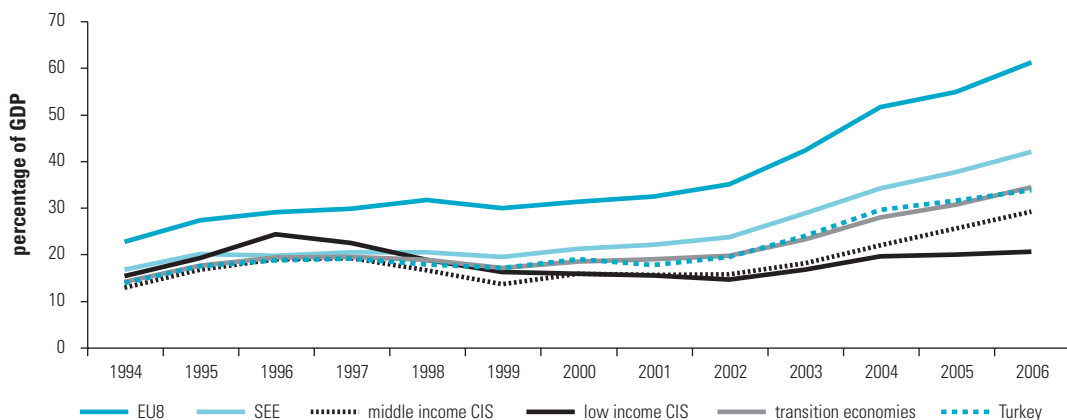


## International Trade

A key reform at the beginning of the transition was price liberalization, opening domestic markets of tradable goods to international prices and setting in motion the integration of the countries of Eastern Europe and the former Soviet Union into the world economy. Merchandise exports and imports in those countries expanded from just over 15 percent of GDP in 1994 to nearly 35 percent in 2006. Services, a low priority under central planning, emerged as a dynamic force in such sectors as telecommunications, transportation, energy, and banking, boosting services trade to nearly 7 percent of GDP.

These averages mask large intraregional variation: merchandise exports and imports in 2006 ranged from 20 percent of GDP for the low income CIS countries to more than 60 percent in the EU8 with the Southeastern European (SEE) countries falling in between at 40 percent of GDP (figure 6.1). Services trade ranged from under 5 percent of GDP for the middle income CIS countries, where services are heavily burdened by regulation and protected from competition, to nearly 10 percent for the Southeastern European countries (figure 6.2). Indeed, fed by foreign direct investment (FDI) in Estonia, Lithuania, and the coastal Balkans, the share of services in GDP in the EU8 and Southeastern Europe reached nearly 62 percent in 2005, far

**FIGURE 6.1**  
**Merchandise Trade Openness as Percentage of GDP, in Purchasing Power Parities**



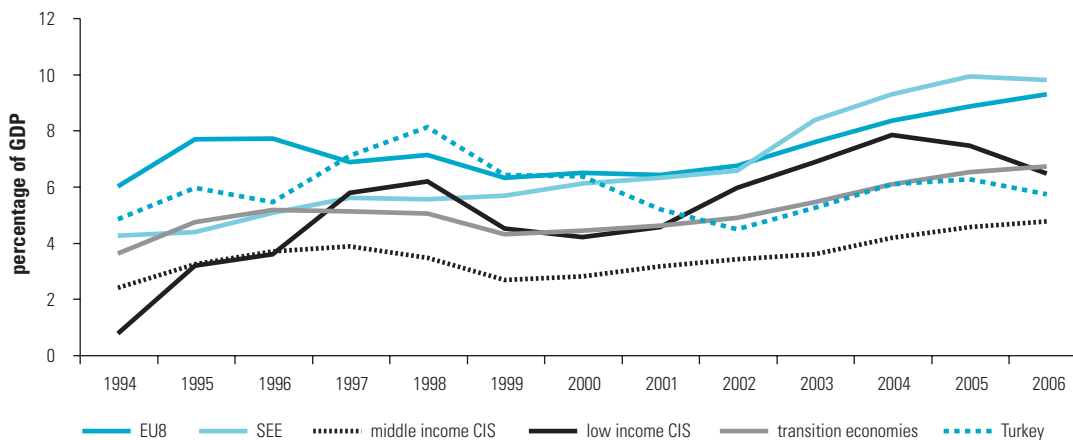
Source: World Bank staff estimates.

