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Abstract

The paper analyzes the increase in transition countries' exports to their non-traditional trade partners. It uses four different measures of product differentiation to find out the extent that the increase in product variety explains this phenomenon. It is found that opening up to new trade partners first increases the number of sectors in which trade occurs. This is followed by a brief period of specialization in some select sectors, and finally an increase in the number of varieties of products in these sectors. Lastly, the increase in product variety in CEEC has been much more substantial than in CIS.

JEL Classification: F14, F15, P33

Keywords: *Product Variety, Eastern Europe, Commonwealth of Independent States*

1. Introduction

The new trade theory points out the increasing importance of product variety and intra-industry trade (IIT), especially in trade among developed countries. However, so far the empirical evidence on the new trade theory has been mixed. Although Helpman (1987) found empirical support for the theory, Hummels and Levinsohn (1993, 1995) suspected that something other than increasing product variety may be responsible for the observed increase in trade volumes. Later, Harrigan (1996) found indirect support for his version of the new trade theory model.

Although lower levels of IIT based on product variety are observed in trade of developing countries, it has important implications for them. It leads to faster economic growth in a number of ways: by making markets bigger and by providing more scope for learning by doing. Furthermore, such trade is also believed to disseminate technology. In this paper, I try to contribute to this literature empirically by analyzing the trade of transition countries. After the fall of socialism, these countries have undergone a series of reforms toward establishing market economies, most notably through extensive trade liberalization. Initially, the majority opinion in Europe was that rapid trade liberalization would not succeed: Transition countries were manufacturing products of such poor quality that they could not possibly export these to market economies. However, there has been a considerable reorientation of their trade towards the EU countries, especially for Central and Eastern European countries, away from their traditional partners in the Council for Mutual Economic Assistance (CMEA). Consequently, trade volume has significantly increased. This is considered as an important condition of successful transition as it implies significant restructuring of production technology. The anecdotal

evidence on high levels of human capital but low levels of physical capital and backward technology in transition countries makes this analysis interesting, since the mixture of factor abundances does not quite resemble to that of developed countries or developing countries.

The natural question is the source of this increase in transition countries' trade with their non-traditional partners. Given their technology gap with developed countries and the implications of product differentiation on technology flow, the answer to this question is especially important for transition countries. In general, the increase in trade could be a result of intensive margin, where there is quality and thus price increase in the products, or extensive margin, where a larger quantity of a larger set of goods is exported (Hummels and Klenow, 2002). The answer to this question will help us determine the extent of restructuring achieved, and thus the success of transitional reforms.

In an attempt towards an answer, this paper analyzes the degree of product differentiation in 22 transition countries' exports. I focus on only their manufacturing exports with their partners outside the former CMEA during 1992-99. In Section 2, a number of product variety measures from the literature are computed and discussed. Measures considered range from simple ones, such as the number of product categories exported, to more complicated ones of Funke and Ruhwedel (2001), and Hummels and Klenow (2002). In Section 3, their intra-industry exports based on product variety are computed according to Kandogan (2003), and then individual Central and Eastern European countries (CEEC) and Commonwealth of Independent States (CIS) are compared. The results show that the initial consequence of opening up to new trade partners is an increase in the number of sectors in which trade occurs. This is followed by

a brief period of specialization in some select sectors, and finally an increase in the number of varieties of products in these sectors. Lastly, it is found that trade based on product variety, the horizontal intra-industry exports, has increased much more significantly in CEEC than in CIS, especially in the Czech Rep., Poland, Hungary, and Slovenia. These results suggest that an increase in product variety is a more important factor in CEEC countries' trade than that of CIS.

2. Measures of product variety

Data is obtained from the International Trade Center of the UNCTAD/WTO. It covers the period of 1992-99. The time period immediately following the fall of socialism, 1989-91, is left out due to chaos and major economic problems of the time. The trade of 22 transition countries[1] with their non-traditional trade partners outside the CMEA is analyzed. These constitute the most important developed and developing market economies.[2] Exports to these partners constitute 97.3% of their overall exports to all market economies of the world. The analysis focus solely on manufacturing exports in SITC 5-8 sectors, which fit the idea of new trade theories much better. Other SITC sectors rely heavily on natural resources, and therefore they are left out of analysis. CEEC and CIS countries are analyzed separately for comparison, given the different approaches they have taken in trade liberalization: Almost immediately after the collapse of CMEA in 1991, ten CEEC signed the Europe Agreements with the European Union (EU). Four out of 12 CIS formed a customs union among themselves in 1994. Eight CIS countries did not engage in any liberalization agreement during the period analyzed.[3]

Reorientation of transition countries' trade towards market economies has been documented in a number of analyses: Winiecki (2000), Brenton and Gros (1997), Landesmann and Szekely (1995) for CEEC, Djankov and Freund (2002), and Kaminski (1996) for CIS can be counted among many. Figures 1 and 2, Panel (a) for CEEC and CIS, respectively, provide further evidence of increases in transition countries' exports to market economies: Exports of CEEC almost tripled, increasing by 190%, during 1992-99. CIS exports increased slightly slower by 120% during the same period.

