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Yener Kandogan*

The Reorientation of Transition Countries' Exports: Changes in Quantity, Quality and Variety

Exports from transition countries to market economies have increased considerably since the fall of socialism. The countries of Central and Eastern Europe have generally been more successful in this regard than the countries of the Commonwealth of Independent States. There are also considerable differences between countries within both the CEEC and the CIS, however. The following paper uses a variety of measures to determine the factors behind these cross-country differences.

After the fall of socialism, the formerly socialist countries undertook a series of reforms towards establishing functioning market economies. Most noteworthy of these reforms is the extensive trade liberalisation, the purpose of which was to realign domestic relative prices with world prices, and to resume international trade with the countries' natural trade partners.

The initial opinion shared by many in Europe was that the liberalisation efforts would not succeed: transition countries produced very few varieties of low quality goods that they could not possibly export to market economies. Contrary to this opinion, there has been a considerable reorientation of exports towards neighbouring European Union (EU) countries, especially in the Central and East European countries (CEEC), away from their partners in the Council for Mutual Economic Assistance (CMEA). Consequently, their export volume has increased significantly. This is considered an important condition for successful transition as it implies a significant restructuring of production.

The natural question is the source of the increase in exports to market economies. According to Hummels and Klenow,¹ in general an increase in export volume could be the result of three factors: the intensive margin, where the same set of goods is exported in larger volumes; the extensive margin, where a larger set of goods is exported, and finally, higher quality goods. The answer is critical in determining the extent of restructuring achieved, and thus the success of transitional reforms. Furthermore, the effects of each factor on countries' terms of trade and thus welfare are very different. Lastly, from a theoretical point of view, the answer is needed for determining the features of trade

models that correspond better to data from transition countries.

In an attempt toward an answer, the exports of CEEC and the Commonwealth of Independent States (CIS) are analysed in this paper. The focus is on their manufacturing exports to partners outside the former CMEA during 1992-99. CEEC and CIS countries are analysed separately in groups and individually for comparison.

In the second part of the paper, potential export volumes of transition countries are computed with the help of gravity models. These are compared to actual volumes in order to measure the amount of reorientation. The change in the intensive margin of transition exports is then computed to see how many of the same products exported under the CMEA have been reoriented to market economies. Next, the volume of total exports is decomposed into its inter-industry, horizontal and vertical intra-industry parts and the changes in each part are noted. Intra-industry exports have important implications for transition countries since they lead to growth by making markets bigger and by disseminating technology. Cross-country and cross-sector comparisons of each part of exports conclude this part of the paper. The analysis shows that there have been significant increases in exports, but both CEEC and CIS exports were still below their potential as of 1999. There are considerable cross-country differences in the amount and type of exports, as well as the amount of reorientation. Finally, not all of the increase is due to the intensive margin, especially for CEEC, and therefore there is a need to analyse the changes in product differentiation and quality.

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¹ David Hummels, Peter Klenow: The Variety and Quality of a Nation's Trade, NBER Working Paper No. 8712, 2002.

The paper then analyses the degree of product differentiation in transition countries' exports in order to measure its effect on the amount of reorientation. A number of measures of product variety from the literature are computed and discussed. These range from simple ones such as the number of product categories exported to the more complicated ones of Funke and Ruhwedel,² and Hummels and Klenow's extensive margin.³ Lastly, their horizontal intra-industry exports based on product variety are measured, and CEEC and CIS countries are compared. The results show that the initial consequence of opening up to new trade partners is an increase in the number of products exported. This is followed by a brief period of specialisation in certain products, and finally an increase in the number of varieties of these products. It is also found that the horizontal intra-industry exports have increased more significantly in the CEEC than in the CIS. Overall, the results suggest that an increase in product variety has been a more important factor in the CEEC than in the CIS in the amount of reorientation.

Various measures of quality are considered in the final part of the paper in order to analyse the extent of the reorientation due to quality improvement. First, the factor intensity of exports is examined. Some issues related to the use of unit values to proxy quality are then briefly mentioned. The results of two different methods using unit values to analyse the extent of restructuring are discussed. Finally, a quality index derived from Hummels and Klenow⁴ is computed for transition exports. The analysis shows that the factor content of CEEC exports has become more human-capital intensive, whereas the share of such products has decreased in CIS exports. After a brief period of price competition, the aggregate unit values increased in the CEEC, whereas CIS countries were not able to reverse the decreasing trend. The number of products showing quality improvement in the CEEC is more than triple the number in the CIS. Calculations of the Hummels-Klenow quality index show that although the CIS started with lower quality exports, the quality has been increasing. Overall, these results suggest a higher level of quality in CEEC exports, and a higher rate of quality improvement.

In sum, both CEEC and CIS have increased their exports to market economies significantly in a short period of time. However, the extent of reorientation

has been smaller in the CIS. The analysis of changes in quantity, variety and quality shows that the reorientation in the CIS has been primarily due to increases in quantity, whereas increases in variety as well as increases in quantity have been important in the CEEC. Although the quality of exports has been increasing in both groups of countries, the effect of quality upgrading on the extent of reorientation has been small for both.

Reorientation of Transition Exports

The data used in the analyses was obtained from the International Trade Centre of the UNCTAD/WTO. The time period immediately following the fall of socialism, 1989-91, is left out due to the chaos and major economic problems of the time, especially in the CIS. The analysis therefore covers only the period 1992-99. The trade of 22 transition countries with their non-traditional trade partners outside the CMEA is analysed.⁵ These constitute the most important developed and developing partners with market economies. Exports to these countries constituted 97.3% of overall transition exports to all market economies of the world. The analysis focuses primarily on manufacturing exports in SITC sectors 5-8, which better fit the concepts of quality and variety addressed in this paper. CEEC and CIS countries are analysed separately for comparison, given the different approaches they have taken in trade liberalisation: almost immediately after the collapse of the CMEA in 1991, ten CEEC signed the Europe Agreements with the EU; five out of twelve CIS countries formed a customs union among themselves in 1994.⁶

Figure 1 panel (a) shows the increase in transition countries' exports to market economies: the exports of the CEEC almost tripled, increasing by 190% during 1992-99. CIS exports increased somewhat more slowly – by 120% – during the same period. The increase in CEEC exports has been steady, whereas it levelled off in the CIS after 1995. Major EU countries dominated the CEEC exports, as well as smaller neighbouring EU countries such as Austria. The same major EU countries, the USA and Japan, as well as surrounding

² Michael Funke, Ralf Ruhwedel: Product Variety and Economic Growth – Empirical Evidence for the OECD Countries, in: IMF Staff Papers, Vol. 48, No. 2, 2001, pp. 225-242.

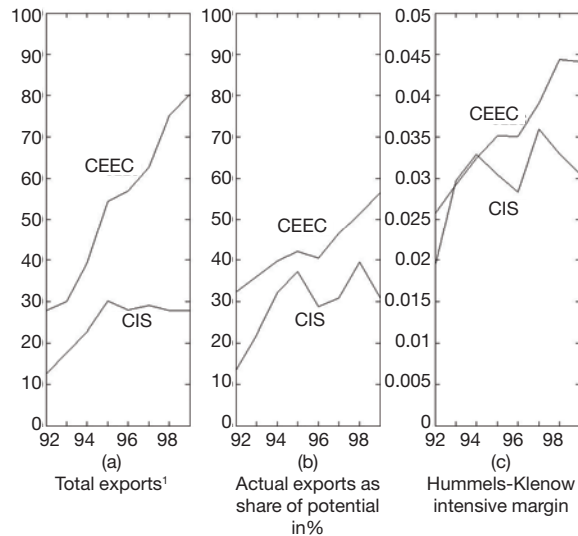
³ David Hummels, Peter Klenow, op. cit.