higher than around 43 percent in the South Caucasus (Armenia, Azerbaijan, Georgia) and Central Asia (Kazakhstan, the Kyrgyz Republic, Tajikistan, Uzbekistan).

**Direction of Trade**

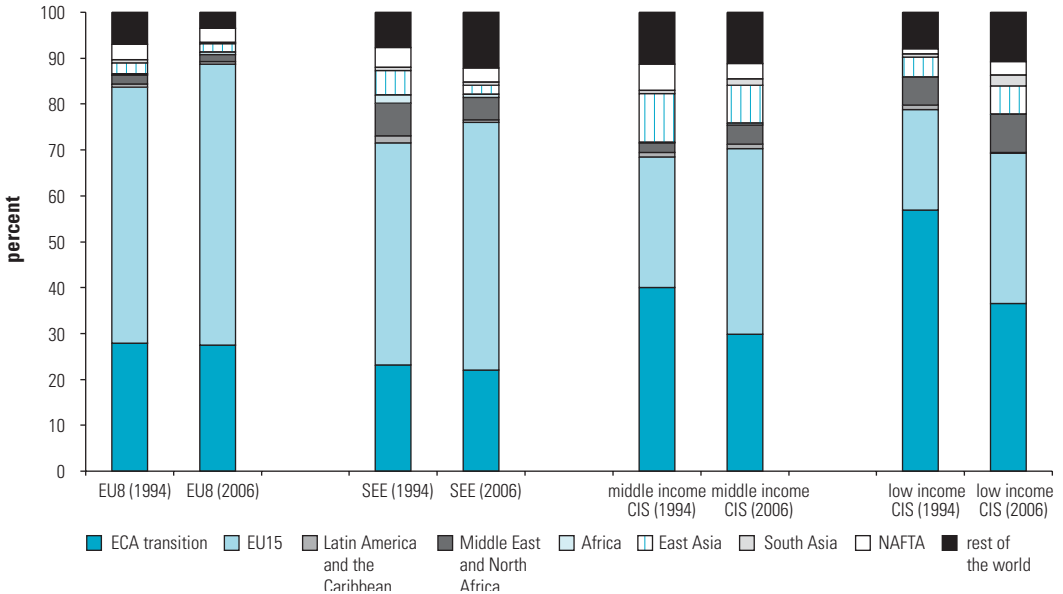
Figure 6.3 compares the global destination of merchandise exports between 1994 and 2006. The share of EU8 exports absorbed by the EU15 countries, already the highest among transition country groups

**FIGURE 6.2**  
**Services Trade Openness as Percentage of GDP, in Purchasing Power Parities**



Source: World Bank staff estimates.

**FIGURE 6.3**  
**Global Distribution of Merchandise Exports from the Transition Countries**



Source: IMF Direction of Trade Database.

in 1994, increased further by 2006, largely at the expense of trade with the rest of the world. The same was true of the share of Southeastern European exports absorbed by the EU15 countries, at the expense of trade with the Middle East, North Africa, and East Asia. Both the middle income and low income CIS groups substantially increased the share of their total exports going to the EU15 countries, largely at the expense of the transition countries and, to much less extent, North American Free Trade Agreement (NAFTA) countries. The EU15 became the most important destination for middle income CIS exports and nearly as important as the transition countries for low income CIS exports. Underlying this reorientation in recent years was the growing significance of fuel exports from the Russian Federation to the EU15. The share of low income CIS exports to East Asia and South Asia went up as well. So, all transition country groups increased the share of exports going to the EU15, and by 2006 the EU15 had become the most important destination for exports from three of the four transition country groups and the second most important for the fourth.