This paper focuses on the increase in product differentiation as a possible cause for the substantial increases in exports. A number of measures for this purpose have been developed in the literature. Hufbauer (1970) suggested the first measure of product differentiation: ratio of standard deviation of unit values of exports to the mean of unit values of exports. The underlying assumption in this measure is that there is a negative relationship between product standardization and dispersion of prices. This method has been widely criticized since unit values are sensitive to changes in composition of trade and gives spurious evidence of product differentiation. Other researchers argue that since investment can stand as a proxy to resources devoted to production, it should act as an indirect indicator of product variety (Muscatelli et al., 1995; Owen and Wren-Lewis, 1993). Some other authors have used output, profitability, R&D expenditures, and patents as indicators of product variety.

Here, I concentrate only on the measures that use the widely available trade data. The simplest measure of product variety is the number of product categories in which a country exports. Figures 1 and 2, Panel (b) give the total number of 4-digit level manufacturing products in which CEEC and CIS countries exported as a group to market

economies, respectively.[4] Although the average number of products exported by an individual country in CEEC is much higher than a CIS country, a similar pattern is observed in both groups of countries across time: Trade liberalization is immediately followed by an increase in the number of products exported. This is most likely a result of the often-cited distressed-sale argument in the literature (Winiecki, 2000). This is followed by a short period of decrease, after which the number of products exported levels off. Trade liberalization obviously opens doors to many firms that would like to test their mettle in the world markets. As seen in these figures, however, not all of them are successful. This result is in conjunction with Djankov and Hoekman (1996) that find limited redirection of traditional CMEA goods to OECD markets. In sum, although the immediate effect is an increase in the number of products exported, an adjustment eventually occurs, and countries specialize in only certain sectors.

Despite the advantage of its easiness, such a simple count of product categories treats small and large product categories the same. Furthermore, it disregards the possible product differentiation within a product category. Either more disaggregated data or a method that would capture product differentiation within 4-digit-level SITC product categories is needed.

The second measure considered is an alternative interpretation of the approach taken in Funke and Ruhwedel (2001). It also has close links to Feenstra (1994), Feenstra and Markusen (1996), and Feenstra et al. (1999a, b). While Funke and Ruhwedel's original measure (FR) relies on CES production function, this one relies on CES utility functions. It is also further modified so that the increase in product variety from one year to the next can be computed rather than the increase relative to a base year. Accordingly, the change

in product variety in a country *A* from time period *t-1* relative to the next time period *t* is given as follows:

$$FR_t^A = \ln\left(\frac{\sum_{p\in P_t} X_{pt}^A \Big/ \sum_{p\in P} X_{pt}^A}{\sum_{p\in P_{t-1}} X_{pt-1}^A \Big/ \sum_{p\in P} X_{pt-1}^A} \right) \tag{1}$$

$$P_t = \{p \mid X_{pt}^A > 0\}, P_{t\text{-}1} = \{p \mid X_{pt\text{-}1}^A > 0\}, \text{and } P = P_{t\text{-}1} \cap P_t$$

where X_{pt}^A is the volume of exports of country *A* in product *p* at time *t*. To better understand this measure, it is rewritten in the following form:

$$FR_t^A = \ln\left(\frac{\sum_{p\in P_t} X_{pt}^A}{\sum_{p\in P_{t-1}} X_{pt-1}^A} \right) - \ln\left(\frac{\sum_{p\in P} X_{pt}^A}{\sum_{p\in P} X_{pt-1}^A} \right) \tag{2}$$

where the first term gives the change in the volume of exports in all products in two consecutive time periods, and the second term gives the increase in the volume of exports in common products that were exported at both time periods. The difference gives the increase in the volume of other products traded.

This measure better deals with differences in the size of product categories than the simple count of product categories, since it is based on the volume of trade instead of the number of products. However, it has its own shortcomings: In the absence of highly disaggregated data, all of the increase in volume of products commonly traded in two consecutive periods is considered to be an increase in the volume of the same product variety. However, this may very well be due to an increase in product variety in that product category.

Figures 1 and 2, Panel (c) give the FR index averaged over all CEEC and CIS, respectively, where the weights are each country's export shares. More or less a similar pattern in the number of product categories is observed. However, the period of specialization is more pronounced. This implies that most of the specialization observed occurred in larger product categories, where the trade volume is higher.