⁴ Ibid.

⁵ These are 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 USA.

⁶ 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. Russia, Kazakhstan and Belarus formed a 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 this customs union.

Figure 1
Exports, their Share in Potential, and the Intensive Margin



¹ US \$ billion.

regional powers, such as Finland, Turkey and China had important places in CIS exports during this period. Given its relatively small size, Turkey's trade with Central Asian countries is striking. These results show the importance of economic size, distance, a common language and a common border.

Actual and Potential Export Volumes

The reorientation of transition countries' exports towards market economies has been documented in a number of analyses: Winięcki,⁷ Brenton and Gros,⁸ and Landesmann and Szekely⁹ for the CEEC, Djankov and Freund,¹⁰ and Kaminski¹¹ for the CIS can be mentioned among the many. To answer whether the reorientation is complete or not, these studies used gravity models based on market economies. Gravity models are useful in finding the trade potential of countries by taking into account transportation costs, and demand and supply

⁷ Jan Winięcki: Successes of Trade Reorientation and Expansion in Post-Communist Transition: An Enterprise Level Approach, in: Banca Nazionale del Lavoro Quarterly Review, Vol. 53, No. 213, 2000, pp. 187-223.

⁸ Paul Brenton, Daniel Gros: Trade Reorientation and Recovery in Transition Economies, in: Oxford Review of Economic Policy, Vol. 13, No. 3, 1997, pp. 65-76.

⁹ Michael Landesmann, Istvan Szekely: Restructuring and Trade Reorientation in Eastern Europe, University of Cambridge Department of Applied Economics Occasional Paper No. 60, 1995.

¹⁰ Simeon Djankov, Caroline Freund: Flows in the Former Soviet Union, 1987 to 1996, in: Journal of Comparative Economics, Vol. 30, No. 1, 2002, pp. 76-90.

¹¹ Bartłomiej Kaminski: Affecting Trade Reorientation of the Newly Independent States, in: Bartłomiej Kaminski (ed.): Economic Transition in Russia and the New States of Eurasia, International Politics of Eurasia Series 8, New York and London 1996, Sharpe.

considerations with the help of distance, and GDPs of partner countries. In this paper, a gravity model with incomplete specialisation that also includes common border and common language variables is used to find the export potential of transition countries in manufacturing to market economies. Haveman and Hummels¹² found this model to be more consistent with data from 173 market economies. Figure 1 panel (b) gives the ratio of actual CEEC and CIS manufacturing exports to their potential. Although a significant amount of reorientation occurred in a short period of time, contrary to some earlier findings the reorientation of CEEC exports is found to be far from complete, at slightly less than 60% of its potential in 1999. The reorientation of CIS exports has been less steady; it has been oscillating around 35% of its potential since 1995. There are also significant cross-country differences in reorientation. Table 1 column (1) lists actual exports as a percentage of potential exports in 1992 and 1999 for individual countries. Hungary exceeded its potential by 1998. Kazakhstan and Romania's actual exports were about 90% of their potential in 1999. Bulgaria, Slovenia and the Czech Republic had exports of about 32-50% of their potential at the beginning of the period analysed, and showed a relatively modest reorientation to 53-73% of their potential. Estonia, Lithuania and Latvia showed a much more significant reorientation, starting at around 7% of their potential and ending at 69%, 45% and 38% respectively. CIS countries underperformed relative to the CEEC. Although Russia, at 18%, started with the highest ratio in the CIS, it ended with only 31% in 1999. Kazakhstan, Moldova and Ukraine had the largest reorientation in CIS, increasing the ratio from around 2-10%, to 90%, 58% and 42% respectively. We now analyse the changes in the quantity, quality and variety of exports in order to understand why some countries were more successful in reorienting their exports than others.

Changes in the Intensive Margin

This reorientation has been not entirely due to simply trading the same products exported under the CMEA with market economies. This is evident from Figure 1 panel (c), where changes in the intensive export margins for the CEEC and the CIS are calculated using Hummels and Klenow.¹³ Figures for individual countries can be found in Table 1 column (2). The intensive export margin computes the share of a country in world exports of the product categories in which

¹² Jon Haveman, David Hummels: Alternative Hypotheses and the Volume of Trade: the Gravity Equation and the Extent of Specialization, Purdue University Center for International Business Education and Research, Working Paper 2000-04, 2001.

¹³ David Hummels, Peter Klenow, op. cit.

INTERNATIONAL TRADE

Table 1
Changes in Volume, Quantity, Variety and Quality of Exports

Country	Exports	Quantity		Variety			Quality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Kazakhstan	236(10%)-1659(90%)	44	89-122	80	322	0.7-160.6	19.9-328.8	-49%	51-82	3.63
Moldova	14(2%)-190(58%)	11	45-103	9	168	0.9-8.5	1.0-4.6	-17%	38-50	-0.10
Ukraine	565(4%)-3282(42%)	12	331-461	70	1919	44.5-260.3	114.3-524.9	10%	172-252	16.20
Armenia	8(4%)-99(30%)	7	14-34	-325	175	0.2-77.4	0.2-2.0	-20%	7-8	-0.62
Tajikistan	11(5%)-73(28%)	15	8-16	265	36	0.0-0.0	0.4-0.2	26%	4-9	0.16
Russia	11467(18%)-21427(31%)	14	654-612	-3	567	1121.6-917.1	3204.7-3826.4	14%	241-371	6.53
Turkmenistan	7(2%)-63(15%)	5	22-39	709	135	0.2-0.3	1.0-1.9	-39%	6-7	0.11
Belarus	162(3%)-673(11%)	4	210-283	-99	793	9.4-86.2	15.0-111.2	17%	127-182	0.18
Uzbekistan	18(1%)-159(8%)	4	34-69	34	256	0.0-1.8	2.2-17.5	31%	19-23	0.00
Azerbaijan	13(2%)-37(6%)	-2	41-73	-1573	186	0.3-6.6	1.2-18.4	-11%	15-26	N.A
Kyrgyzstan	17(5%)-15(8%)	-2	38-36	2759	-18	0.0-0.0	3.6-4.1	-16%	18-28	1.27
Georgia	15(12%)-68(14%)	0.3	64-97	1322	335	0.1-2.0	2.5-11.0	21%	31-47	0.94
Hungary	5272(47%)-19745(126%)	45	678-663	-2	1176	1951.2-6197.5	1605.2-10056.9	-7%	218-356	1.28
Estonia	138(9%)-1508(69%)	15	260-420	-36	1115	10.6-491.9	24.5-603.2	10%	176-223	0.86
Romania	2426(49%)-6743(91%)	18	511-572	32	584	234.7-1242.5	275.8-841.4	14%	240-344	2.13
Lithuania	190(6%)-1392(45%)	12	268-356	-2	1031	9.7-194.8	24.0-195.8	21%	166-219	3.06
Slovak Rep.	1521(22%)-6508(56%)	23	567-569	-2	1228	325.0-1723.5	296.2-2983.3	8%	240-351	1.46
Latvia	119(6%)-797(38%)	9	225-317	-35	727	13.2-113.1	22.8-72.8	12%	138-183	0.51
Bulgaria	1213(50%)-2347(73%)	5	541-514	-11	-25	153.1-300.3	233.2-406.1	19%	221-335	1.02
Slovenia	2415(43%)-5889(65%)	9	573-592	-19	961	620.2-2189.2	742.5-2301.1	-2%	211-344	1.14
Czech Rep.	6522(32%)-17752(53%)	27	689-679	-2	955	2513.7-8857.7	1940.3-7410.4	11%	296-423	1.17
Poland	7922(26%)-17616(33%)	21	686-679	-1	674	1849.4-6757.2	1650.5-5046.7	4%	264-398	1.55

