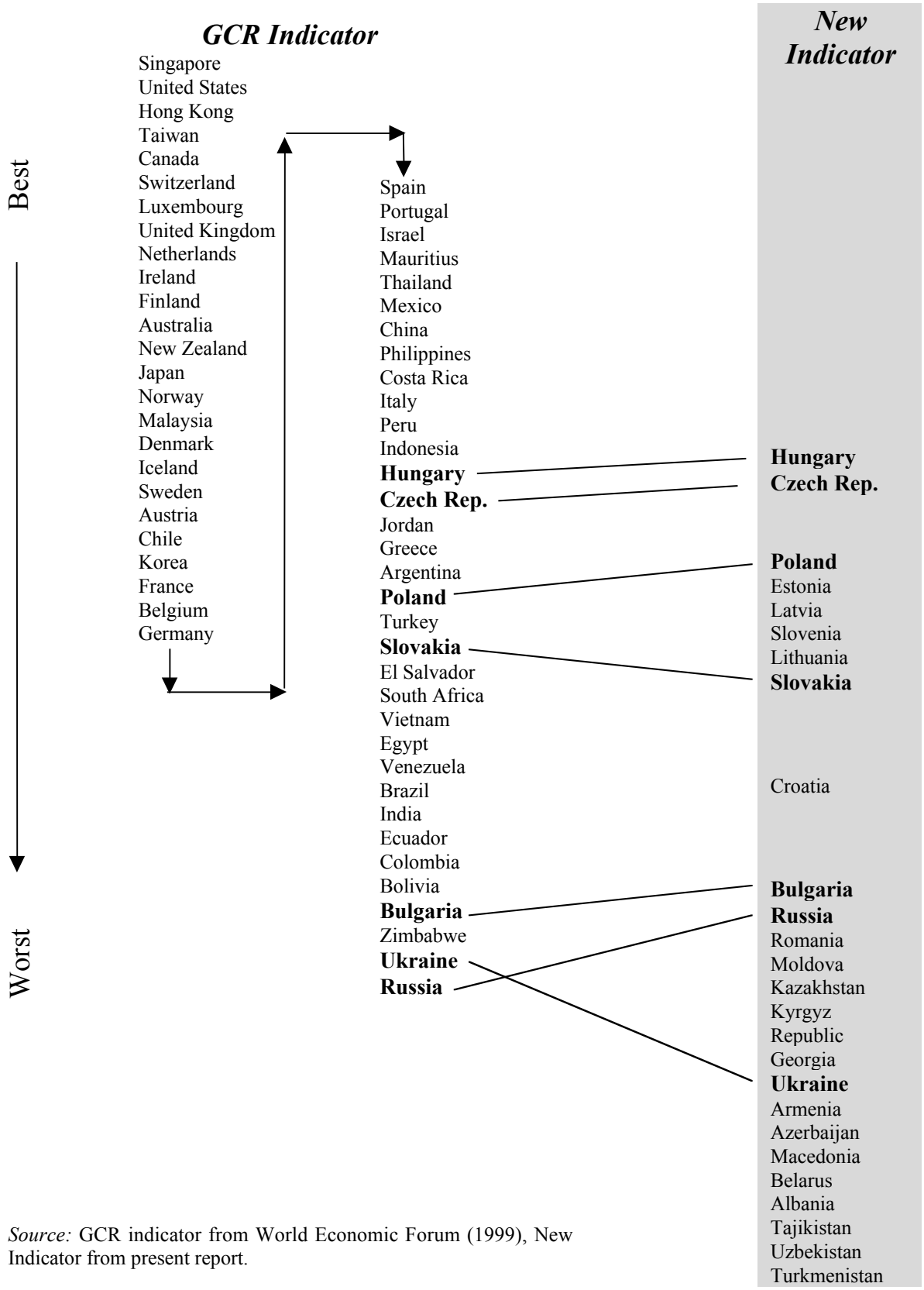
While it would have been an additional substantial data collection effort to assemble a dataset of variables used in Table 2 through Table 8 for the non-transition countries, we have purposely designed our competitiveness indicator to obviate that need. In particular, by using the same sub-indicators as the GCR and a methodology that combines field survey data with "hard" data, there is reason to believe that the two measures are conceptually similar. This allows us to link the two ranking schemes in a two-step procedure. First, we use the fact that both schemes overlap for seven countries to line up these countries. Then we insert the rest of the transition countries into the GCR scheme according to how they already fit into our indicator. The result is shown in Figure 10.

What is striking about these results is that, as hoped, the two indicator schemes rank the overlapping countries identically.[8] What we find is that all of the Balkans, the Caucasus, the Western FSU, and Central Asia are less competitive than the whole of the GCR sample with the exception of Zimbabwe, i.e., essentially the rest of the world. The EU Border States (with the exception of Croatia) and Baltics, on the other hand, are in the same league as Turkey and are more competitive than the Andean Pact countries and economic powerhouses such as Brazil, India, and South Africa.

While these results are only indicative, they certainly send a strong signal and incentive to the regions involved to improve their country's level of competitiveness if the higher incomes per capita associated with the higher rankings are desired.

[8] While Ukraine and Russia appear to be exceptions, this is not quite the case since our indicator is for t he period 1997/8 and in 1997 the GCR actually had these two countries' ranks reversed.

Figure 10: Comparison of transition country competitiveness with the rest of the world for 1998



Source: GCR indicator from World Economic Forum (1999), New Indicator from present report.

Annex A: Data sources used for the initial conditions.

Source	*Variables*
WDI - World development indicators, World Bank:	Resource balance, Domestic absorption, Gross domestic savings, Physicians, Domestic investment, Vehicles, Televisions, Telephone lines, Commercial energy use, Electricity consumption, Infant mortality, Life expectancy, Hospital beds, Private consumption, Paved roads, Birth rate, Population growth, Urbanization, Consumption, Public health expenditures, Fixed domestic investment, Share of services in GDP, GNP per capita 89,PPP adjusted, Working age population, Energy imports, Fertility rate, urban population growth, working age population, old population
De Melo, Denziger, Gelb and Tenev, Circumstance and Choice, World Bank, 1997	Natural resource abundance, Share of industry in GDP, Black market premium, Industrial overload, Trade, Share of agriculture in GDP, first principal component, second principal component, Income per capita, 1987-1990 repressed inflation, Period under central planning, economic freedom index
Human Development report statistics, UNDP	Education index, School participation, Human development index
National authorities & IMF staff	GDP Growth, 1990 inflation, Government expenditures
Growth file, Sachs/Amar, HIID	Distance to major ports, Landlocked population
Fischer, Sahay, Vegh, (1996)	: the early Experience, JPE V10,N2, Spring 96: Share of exports to CMEA countries
World Bank	% Muslims, % Christians, % Orthodox, Government revenues
Freedom House	Democratic rights index

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[To be completed]

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