The third measure considered is Hummels and Klenow's (2002) extensive margin. The extensive margin measures the fraction of the world exports that occur in the product categories in which that a country exports to its partners. This is the export version of Feenstra's (1994) measure of import variety. The idea here is that if a country's exports are concentrated in a small number of products, it will have low extensive margin, implying few product varieties. The extensive margin for country *A* at time *t* is computed as follows:

$$HK_t^A = \frac{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{WC}}{X_t^W} \qquad (3)$$
$$P_t^{AC} = \{p \mid X_{pt}^{AC} > 0\}$$

where *C* is the set of market economies, X_{pt}^{WC} is the world exports to a country in *C* in product *p* at time *t*, and X_t^W is the overall world manufacturing exports at time *t*.

In this measure, the weight of each product category is different –its share in world exports- therefore large product categories are better represented than they were in the simple count of product categories. It has an advantage over the FR index too: Highly disaggregated data is not needed as much. This index captures the increase in product differentiation within a product category. However, since it considers all of the increase

in trade in a product category as an increase in the number of varieties, it may overstate the increase in product differentiation. Furthermore, this index may also overstate the extensive margin of a country, since the weight used for each product category is its share in world exports, rather than its share in that country's exports. Partner countries may import more varieties in a product category, but this does not necessarily come from the country being analyzed.

Figures 1 and 2, Panel (d) give the HK indexes for CEEC and CIS, respectively. A similar pattern is observed, but the product variety no longer levels off after the period of specialization. In fact, an increase is observed, which can be interpreted as an increase in the number of varieties of the products in the sectors that transition countries have specialized.

3. Horizontal intra-industry exports

Lastly, considering the close relationship between product differentiation and intra-industry trade (IIT), I am going to analyze the IIT in transition countries. However, intra-industry trade is composed of two significantly different vertical and horizontal parts: Vertical IIT is the simultaneous export and import of different goods in the same industry, whereas horizontal IIT is the simultaneous trade of varieties of basically the same product. The measure of product differentiation used here is based on horizontal IIT in a product category. Thus, not all of the increase in trade within a product category is labeled as an increase product differentiation, as was the case in Hummels and Klenow index in the absence of highly disaggregated data.

A common method of decomposing IIT into its horizontal and vertical parts is based on the ratio of the unit value of exports to that of imports. If the ratio is within a previously determined range, usually 1 ± 0.15, it is said that the matched trade in that product category is entirely horizontal. Apart from methodological concerns about unit values, this technique has been criticized by the randomness in the choice of the range. Therefore, a newer method proposed in Kandogan (2003) is used in this study. This method is derived directly from the definitions of each part of IIT provided earlier. It uses the volume of exports and imports at two different levels of aggregation. The higher level of aggregation defines industries, and the lower level of aggregation defines different products in each industry.

Using trade data at the higher level of aggregation, the total amount of IIT in each industry is computed by finding the amount of exports matched by imports, following the Grubel-Lloyd index (1975). Then, the amount of matched trade in each product within an industry is computed using the data at the lower level of aggregation. This gives the trade of different varieties of basically the same products, i.e. horizontal IIT. The rest of the IIT in this industry is the trade of different products within that industry, i.e. vertical IIT. The unmatched part of the total trade in the industry is the inter-industry trade. Thus, in country *A*, horizontal IIT in industry *i* at time *t* is:

$$HIIT_{it}^{A} = \sum_{p} X_{ipt}^{A} + M_{ipt}^{A} - \left| X_{ipt}^{A} - M_{ipt}^{A} \right| \tag{4}$$

where X_{ipt}^{A} and M_{ipt}^{A} are country *A*'s exports and imports of product *p* in industry *i* at time *t*, respectively.

Consequently, the amount of exports of varieties is the horizontal intra-industry exports, which is the export's part of the matched trade in a product category, summed over all industries:

$$HIIX_t^A = \frac{1}{2}\sum_i HIIT_{it}^A \quad (5)$$

This measure not only captures the increase in the number of products traded which obviously increases variety, but also the increase in the number of varieties in a product category. It also has advantages over the HK index, when highly disaggregated data is absent: Not all of the increase in a product category is assumed to be due to an increase in product variety.