CIS countries and the CEEC are ordered from largest to smallest decrease in gap between actual and potential exports between 1992 and 1999.

(1) Exports in 1992 and 1999 in millions of US\$ (actual exports as percentage of potential exports).

(2) Change in intensive margin between 1992 and 1999 in 10^{-4} .

(3) Number of product categories exported in 1992 and 1999.

(4) Change in Funke-Ruhwedel index between 1992 and 1999 in 10^{-4} .

(5) Change in extensive margin in 10^{-4} .

(6) Horizontal intra-industry exports in 1992 and 1999.

(7) Human capital intensive exports in 1992 and 1999.

(8) % change in aggregate unit values of exports.

(9) Number of product categories under quality improvement in 1992 and 1999.

(10) Change in Hummels-Klenow quality index between 1992 and 1999.

it exports. To find whether the same products sold to CMEA members are being reoriented to market economies, the formula is slightly modified, and the amount of exports in the product categories where exports occurred in 1992 is analysed.¹⁴ At time t , for country A , it is given as follows:

$$(1) \text{HKIM}_t^A = \frac{\sum_C \sum_{p \in P_{92}^{AC}} X_{pt}^{AC}}{\sum_C \sum_{p \in P_{92}^{WC}} X_{pt}^{WC}}$$

$$P_{92}^{AC} = \{p \mid X_{p92}^{AC} > 0\}$$

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 .¹⁵

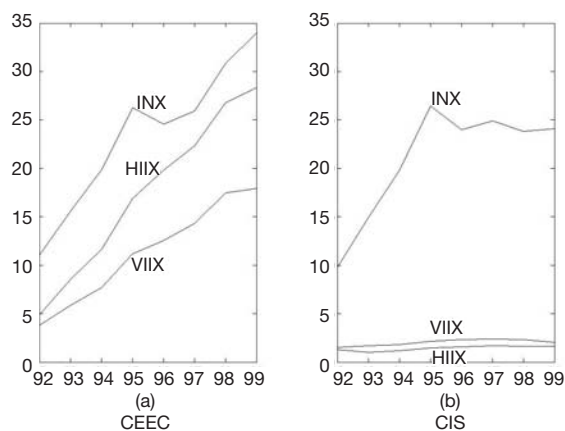
¹⁴ Product categories chosen are at 4-digit SITC. More disaggregated data were incomplete as the trade reported at 5-digit level or 6-digit level did not add up to the overall trade volume.

¹⁵ Because of the changes made to the intensive margin formula, it no longer factors to a country's share in world exports with the extensive margin.

From the figure, it is seen that the changes in the intensive margins are 69% and 63% for the CEEC and the CIS respectively. When compared to a rate of increase in overall manufacturing exports of 190% in the CEEC and 120% in the CIS, it becomes clear that factors other than selling the same products that were previously exported to CMEA members are also at play in the reorientation of exports.¹⁶ It is noteworthy, however, that the comparison of these figures implies that selling the same products has been relatively much more important in CIS exports. This is also evident from the correlation coefficient for the rate of closing the gap between actual and potential exports, which are 0.87 and 0.53 for the CIS and the CEEC respectively.

¹⁶ This result is in conjunction with Djankov and Hoekman, who find limited redirection of traditional CMEA goods to OECD markets. Cf. Simeon Djankov, Bernard Hoekman: Intra-industry trade, Foreign Direct Investment and the Reorientation of East European Exports, Centre for Economic Policy Research, Discussion Paper No. 1377, 1996.

Figure 2
Parts of Transition Exports
(US \$ billion)



Volume of Different Parts of Exports

Before looking for other factors to explain the reorientation, it is important to decompose the exports into their parts and see how each has changed. This analysis will also help in determining the factors behind the reorientation.

Inter-industry trade is a consequence of different factor endowments and the resulting specialisation as predicted by Heckscher-Ohlin trade models. This is the most important type of trade between developed and developing countries. Intra-industry trade (IIT) has been significant between developed countries, as explained by the increasing returns trade theory built around the Krugman model.¹⁷

Intra-industry trade is composed of two significantly different parts. Horizontal IIT occurs when similar products are simultaneously exported and imported, mainly due to product differentiation. Vertical IIT is defined by Grubel and Lloyd¹⁸ as the simultaneous export and import of goods in the same industry but at different stages of production. This results from the vertical disintegration of production due to varying factor intensities within an industry.

¹⁷ Paul R. Krugman: Increasing Returns, Monopolistic Competition, and International Trade, in: *Journal of International Economics*, Vol. 9, 1979, pp. 469-79. Although the large volume of intra-industry trade (IIT) is often cited as an element favouring increasing returns trade theory over Heckscher-Ohlin (H-O) theory, Davis provides an account of IIT within the H-O framework with technical differences. Cf. Donald R. Davis: Intra-industry Trade: A Heckscher-Ohlin Ricardo Approach, in: *Journal of International Economics*, Vol. 39, Nos. 3-4, 1995, pp. 201-226.

¹⁸ Herbert G. Grubel, Peter J. Lloyd: Intra-industry Trade: The Theory and Measurement of International Trade in Differentiated Products, London 1975.

A method frequently used to decompose IIT into its parts is based on the ratio of unit values of exports. This technique has been criticised for the randomness in the choice of the threshold ratio which is used to determine whether IIT in an industry is vertical or horizontal. Therefore, a method based on the definitions for each part of IIT provided earlier is used in this study.¹⁹ This method uses values of exports and imports at two different levels of aggregation, where the higher level defines industries, and the lower level defines different products in each industry.