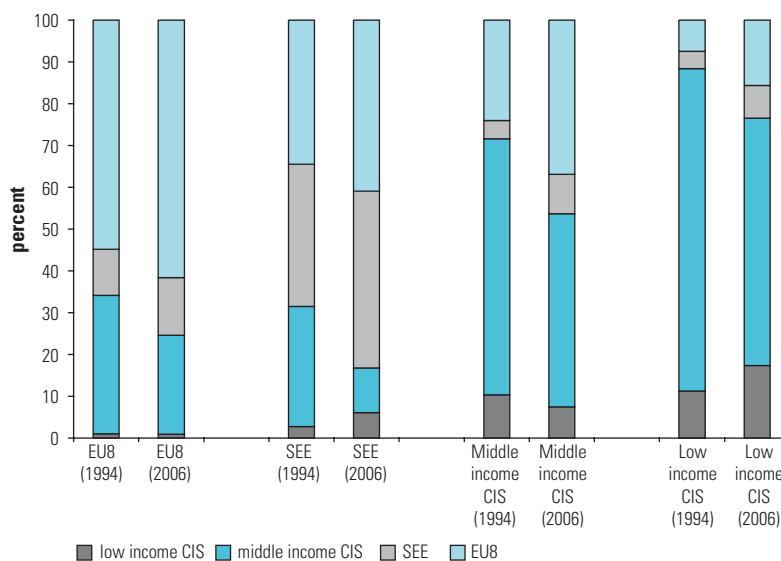
Figure 6.4 shows changes in intraregional patterns in the destination of merchandise exports. A modestly larger share of EU8 intraregional merchandise exports in 2006 went to the EU8 and Southeastern European countries, at the expense of the share of the middle income CIS countries, with the EU8 the dominant destination

(figure 6.4). A much larger share of Southeastern European intraregional exports went to Southeastern European countries, principally at the expense of the share of the middle income CIS countries, with the Southeastern European countries the dominant destination. A much larger share of middle income CIS intraregional exports went to the EU8 and Southeastern European countries, mainly at the expense of the share of the middle income CIS countries. But the middle income CIS remained the dominant destination. The share of low income CIS intraregional exports going to the EU8 and Southeastern European countries increased at the expense of the share of the middle income CIS countries. Again, the middle income CIS countries remained the dominant destination.

So, the salient features of intraregional merchandise exports were:

- The dominance of the EU8 and Southeastern European countries for the intraregional exports from each subgroup.
- The dominance of the middle income CIS countries for the intraregional exports of both middle income and low income CIS countries.
- A redirection of the intraregional exports from all four country groups away from the middle income CIS countries and toward the EU8 and Southeastern European countries.

**FIGURE 6.4**  
**Intraregional Distribution of Merchandise Exports**



Source: IMF Direction of Trade Database.