Figures 3 and 4 give total manufacturing exports and horizontal intra-industry exports of individual countries in CEEC and CIS, respectively. It can be seen that the majority of increases in manufacturing exports to market economies in CEEC is due to an increase in product variety. This is especially strong in the Czech Rep., Poland, the Slovak Rep., and Estonia. In particular, 56% of the increase in exports of the Czech Rep. is due to an increase in product variety.[5] This figure is as high as 51% in Poland, 45% in the Slovak Rep., 35% in Estonia, and 29% in Hungary, whereas it is much smaller in Bulgaria, Lithuania, and Latvia, 13%, 15%, and 14%, respectively. This can be the result of substantial FDI flows to CEEC as mentioned in Aturupane et al. (1999). The situation is much different in CIS exports: Although the amount of horizontal intra-industry in the Russian Fed., and Ukraine are the highest, only 2% and 8% of the increase in their trade can be explained by an increase in product variety, respectively. The highest increases in product variety are observed in Armenia, Azerbaijan, Kazakhstan and Belarus. Even for

these countries, only a small portion of the increase in their trade is due to product differentiation: 11% in Kazakhstan, 27% in Azerbaijan, and 15% in Belarus, except in Armenia (84%). Less than 4% of the increase in exports of other CIS is explained by an increase in product variety. Obviously, product differentiation played much smaller role in the trade reorientation of CIS countries.[6]

4. Conclusions

In this paper, the extent of the increase in transition countries' exports to their non-traditional market-economy partners due to product differentiation is examined using a variety of measures from the literature. Although each measure has its advantages and disadvantages, each revealed different yet important piece of information. Analyzing the number of product categories in which transition countries exported showed that firms responding to liberalization first tried their mettle in world markets. However, only those in certain industries succeeded, which led to specialization in certain product categories. Modified Funke and Ruhwedel's index showed that most of this specialization occurred in large product categories. Extensive margin index of Hummels and Klenow revealed that, in fact, there was an increase in variety in product categories that the transition countries have specialized. Last, but not least, an analysis of horizontal intra-industry exports revealed that Central and Eastern European countries have been much more successful in product differentiation than Commonwealth of Independent States.

References

Aturupane, Chonira, et al., 1999. Horizontal and Vertical Intra-industry Trade between Eastern Europe and the European Union. *Weltwirtschaftliches Archiv* 135(1): 62-81.

Brenton, Paul, and Gros, Daniel, 1997. Trade Reorientation and Recovery in Transition Economies. *Oxford Review of Economic Policy* 13(3): 65-76.

Djankov, Simeon, and Freund, Caroline, 2002. Trade Flows in the Former Soviet Union, 1987 to 1996. *Journal of Comparative Economics* 30 (1): 76-90.

Djankov, Simeon, and Hoekman, Bernard, 1996. Intra-industry trade, Foreign Direct Investment and the Reorientation of East European Exports. *Centre for Economic Policy Research*, Discussion Paper 1377.

Feenstra, Robert, 1994. New Product Varieties and the Measurement of International Prices. *American Economics Review* 84(1): 157-77.

Feenstra, Robert, and Markusen, James, 1996. Accounting for Growth with New Inputs. *International Economic Review* 35(2): 429-447.

Feenstra, Robert, et al., 1999a. Business Groups and Product Variety in Trade: Evidence from South Korea, Taiwan, and Japan. *Journal of International Economics* 48(1):71-100.

Feenstra, Robert, et al., 1999b. Testing Endogenous Growth in South Korea and Taiwan. *Journal of Development Economics* 60(2): 317-341.

Funke, Michael, and Ruhwedel, Ralf, 2001. Product Variety and Economic Growth – Empirical Evidence for the OECD Countries. *IMF Staff Papers* 48(2): 225-242.

Grubel, H., and Lloyd, P., 1975. *Intra-industry Trade: The Theory and Measurement of International Trade in Differentiated Products*. London.

Harrigan, James, 1996. Openness to Trade in Manufactures in the OECD. *Journal of International Economics* 40 (1/2): 23-39.

Helpman, Elhanan, 1987. Imperfect Competition and International Trade: Evidence from Fourteen Industrialized Countries. *Journal of the Japanese and International Economies* 1(1): 62-81.

Hufbauer, Gary, 1970. The Impact of National Characteristics and Technology on the Commodity Composition of Trade in Manufactured Goods. In Vernon, Roningen, (Ed.) *The Technology Factor in International Trade*. New York: Columbia University Press.

Hummels, David, and Klenow, Peter, 2002. The Variety and Quality of a Nation's Trade. *NBER Working Paper No*. 8712.

Hummels, David, and Levinsohn, James, 1993. Product Differentiation as a Source of a Comparative Advantage? *American Economic Review* 83(2): 445-9.

Hummels, David, and Levinsohn, James, 1995. Monopolistic Competition and International Trade: Reconsidering the Evidence. *Quarterly Journal of Economics* 110(3): 799-836.