The method is slightly modified to find the export components of each part of trade. Using trade data at the higher level of aggregation, the total amount of intra-industry exports (IIX_i) in each industry i is computed by finding the amount of exports matched by imports. The unmatched part of total exports (X_i) in the industry is inter-industry exports (INX_i). Then, the sum of matched exports in each product p of industry i is computed using data at the lower level aggregation. This gives the exports of similar products in an industry, i.e. horizontal intra-industry exports ($HIIX_i$). The rest of the IIX_i is the exports of different products within industry i , i.e. vertical intra-industry exports ($VIIX_i$):

$$(2) X = \sum_i X_i = \sum_i \sum_p X_{ip}$$

$$(3) IIX = \sum_i IIX_i = \frac{1}{2} \sum_i TT_i - |X_i - M_i|$$

$$(4) INX = \sum_i INX_i = \sum_i X_i - IIX_i$$

$$(5) HIIX = \sum_i HIIX_i = \sum_i \frac{1}{2} \sum_p X_{ip} + M_{ip} - |X_{ip} - M_{ip}|$$

$$(6) VIIX = \sum_i VIIX_i = \sum_i IIX_i - HIIX_i$$

After a scrutiny of the definitions used in SITC classification, when decomposing total exports into its parts the 4-digit level is found to be appropriate to define products, and the 2-digit level for industries. Figure 2 shows the trends in the inter-industry, and the horizontal and vertical intra-industry, exports of transition countries over the period analysed. It is seen that the export volume of the CEEC soared in the 1990s, with particularly strong increases in vertical and hori-

¹⁹ Yener Kandogan: Reconsidering the Adjustment Costs of the Europe Agreements, in: *Applied Economics Letters*, Vol. 10, No. 2, 2003, pp. 63-8.

zonal intra-industry exports.²⁰ The situation in the CIS is completely different. Almost all of the increase in exports has been inter-industry, whereas the increase in vertical and horizontal intra-industry exports has been very small. Analysing countries individually, it can be seen that five Visegrad countries dominated the CEEC. Ukraine, Kazakhstan and Belarus were the most important countries in the CIS. It is interesting that while Russia's inter-industry exports to its partners were the highest among all the transition countries, it had a relatively insignificant amount of horizontal and vertical intra-industry exports.

The volumes of different parts of exports in all nine sectors, both manufacturing and non-manufacturing, are also calculated for overall transition countries. More than half the exports in manufacturing (SITC 6 and 8) and the machinery sector (SITC 7) were intra-industry, where the share of vertical IIX was almost equal to that of horizontal IIX. Specialisation was particularly strong in the fuels, crude materials, and animal and vegetable oils sectors (SITC 0 to 4), where most of the trade was of the inter-industry type. This explains the earlier observation on Russia's exports. Overall, the IIX, especially HIIX, was more common in sectors where there was significant production differentiation such as manufacturing. It was insignificant in sectors with standardised products such as natural resources, where most exports were inter-industry.²¹

The choice of partner also affects the type of exports. A large percentage of exports to developed market economies were IIX, with the bigger share in its horizontal part. IIX took only a small portion of trade with developing market economies, where the majority was vertical. This observation points out the role of different income levels and relative factor endowments in explaining the volume of the different components of exports. As countries become similar in factor endowments, inter-industry exports lose their dominance, and horizontal IIX become more important. Similarly, the choice of partner countries in liberalisation agreements also affects the part of exports in which there will be increases, and consequently the changes in the quality and variety of a country's exports.

Product Differentiation in Transition Countries

We now focus on the increase in product differentiation as a possible cause of the reorientation of exports.

²⁰ Djankov and Hoekman, *op. cit.*, also find high growth rates in vertical IIX of CEEC to EU in their early analysis, and explain it with high inflows of foreign direct investment.

²¹ This justifies focusing on the manufacturing sector in the analyses in the rest of the paper.

A number of measures have been used for this purpose in the literature. The earliest measure, suggested by Hufbauer,²² is the ratio of the standard deviation of the unit value of exports to its mean. This measure assumes a positive relationship between product differentiation and dispersion of prices. This method has been widely criticised since unit values are sensitive to changes in the composition of trade and provide spurious evidence of product differentiation. Other researchers argue that since investment can stand as a proxy for resources devoted to production, it should act as an indirect indicator of product variety.²³ Others have used output, profitability, R&D expenditures and patents as indicators of product variety.

Number of Product Categories

This paper considers only 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 3 and 4 panel (a) give the total number of 4-digit level manufacturing products in which CEEC and CIS countries respectively exported as a group to market economies. Note the N-shaped pattern in both groups of countries across time: the immediate response to trade liberalisation was an increase in the number of products exported. This is most likely a result of the in the literature often-cited distressed-sale argument.²⁴ This was followed by a short period of decrease, after which the number of products exported levelled off. Trade liberalisation obviously opened doors to firms that wished to test their mettle in the world markets. But not all of them were successful. An adjustment eventually occurred, and countries specialised in fewer products. Figures for individual countries are listed in Table 1 column (3), where it is observed that the number of products exported by an individual CEEC country was much higher than that exported by a CIS country.

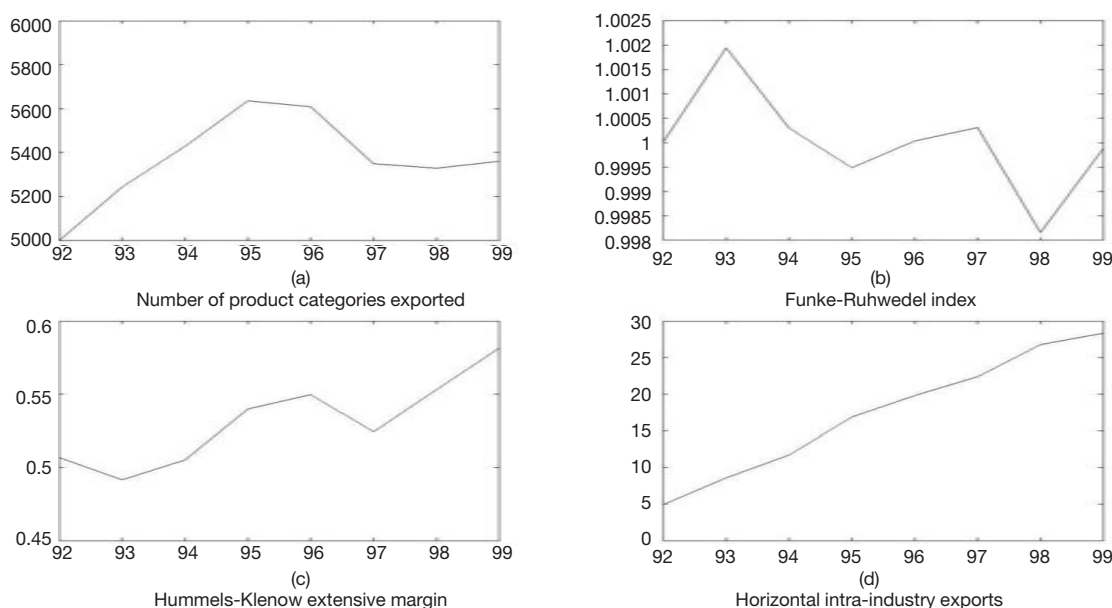
Despite the advantage of its easiness, a simple count of product categories treats small and large product categories the same. This measure also ignores possible differentiation within a product category. This is reflected in the correlation coefficients between the change in the number of product categories and the rate of closing the gap between actual and potential

²² Gary Hufbauer: *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 1970, Columbia University Press.

²³ Antonio Muscatelli et al.: *Modeling Aggregate Manufactured Exports for Some Asian Newly Industrialized Economies*, in: *Review of Economics and Statistics*, Vol. 77, No. 1, 1995, pp. 147-155.