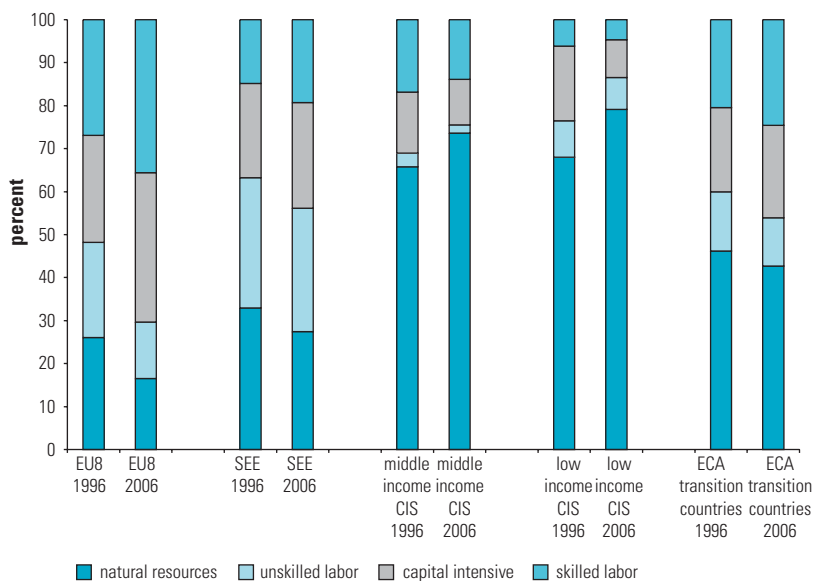
## Factor Composition of Trade

Shaping the factor intensity of trade in the different groups of countries are the changes in the sectoral distribution of economic activity that accompanied the onset of transition (figure 6.5). The collapse of manufacturing and the reverse migration of labor into subsistence, including agriculture, are reflected in an increase in the share of exports of natural-resource-intensive products—oil in Azerbaijan, gold in the Kyrgyz Republic, and aluminum in Tajikistan. They account for nearly 80 percent of the merchandise exports of the low income CIS countries, with skilled-labor-intensive and capital-intensive products making up a modest share. Heavy reliance on natural-resource-based products that involve little processing typically does not generate high paying jobs. Natural-resource-intensive products, such as oil and gas in Kazakhstan, the Russian Federation, and Turkmenistan, make up around 70 percent of the merchandise exports of the middle income CIS countries, but the share of skilled-labor-intensive and capital-intensive products in exports is notably higher than in the low income CIS countries.

At the other end of the spectrum of transition countries, 70 percent of EU8 merchandise exports are intensive in capital and skilled labor. They are less natural-resource-intensive than in the rest of the region, a pattern associated with higher paying jobs. Indeed, the con-

FIGURE 6.5

### Factor Intensity of Merchandise Exports



Source: Computations based on UN COMTRADE Statistics, adapted from World Bank 2005c.

centration of trade increased in the EU8 countries between 1996 and 2006 in activities different from those in the CIS countries. In Hungary and the Czech and Slovak Republics heavy industries, such as automotives and parts, are more important. The EU8 also reduced its share of unskilled-labor-intensive exports, consistent with higher labor costs. The Southeastern European countries have exports with relatively low capital and skilled labor intensity and relatively high unskilled labor intensity, with the share of the latter not having changed much between 1996 and 2006, even as exports rose. This reflects their relative specialization in low value-added products, a pattern not likely to be consistent with their comparative advantage.

### **Buyer-Driven and Producer-Driven Networks**

The various groups of transition countries differ not only in the factor composition of trade but also in the nature of trade itself. Globalization and multinational corporations' creation of production and distribution networks spanning the globe have boosted intrafirm trade to an estimated third of world trade. At some risk of oversimplification, countries in the region may be classified as those that participate actively in intraindustry trade and those that do not, including among the latter countries that trade predominantly in natural resources. This broad split can be seen in the degree of participation in global production-sharing networks, in which specialized activities are developed within a vertically integrated production network, increasing intraindustry trade at the expense of traditional interindustry trade.

Seven countries—the Czech Republic, Estonia, Hungary, Poland, the Slovak Republic, Slovenia, and Turkey, the high performing or HP7 countries—started by participating in network trade in clothing. This activity is intensive in unskilled labor and embedded in “buyer-driven” production chains, where global buyers create a supply base of production, and distribution systems are built without direct ownership. But prompted by rising wages, the HP7 moved into sectors such as automotive and information technology—intensive in skilled labor, capital, and knowledge, demanding foreign capital and know-how, and embedded in “producer-driven” production chains. Such networks divide the value chain into smaller pieces and move them to countries where production costs could be lower.