Kaminski, Bartlomiej, 1996. Factors Affecting Trade Reorientation of the Newly Independent States. In Kaminski, Bartlomiej, (Ed.) *Economic Transition in Russia and the New States of Eurasia. International Politics of Eurasia Series* 8. New York and London: Sharpe.

Kandogan, Yener, 2003. Reconsidering the Adjustment Costs of the Europe Agreements. *Applied Economics Letters* 10(2): 63-8.

Landesmann, Michael, and Szekely, Istvan, 1995. Industrial Restructuring and Trade Reorientation in Eastern Europe. *University of Cambridge Department of Applied Economics Occasional Paper* 60.

Muscatelli, Antonio., et al., 1995. Modeling Aggregate Manufactured Exports for Some Asian Newly Industrialized Economies. *Review of Economics and Statistics* 77(1): 147-155.

Owen C., and Wren-Lewis, Simon, 1993. Variety, Quality and UK Exports. The *University of Strathclyde, International Centre for Macroeconomic Modelling Discussion Paper* 14.

Winiecki, Jan, 2000. Successes of Trade Reorientation and Expansion in Post-Communist Transition: An Enterprise Level Approach. *Banca Nazionale del Lavoro Quarterly Review* 53(213): 187-223.

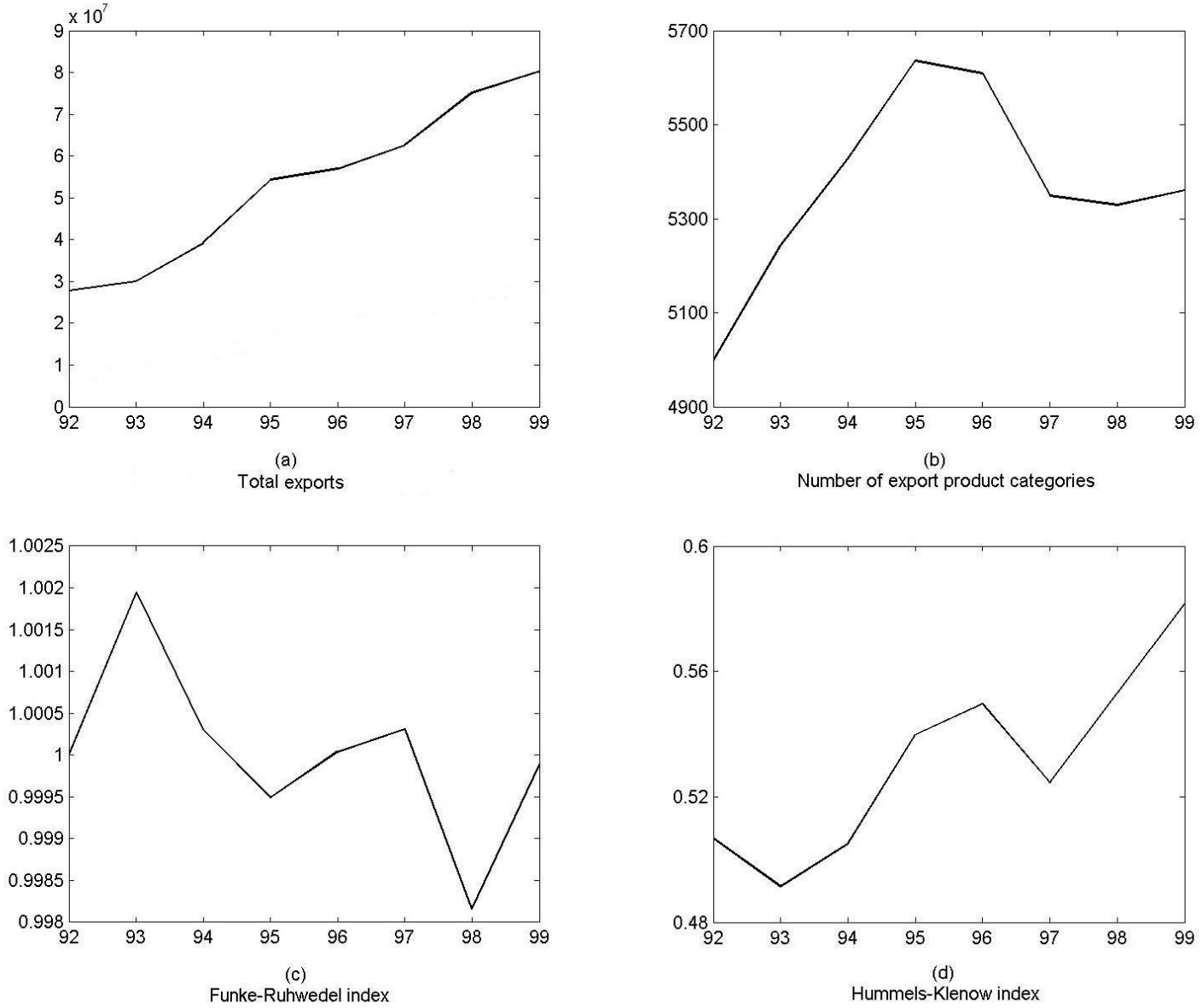

Figure 1. Total exports and product differentiation in CEEC
Total exports are in US$. Product categories are defined at 4 digit level SITC summed over all CEEC. FR and HK indexes are averages over all CEEC, where weights are export shares.