²⁴ Jan Winiecki, *op. cit.*

Figure 3
Product Differentiation in the CEEC



Product categories are defined at SITC 4-digit level, and summed over all CEEC. FR and HK indexes are averages over all CEEC, where weights are export shares. Horizontal intra-industry exports are given in US\$ billion.

exports, which are insignificant (0.17) for the CIS, and low but significant (0.34) for the CEEC. The higher coefficient for the CEEC suggests that an increase in the number of product categories exported has been more important for the CEEC than for the CIS.

Funke-Ruhwedel Index

The second measure considered is an alternative interpretation of the approach taken in Funke and Ruhwedel.²⁵ It has close links to Feenstra,²⁶ and Feenstra and Markusen.²⁷ While Funke and Ruhwedel's original measure (FR) relies on the 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* to *t* is given as follows:

$$(7) FR_t^A = \ln \left(\frac{\sum_{p \in P_t} X_{pt}^A / \sum_{p \in P} X_{pt}^A}{\sum_{p \in P_{t-1}} X_{pt-1}^A / \sum_{p \in P} X_{pt-1}^A} \right)$$

²⁵ Michael Funke, Ralf Ruhwedel, op. cit.

²⁶ Robert Feenstra: New Product Varieties and the Measurement of International Prices, in: American Economics Review, Vol. 84, No. 1, 1994, pp. 157-177.

²⁷ Robert Feenstra, James Markusen: Accounting for Growth with New Inputs, in: International Economic Review, Vol. 35, No. 2, 1996, pp. 429-447.

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

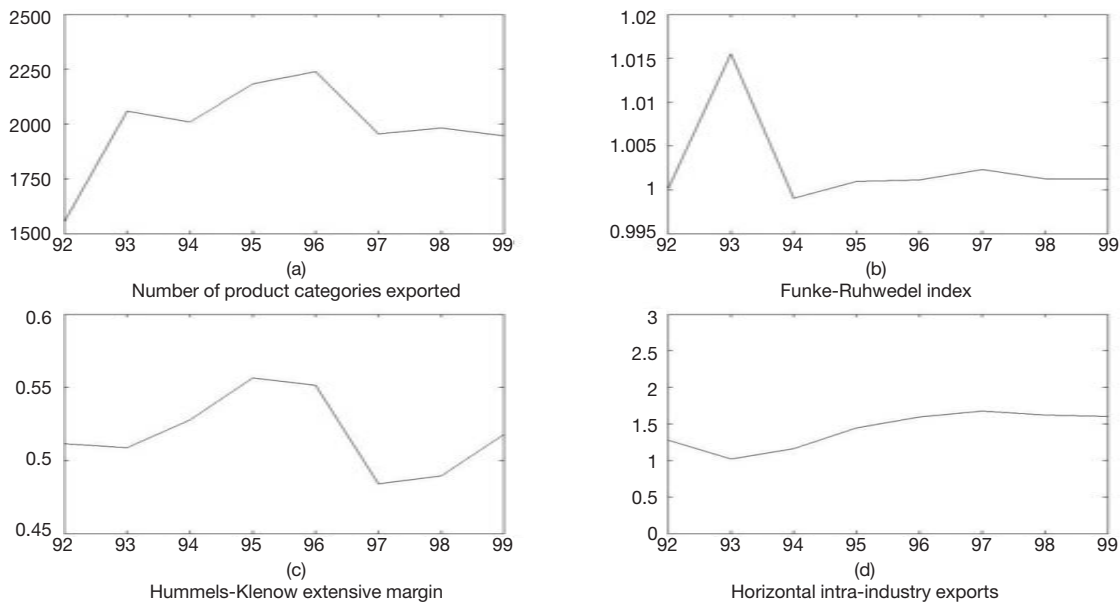
where X^A is the volume of exports of country *A* in product *p* at time *t*.

This measure finds the difference between the change in the volume of exports of all products in two consecutive time periods, and the increase in the volume of exports of common products that were exported in both time periods. The difference is the increase in the volume of other products traded.

This measure deals better 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 shortcomings: in the absence of highly disaggregated data, all of the increase in the volume of products commonly traded in two consecutive periods is subtracted, assumed 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. Therefore, this measure may understate the increase in product variety.

Figures 3 and 4 panel (b) give the FR index averaged over all CEEC and CIS countries respectively, where the weights are each country's export shares. The N-shaped pattern observed in the number of product

Figure 4
Product Differentiation in CIS



Product categories are defined at SITC 4-digit level, and summed over all CIS countries. FR and HK indexes are averages over all CIS countries, where weights are export shares. Horizontal intra-industry exports are given in US\$ billion.

categories is repeated to a certain extent. However, the period of specialisation is more pronounced. This implies that transition countries were no longer able to export varieties of products in large product categories, and most of the specialisation observed occurred in product categories with a low trade volume. The change in this index between 1992 and 1999 for individual countries can be found in Table 1 column (4). Especially for the CEEC, this index does not capture the increase in variety within product categories. The correlation coefficient between the rate of closing the gap between actual and potential exports, and the change in this index is insignificant and negative for both the CIS and the CEEC (-0.19 and -0.04 respectively). At the given level of aggregation, this index performed poorly to capture the changes in variety.

Hummels-Klenow Extensive Margin

The third measure considered is Hummels and Klenow's extensive margin.²⁸ The extensive margin measures the fraction of world exports that occur in the product categories which a country exports to its partners. This is the export version of Feenstra's measure of import variety.²⁹ The logic is that if a country's exports are concentrated in a small number of products, it will have a low extensive margin, implying few prod-

uct varieties. For country *A* at time *t*, it is computed as follows:

$$(8) \text{HKEM}_t^A = \frac{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{WC}}{X_t^W}$$

$$P_t^{AC} = \{ p \mid X_{pt}^{AC} > 0 \}$$

where 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 – and therefore large product categories are better represented than they were in the simple count of product categories. It also has an advantage over the FR index: highly disaggregated data are not needed to the same extent since the index already captures the increase in product differentiation within a product category. However, it may overstate the increase in product differentiation, since it considers all of the increase in exports in a product category as an increase in the number of varieties. It 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.

Figures 3 and 4 panel (c) give the Hummels-Klenow extensive margin (HKEM) indexes for the CEEC and

²⁸ David Hummels, Peter Klenow, op. cit.

²⁹ Robert Feenstra, op. cit.

the CIS respectively. Changes in the extensive margin during the period of analysis for individual countries are listed in Table 1 column (5). The same N-shaped pattern is again observed, but the product variety no longer levels off after specialisation. In fact, an increase is observed, which can be interpreted as an increase in the number of varieties of the products in which transition countries have specialised. The increase in the extensive margin has been much more significant in the CEEC. In particular, the correlation coefficient between the rate of closing the gap between actual and potential exports is 0.45 for the CEEC, and the insignificant but positive figure of 0.16 for the CIS. This further supports the earlier result that the increase in variety has been a much more important factor for the CEEC than for the CIS.

Horizontal Intra-industry Exports

Lastly, considering the close relationship between product differentiation and horizontal intra-industry exports, HIIX is used to measure the extent of product differentiation. HIIX is the export part of the simultaneous trade of varieties of basically the same product category. Thus, not all of the increase in exports within a product category is labelled an increase in product differentiation as was the case in HKEM in the absence of highly disaggregated data.