Production fragmentation in vertically integrated sectors is behind producer-driven network trade. It is characterized by two-way flows of parts and components for further processing and development

across firms in various countries and hinges critically on the presence of multinationals.

CIS countries such as the Kyrgyz Republic, Moldova, and Turkmenistan, involved in the buyer-driven production chains of the clothing trade, have not made a transition to producer-driven networks. Nor have Belarus, the Russian Federation, and Ukraine, countries active with the Kyrgyz Republic and Moldova in the furniture network. Although buyer driven, the furniture network is more diversified and complex, requiring larger inputs of skills and investments in capital assets—and creating more opportunities for knowledge transfers and productivity spillovers than the clothing network. The same is true for Armenia, prominent in the diamond supply chain. The remaining CIS countries have remained outside any network trade and have thus not taken advantage of this avenue of export growth. Network exports have significantly declined, however, in the Kyrgyz Republic and Moldova, where the high proportion of imported parts as a proportion of network exports of parts and final products suggests limited participation of local firms in the network.

But this stark binary picture for participation in production-driven networks needs to be qualified: not all EU8 and Southeastern European countries are heavily involved in producer-driven network trade. Latvia and Lithuania among the Baltic states and Albania, Bulgaria, Croatia, Romania, Serbia, and Montenegro in Southeastern Europe came into the clothing network later and continue to be heavily involved in outward processing for customers in Western Europe. Even so, the share of parts and components in manufacturing exports in 2006 reached 20 percent in the EU8 and 11 percent in Southeastern Europe, compared with around 6 percent in the CIS countries.

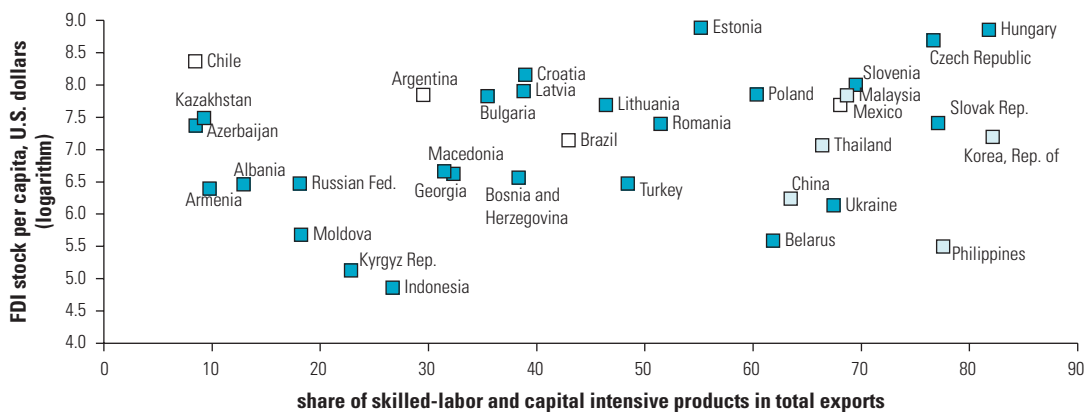
Sizable inflows of FDI have been instrumental in incorporating local manufacturing capacities into global production networks. Indeed, entering producer-driven networks appears to be almost impossible without FDI. Two of the largest recipients—the Czech Republic and Hungary—have also been the best performers in producer-driven network exports. While Hungary emerged as an early leader in Central Europe, the other HP7 countries also witnessed strong export performance after they attracted substantial FDI inflows and subsidiaries of multinationals. Indeed, there is a strong positive association in the region between the stock of FDI in manufacturing per capita and producer-driven network exports per capita. And even though participation in buyer-driven global chains in furniture or clothing does not require foreign investment, it is often associated with FDI. A good example is Romania's clothing sector, which is characterized by fairly high foreign penetration.