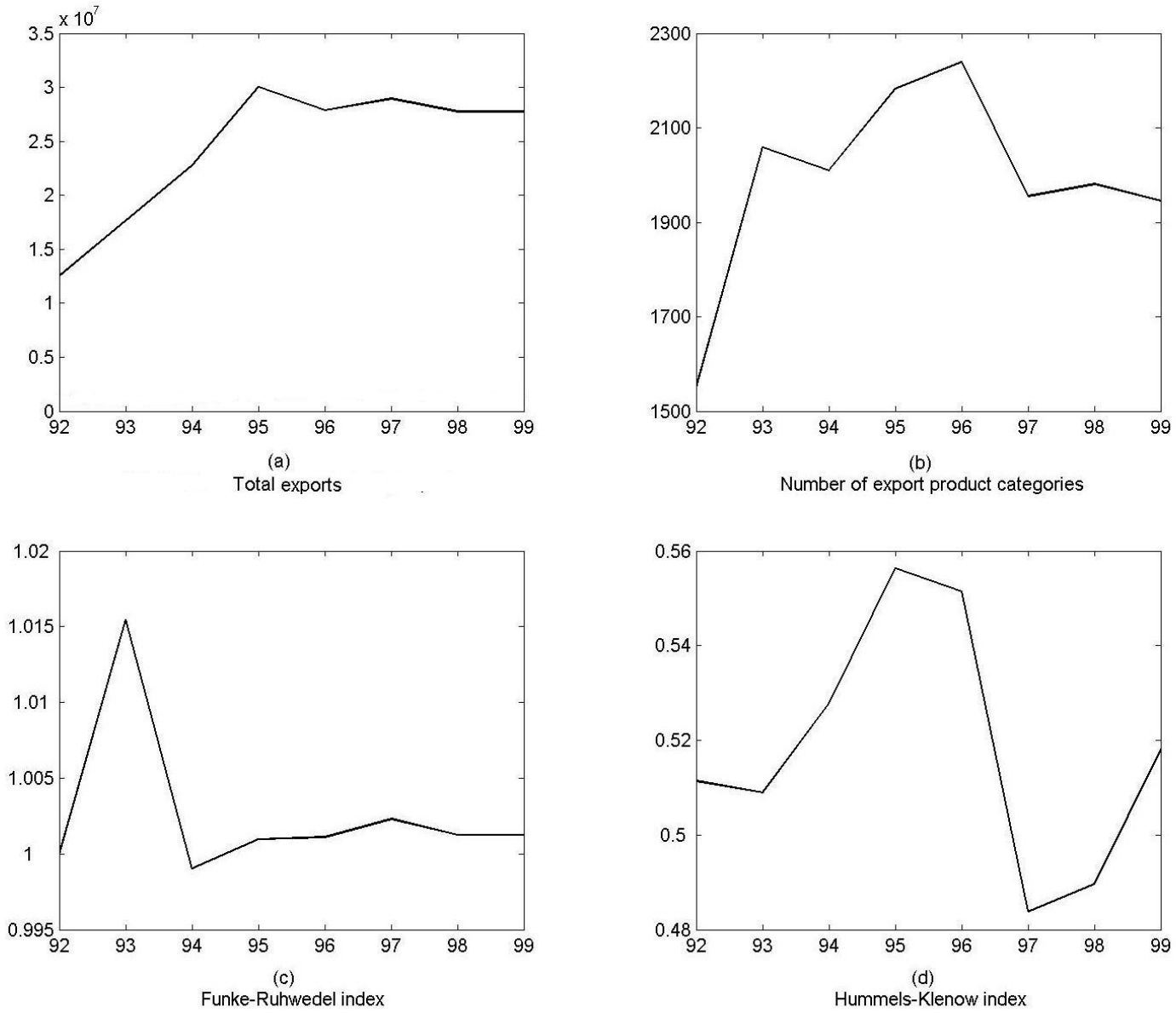

Figure 2. Total exports and product differentiation in CIS
Total exports are in US$. Product categories are defined at 4 digit level SITC summed over all CIS. FR and HK indexes are averages over all CIS, where weights are export shares.