Figures 3 and 4 panel (d) give horizontal intra-industry exports of the CEEC and the CIS respectively. HIIX for individual countries in 1992 and 1999 can be found in Table 1 column (6). HIIX in the CEEC more than tripled during the period of analysis, whereas the CIS experienced a less than 25% increase in HIIX. When increases in manufacturing exports and HIIX are compared individually for each country, it can be seen that the majority of the increase in manufacturing exports to market economies in the CEEC is due to an increase in product variety. This is especially strong in the Czech Republic, Poland and Hungary, whereas it is much smaller in Bulgaria, Lithuania and Latvia. This can be the result of substantial FDI flows to the CEEC, as mentioned in Aturupane et al.³⁰ The situation is very different for CIS exports: although the amount of horizontal intra-industry exports in the Russian Federation is the highest, there has been a decrease. The highest increases are observed in Kazakhstan, Ukraine and Belarus. However, even for these countries, only a small portion of the increase in their exports is due to product differentiation. The situation is much worse in

other CIS countries. This measure shows once again that product differentiation played little role in the trade reorientation of CIS countries but it has been very important for the CEEC.

Quality of Transition Countries' Exports

The literature before the collapse of socialism provides numerous reasons for the lack of quality in Eastern Europe's manufacturing exports (van Brabant,³¹ Bogomolov,³² TremI³³). The US-imposed embargo on exports of strategic and high technology goods to communist economies in 1947 can be counted as one of the major causes of this situation.³⁴ However, the trade block formed in response among socialist countries in 1949, the Council for Mutual Economic Assistance (CMEA), where there were no incentives for innovation, is considered by many as the primary reason for the low quality of Eastern European products.

To be able to export their manufacturing products, transition countries needed to improve the quality of their products through restructuring. In the following, the amount of restructuring, and quality improvement, is examined.

Factor Intensity of Exports

One way to find out about changes in the quality of products is to look at the production technology. Changes in the factor content of production reveal the amount of technological improvement and thus the extent of restructuring. In the CMEA, the factor used intensively in transition countries' exports was primarily natural resources. A move towards human and physical capital intensive production would therefore imply significant restructuring. To analyse the factor content of the transition countries' exports to market economies, Wolfmayr-Schnitzer's quality ladders³⁵ are used. Accordingly, the quality of production increases in the following order:

- resource intensive
- human capital intensive / low technology

³¹ Jan van Brabant: Production Specialization in the CMEA: Concepts and Empirical Evidence, in: *Journal of Common Market Studies*, Vol. 26, No. 3, 1988, pp. 287-315.

³² Oleg Bogomolov: The Socialist Countries at a Critical Stage in World Economic Development, in: *Problems of Economics*, Vol. 30, No. 8, 1987, pp. 38-54.

³³ Vladimir TremI: Inferior Quality of Soviet Machinery as Reflected in Export Prices, in: *Journal of Comparative Economics*, Vol. 5, 1981, pp. 200-221.

³⁴ Jan van Brabant: *Socialist Economic Integration*, Cambridge 1980, Cambridge University Press.

³⁵ Yvonne Wolfmayr-Schnitzer: Trade Performance of CEECs According to Technology Classes, in: *The Competitiveness of Transition Economics*, OECD Proceedings:81-92, 1998.

³⁰ Chonira Aturupane et al.: Horizontal and Vertical Intra-industry Trade between Eastern Europe and the European Union, in: *Weltwirtschaftliches Archiv*, Vol. 135, No. 1, 1999, pp. 62-81.

- labour intensive
- human capital intensive / medium technology / labour intensive
- human capital intensive / medium technology / capital intensive
- human capital intensive / high technology / labour intensive
- human capital intensive / high technology / capital intensive.

For simplicity, the last four categories are aggregated into human-capital intensive high quality products.

Figures 5 and 6 panel (a) give the amount of total (X) and human-capital intensive (HCX) manufacturing exports from the CEEC and the CIS to market economies during 1992-99. Figures for individual countries are listed in Table 1 column (7). HCX in the CEEC more than tripled, whereas it increased only slightly in the CIS. Consequently, all the CEEC experienced increases in the share of HCX except for relatively labour abundant countries among the CEEC (Bulgaria, Romania, Latvia and Lithuania).³⁶ This is primarily due to increases in the share of labour intensive exports in these four countries, as a result of outward processing trade arrangements in the Europe Agreements for the labour intensive sectors of clothing and footwear (SITC 841, 842, 851). The share of HCX ranged from 9% to 17% in these four countries in 1999. It was 29% in Poland, 51% in Hungary, and between 39% and 46% in the other CEEC. A decreasing trend in the share of HCX was more common in the CIS, except in Kazakhstan and Belarus. In 1999, the share in the CIS was much smaller than in the CEEC. This is also captured by the correlation coefficient between increases in HCX and the rate of closing the gap between actual and potential exports. The figures are positive and significant for both the CIS and the CEEC, but much higher in the CEEC (0.39 and 0.52 respectively).

Unit Values of Exports

Although an examination of the factor intensity of exports gives a general idea of the extent of restructuring, not much can be inferred about the response of individual sectors to competition from market economies due to the amount of aggregation involved. Unit

³⁶ An earlier analysis by Landesmann and Burgstaller indicates that the quality gap between the EU and Hungary, Poland, Slovenia and the Czech Republic narrowed during 1989-94, and the gap to Bulgaria and Romania widened. Cf. Michael Landesmann, Johann Burgstaller: Vertical Product Differentiation in EU Markets: The Relative Position of East European Producers, in: The Competitiveness of Transition Economies, OECD Proceedings, 1998.

values provide a better and more frequently used tool to measure quality changes.

The unit value of exports is defined as the dollar value of exports in a given commodity category divided by its quantity. Since quantity units can be different from the number of products, unit value might be different from unit price. Lipsey,³⁷ and Kravis and Lipsey³⁸ have shown that unit value indexes can be poor substitutes for price indexes. Several reasons have been forwarded to explain this inadequacy of unit values: according to Enoch³⁹ and Maciejewski⁴⁰ the most important reason is that a change observed in unit values may simply be a reflection of changes in the composition of goods within a class of products.

According to Aiginger,⁴¹ and Landesmann and Burgstaller,⁴² unit value reflects quality rather than price for a number of reasons. First, if the products are similar, the prices that consumers are willing to pay must reflect differences in the consumers' perception of the quality of the products. Second, higher quality products embody a greater proportion of factors that do not make a corresponding contribution to the weight of the product, such as human capital and better technology.

Aiginger⁴³ further argues that as a country's output moves up the quality ladder, the unit value of that country's aggregate exports of manufactures increases. Consequently, differences in the unit value of aggregate exports can be taken as an approximation of the relative quality difference. Aggregation, which was a disadvantage in the comparison of prices, turns out to be an advantage in comparing the quality of products.

It should be noted that decreasing unit values are not always a sign of distressed trade resulting from structural problems. When competing internationally, the technologically superior partner can retain its com-

³⁷ Robert Lipsey: Price and Quantity Trends in the Foreign Trade of the United States, Princeton 1963, Princeton University Press.

³⁸ Irving Kravis, Robert Lipsey: International Trade Prices and Price Proxies, in: Nancy Ruggles (ed.): The Role of the Computer in Economic and Social Research in Latin America, New York 1971, NBER.