Countries participating in producer-driven network trade have seen a shift toward capital-intensive and skilled-labor-intensive products. More generally, however, countries with larger stocks of FDI per capita are also those with a higher share of such products in total exports. This share is by far the highest in Central Europe, followed by other middle income countries in the region such as Ukraine, Belarus, Romania, the Baltic states, Croatia, and Bulgaria (figure 6.6, which also shows countries in East Asia and Latin America, as well as Turkey). Low income countries such as Albania, Armenia, and Moldova and natural resource-rich countries such as Azerbaijan and Kazakhstan exhibit the lowest ratios. Cross-country differences in FDI per capita are striking, ranging from less than \$167 in Kyrgyzstan to \$7,212 in Estonia—more than 40 times larger.

The share of producer-driven network exports in total exports is the highest in Central Europe, followed by the Baltic states, whereas the share of buyer-driven network exports in total exports is the highest in Southeastern Europe. There is a statistically significant positive link between productivity growth in manufacturing and participation in buyer-driven and producer-driven networks.<sup>1</sup> This is because openness to FDI-enabled network trade improves productivity by providing access to investment capital, technology, and expertise.

Proximity to Western Europe has evidently been a major advantage for participation in networks. Indeed, the EU15 received nearly two-thirds of the producer-driven network exports of the transition countries and Turkey in 2006. For intra-regional trade in 2006, almost 75 percent of the total network exports of the transition countries

**FIGURE 6.6**  
**FDI Stock per Capita and Share of Skilled-Labor and Capital-Intensive Exports in 2006**



Source: UN COMTRADE and IMF International Financial Statistics Database.

Note: FDI stock per capita is for 10 years or more over the period.

and Turkey were accounted for by the EU8 and Turkey. That figure rises to 79 percent if Bulgaria and Romania are included as well. The corresponding figure for the CIS countries was 18 percent.

### Transition Countries: “Normally” Integrated?

There are large differences between subgroups of countries in the factor intensity of trade and the importance of intraindustry compared with interindustry trade. But there is no evidence, a decade and a half into the transition, of systematic overtrading or undertrading by the transition countries, whether measured multilaterally or bilaterally, based on such factors as population (a proxy for country size), geographic distance to major markets (a measure of market access), and GNP per capita.<sup>2</sup> This implies that the integration of even the low income CIS countries into the global economy is not significantly different from that of low income countries in other parts of the developing world. The transition countries thus resemble other countries in their relationship with the international trading system. This reintegrating into the world economy in barely a decade and a half since the beginning of the transition, is worthy of note. But some of the western Balkans—Albania, Bosnia, and Macedonia—are trading below their potential, a finding consistent with the evidence that the commodity composition of trade might not be in line with their comparative advantage.

With the exception of such countries as Belarus, Turkmenistan, and Uzbekistan, which have not proceeded far along the transition to a market economy, generally liberal trade policy regimes have prevailed in the region.<sup>3</sup> The remaining barriers to greater integration require “behind-the-border” reforms of the business environment. These include strengthening competition, improving governance, deepening the financial sector, and investing in skills and infrastructure. These changes are important for attracting the foreign direct investment needed to participate in network trade. Unlike geography, they are under the control of country authorities. While the priority to be accorded to different reforms will vary from one country to another, two sets of reforms have more general application for economic integration: trade facilitation and logistics, and service liberalization.

A first reform is to improve trade facilitation and logistics in port efficiency, customs regimes, regulatory policy, and information technology infrastructure. This reform has the potential to significantly increase intraregional trade and trade with the rest of the world. What might happen if existing levels of trade facilitation in 15 transition countries and Turkey, which account for 95 percent of the combined

GDP of all the transition countries and Turkey, rose to half the EU15 level? The gain in intraregional trade would be \$94 billion. And the gain in trade with the rest of the world would be \$178 billion, which is nearly 50 percent of the transition countries' and Turkey's trade with the rest of the world in 2003. The largest gains would come from improvements in information technology infrastructure (39 percent) and port efficiency (27 percent), complemented by reforming customs (19 percent) and streamlining regulations (15 percent).<sup>4</sup>