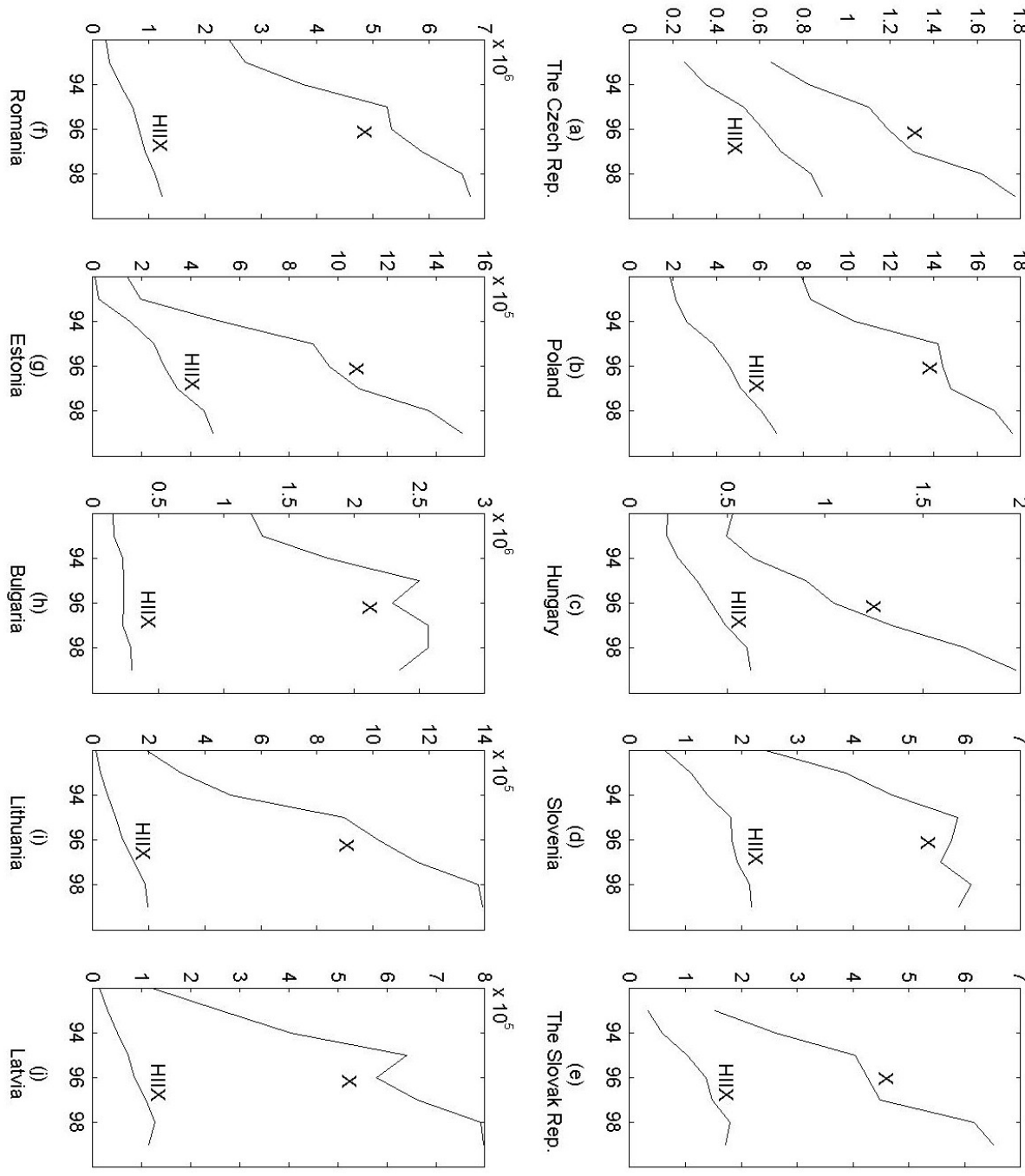

Figure 3. Total and horizontal intra-industry exports of CEEC
The figures are in US$. Countries are ordered from highest HIIX in 1999 to lowest.