³⁹ C. A. Enoch: Measures of Competitiveness in International Trade, in: Bank of England Quarterly Bulletin, Vol. 18, 1978, pp. 181-195.

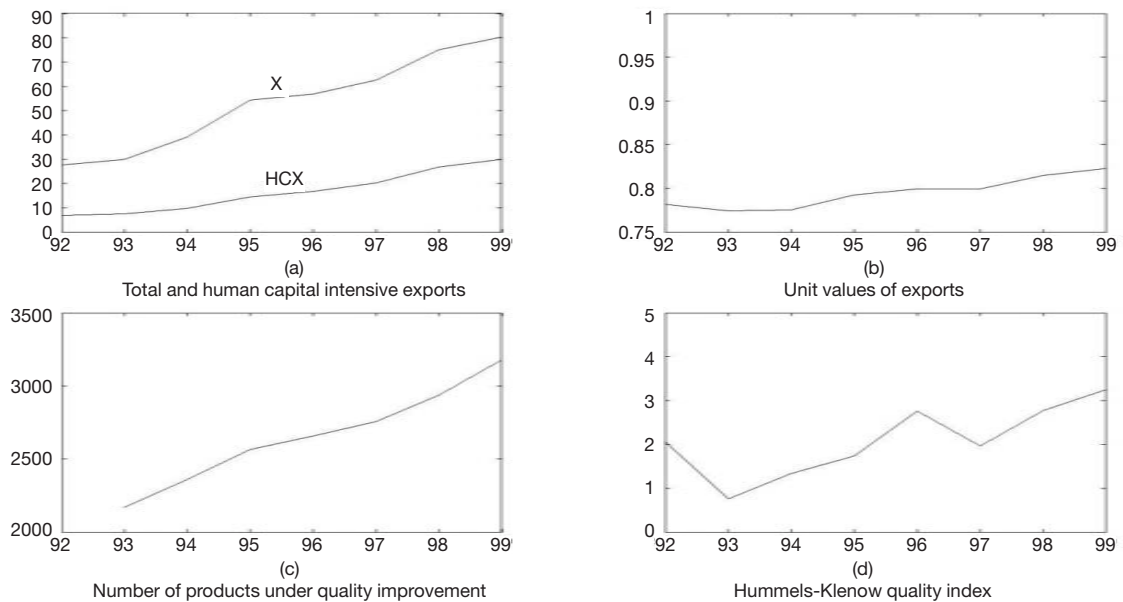
⁴⁰ E. B. Maciejewski: Real Effective Exchange Rate Indexes – a Reexamination of the Major Conceptual and Methodological Issues, in: IMF Staff Papers, Vol. 30, 1983, pp. 491-541.

⁴¹ Karl Aiginger: Unit Values to Signal the Quality Position of CEECs, in: The Competitiveness of Transition Economies, OECD Proceedings, 1998.

⁴² Michael Landesmann, Johann Burgstaller, op. cit.

⁴³ Karl Aiginger, op. cit.

Figure 5
Quality of CEEC Exports



Total and human capital intensive exports are given in US\$ billion. Unit values are weighted average, where weights are quantities of exports. Product categories are defined at SITC 4-digit level, and summed over all CEEC. HK quality index is an average over all CEEC, where weights are export shares.

petitiveness by increasing quality, and the inferior one can stay competitive by lowering production costs.⁴⁴

Thus, transition countries can either engage in price competition and sell their low quality products, or try to improve the quality by restructuring. The difference is that industrial restructuring cannot happen instantaneously, but price competition can.⁴⁵ Given the initial conditions, transition countries are expected to engage initially in more price competition than quality improvement, and thus the aggregate unit values will initially decrease. They will gradually overcome this initial disadvantage through changes in the economic environment, and move up the quality ladder. Thus, there will be increases in the quality of some products and/or the proportion of products with higher quality due to restructuring. This reasoning implies U-shaped aggregate unit values.

This is what is observed in Figure 5 panel (b), where the aggregate unit value of exports for the CEEC is

plotted.⁴⁶ Percentage changes for individual countries are listed in Table 1 column (8). When sectors and countries are analysed separately, it is observed that in the chemicals sector (SITC 5) price competition is widespread. Quality improvement is common in other sectors: in the manufacturing sector (SITC 6), all CEEC experienced increases in the unit values. In the machinery and miscellaneous manufacturing sectors (SITC 7 and 8), the unit values increased for the majority of the CEEC. Hungary experienced decreases in both sectors. Slovenia experienced a decrease only in miscellaneous manufacturing. In the machinery sector, Slovenia and the Czech and Slovak Republics eventually turned the decreasing trend upwards.

Decreasing unit values are much more common in the CIS, as can be seen in Figure 6 panel (b). However, when sectors are analysed individually, the U-shaped unit values are commonly observed in the machinery sector. Increasing unit values are observed in the manufacturing sector for the majority of the CIS countries.

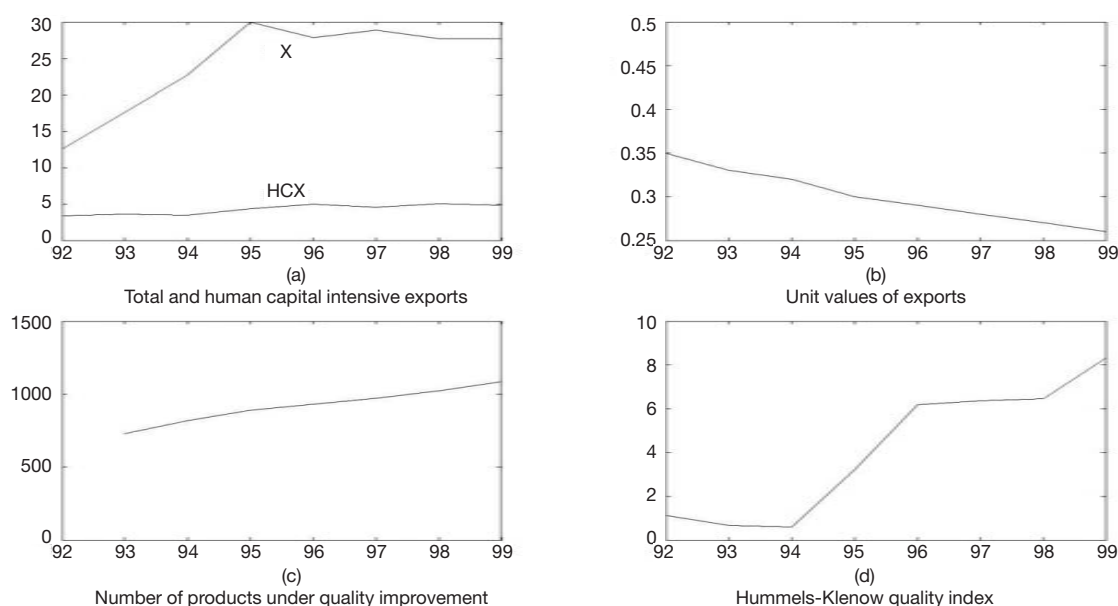
Next, an analysis of the unit values in each product category across time is carried out to obtain the

⁴⁴ Grossman and Helpman provide such a model, where the south imitates the north and uses its lower wages to compete with the north. The north regains its advantage through innovation. Cf. Gene Grossman, Elhanan Helpman: *Quality Ladders and Product Cycles*, in: *Quarterly Journal of Economics*, Vol. 106, No. 2, 1991, pp. 557-586.