A second reform is to liberalize such services as banking, telecommunications, and transport, typically combining competition with effective regulatory supervision. Reforming services allows the growth of service exports. Chapter 2 also cited evidence that manufacturing industries that rely more heavily on inputs from more liberalized service sectors enjoy higher levels of productivity than those that do not—and the resulting increase in competitiveness promotes deeper integration with the global economy. The European Union's *acquis communautaire* has provided a framework for service liberalization in the transition countries during the process of accession.

The prospect of European Union accession provided the new member states with an external anchor that supported many of the reforms necessary for the creation of a business environment conducive to productivity growth and international integration. The extent to which countries without similar prospects can look to outside mechanisms to enhance the credibility of a reforming government and thus lock in the necessary institutions is an open question. In the context of services, it has been found that commitments made by some low income CIS countries to the General Agreement on Trade in Services (GATS), for example, have not been particularly effective in improving services trade and investment policies<sup>5</sup>.

### **Patent Citations, International Co-Invention and Multinational Sponsorship of Local Invention**

Another perspective on the links between openness and innovation, in addition to trade and EDI, is provided by examining knowledge flows through patent citations, international co-invention and multinational sponsorship of local inventions.<sup>6</sup>

To a greater extent than is commonly realized, the major patent systems often grant patents that protect even relatively incremental product and process innovations. As such, patent citations are a window into knowledge absorption. First, they show the extent to which inventors in the transition countries cite new technologies as well as how fre-

quently such technologies are cited worldwide. Taken together, this information indicates to what extent patents in countries of the region are grounded in the recent state of the art. Second, patterns in cross-national teams of inventors reveal how connected inventors in the transition countries are to the global technological mainstream.

Data from the U.S. Patent Office, covering Bulgaria, the Czech Republic, Hungary, Poland, the Russian Federation, Slovenia and Ukraine over the period 1993 to 2006, show that indigenous patents from the transition countries typically make fewer citations to the preceding literature than do those from other technologically successful regions. They tend to cite older technologies, less fundamental prior inventions, and patents that are less frequently cited. This suggests that inventors in the transition countries are insufficiently connected to the technological frontier and that the R&D community is relatively isolated from international technological trends.

But international R&D collaboration in various forms has allowed inventors in the region to sidestep these handicaps to some extent. Co-invented patents, that is, those where at least one inventor is located in a transition country and one inventor is located outside—usually in more advanced countries such as Germany, the United States, other major European economies and South Korea—have become extremely important, accounting in recent years for over half of total patents granted. Most critically, the citation patterns become less distinctive when patents generated through these collaborative arrangements are taken into account.

Foreign firms make a significant contribution to inventive activity in the region. Their local R&D operations, as well as sponsorship of local inventors, raise both the quantity of patenting activity and the quality of inventive effort. In the Russian Federation, for example, the top 10 organizations that have obtained patent grants in the United States are dominated by the local research operations of foreign firms. Indeed, patents in the transition countries created through multinational sponsorship are more connected to global R&D trends and represent inventions of higher quality. This suggests that transition countries should foster participation in an emerging international division of inventive labor, where foreign R&D investment is encouraged and local inventors become part of a knowledge production chain.

## Endnotes

1. The countries in the analysis were Bulgaria, Croatia, the Czech Republic, Estonia, Poland, Romania, and Ukraine. [World Bank (2008a)].

2. The method and results are in World Bank (2005c).
3. The average tariff in the Russian Federation did, however, increase from 11.5 percent in 2001 to between 13 percent and 14.5 percent in 2003, where it held steady in 2004 and 2005 (Tarr and Shepotylo 2007).
4. The calculations are in World Bank (2005c).
5. Eschenbach and Hoekman (2006).
6. This discussion is based on World Bank (2008b).