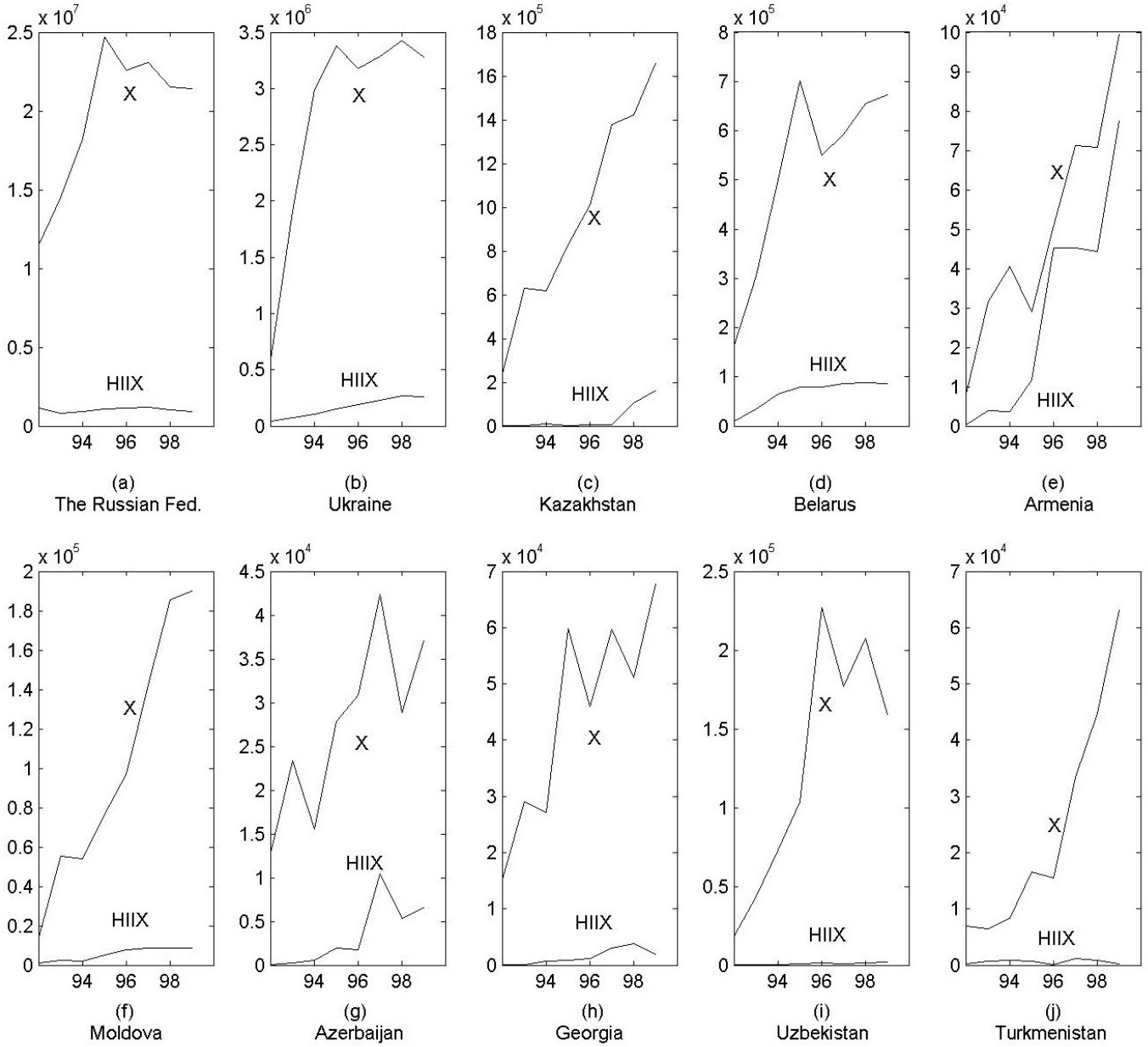

Figure 4. Total and horizontal intra-industry exports of CIS
The figures are in US$. Countries are ordered from highest HIIX in 1999 to lowest. Tajikistan and Kyrgyzstan are not plotted since their horizontal intra-industry exports are insignificant relative to their total exports.

Notes

[1] CEEC: Bulgaria, the Czech Rep., Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Rep., and Slovenia. CIS: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Fed., Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

[2] Austria, Belgium, Brazil, Canada, China, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, Indonesia, Italy, Japan, Korea, Luxembourg, the Netherlands, Norway, Portugal, Philippines, Singapore, Spain, Sweden, Switzerland, Thailand, Turkey, the UK, and the US.

[3] Interim Agreements on trade with the EU became effective by 1993 with Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and the Slovak Republic, and in 1996 with Slovenia. The Russian Federation, Kazakhstan, Belarus formed the CIS customs union in 1994. Kyrgyzstan and Tajikistan joined in 1997, and 1999, respectively. Other CIS countries, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, Ukraine, and Uzbekistan did not participate in the customs union.

[4] More disaggregated data was incomplete as the trade reported in 5-digit level or 6-digit level did not sum to overall trade volume.

[5] This figure is computed by taking the ratio of the increase in horizontal intra-industry exports to the increase in total manufacturing exports.

[6] For other possible explanations, refer to Kaminski (1996).

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