⁴⁵ Sheets and Boata also take the extent of reorientation of trade from CMEA to the EU as a sign of restructuring. Cf. Nathan Sheets, Simona Boata: *Eastern European Export Performance during the Transition*, in: *Contemporary Economic Policy*, Vol. 16, 1998, pp. 211-226.

⁴⁶ This is consistent with the early analysis by Drabek and Smith. Analysing the period 1989-94, they find that the unit values of EU imports from the CEEC have fallen. Cf. Zdenek Drabek, Alasdair Smith: *Trade Performance and Trade Policy in Central and Eastern Europe*, CEPR Discussion Paper No. 1182, 1995.

Figure 6
Quality of CIS Exports



Total and human capital intensive exports are given in US\$ billion. Unit values are weighted average, where weights are quantities of exports. Product categories are defined at SITC 4-digit level, and summed over all CIS countries. HK quality index is an average over all CIS countries, where weights are export shares.

number of products under quality improvement. For this purpose, each year the products that reverse the decreasing trend are added to the list of products under quality improvement. If there is an increasing trend in the unit value for a product category for the whole time period, it is considered to be already under quality improvement since 1993. The difference between the CIS and the CEEC is once again striking, as seen in Figures 5 and 6 panel (c). The number of products under quality improvement in 1992 and 1999 for individual countries are listed in Table 1 column (9). The number in the CEEC is more than triple the number in the CIS. Furthermore, more than 30% of the products exported by the CEEC were under quality improvement in 1993, and almost all CEEC surpassed 40% by the end of 1999, led by the Czech Republic and Poland. Although they started at lower levels, Slovenia and Hungary had faster increases in the number of products under quality improvement. The Baltic states of Lithuania, Estonia and Latvia started at the lowest levels and had the lowest rate of increase. In contrast, in all the CIS countries except Russia, Ukraine and Belarus the percentage of traded products under quality improvement remained below 15% for the entire period of analysis. In these three countries, the rate of increase was comparable to that in the CEEC. Kazakhstan, Georgia and Moldova had modest increases in the percentage. The increase in other CIS countries

can be considered negligible. The insignificant but positive correlation coefficients between the increases in the number of products under quality improvement and the rate of closing the gap suggest stronger effects of other factors on the rate (0.01 for the CEEC and 0.06 for the CIS). According to the analysis so far, that factor could be increases in variety for the CEEC and increases in quantity for the CIS. In fact, Landesmann and Szekely⁴⁷ find significant increases in quality in the three largest CEEC earlier, during 1988-1991. In any further closing gap in the CEEC, increases in variety can be more important.

Hummels-Klenow Quality Index

The last measure of quality is derived from Hummels and Klenow.⁴⁸ It is based on an Armington model with endogenous choice of quality, where relative demand is decreasing in quality adjusted prices. The quality of exports of country A relative to country B at time t is given as follows:

$$(9) \quad HKQ_t^A = \left(\frac{HKp_t^A}{HKp_t^B} \right) \left(\frac{HKq_t^A}{HKq_t^B} \right)$$

where HKp_t^A and HKq_t^A are price and quantity indexes for country A at time t :

⁴⁷ Michael Landesmann, Istvan Szekely, op. cit.

⁴⁸ David Hummels, Peter Klenow, op. cit.

$$(10) \text{HK}p_t^A = \frac{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{AC}}{\sum_C \sum_{p \in P_t^{AC}} p_{pt}^{WC} q_{pt}^{AC}} \quad \frac{\sum_C \sum_{p \in P_t^{AC}} P_{pt}^{AC} q_{pt}^{WC}}{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{WC}}$$

$$\text{HK}q_t^A = \frac{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{AC}}{\sum_C \sum_{p \in P_t^{AC}} P_{pt}^{AC} q_{pt}^{WC}} \quad \frac{\sum_C \sum_{p \in P_t^{AC}} P_{pt}^{WC} q_{pt}^{AC}}{\sum_C \sum_{p \in P_t^{AC}} X_{pt}^{WC}}$$

$$P_t^{AC} = \{ p \mid X_{pt}^{AC} > 0 \}$$

Both of these are Fisher Ideal indexes, which are widely used for constructing price and quantity indexes. It must be noted that the factor of these price and quantity indexes gives the intensive margin.

To correctly capture the changes in quantity of a country *A*, the base country *B* must be a small country, where there has not been much change in the quality of its exports. Based on the previous quality measures, Azerbaijan is chosen for this purpose.⁴⁹ Figures 5 and 6 panel (d) give the quality indexes for the CEEC and the CIS relative to Azerbaijan. Changes during the period of analysis for individual countries can be found in Table 1 column (10). Note that the same U-shaped pattern is observed for both groups of countries. The CIS countries experienced larger increases in the quality of their exports relative to Azerbaijan than the CEEC. This is expected since they started at a much lower quality than the CEEC. The correlation coefficients between changes in this index and the rate of closing gap support this conclusion, which are insignificant for both the CEEC and the CIS (0.01 and 0.24 respectively).

In sum, both the CEEC and the CIS experienced improvements in the quality of their exports. However, the increase in quality is observed in labour intensive products in the CIS as their exports are becoming more labour intensive. However, due to the composition of their exports, a decrease in aggregate unit values is observed. In contrast, CEEC exports are becoming increasingly human capital intensive, and their aggregate unit values are rising. Overall, the quality of CEEC exports is much higher than those of the CIS. However, in closing the gap the change in quality has been the least important among the factors considered in this paper.

Conclusions

There has been a considerable amount of increase in the exports of transition countries to market economies. Especially the CEEC were successful in reo-

rienting their exports as their share of actual exports reached almost 60% of its potential by 1999. However, there are considerable differences in the extent of this reorientation across countries in both the CEEC and the CIS. This paper analysed the changes in the quantity, variety and quality of transition exports to market economies using a variety of measures from the literature to determine the factors behind these cross-country differences.

The analysis of Hummels and Klenow's intensive margin⁵⁰ shows that simply exporting the products that were previously traded under the CMEA to market economies cannot be the only reason behind the extent of the reorientation. However, it is found that it had a much more significant effect on CIS exports than CEEC exports.

A variety of different measures are used in analysing changes in product differentiation. Each measure has its advantages and shortcomings, and each revealed different but important pieces of information. Analysing the number of product categories in which transition countries exported showed that firms respond to liberalisation by first testing their mettle in world markets. However, only those in certain industries succeeded, which led to specialisation in certain product categories. Funke and Ruhwedel's index showed that most of this specialisation occurred in small product categories. The extensive margin index of Hummels and Klenow revealed that, in fact, there was an increase in variety in the product categories in which the transition countries specialised. These observations suggest N-shaped changes in the variety of transition exports. Last, but not least, an analysis of horizontal intra-industry exports revealed that the CEEC have been much more successful in product differentiation than the CIS countries, and that had a bigger impact on the rate of closing the gap between actual and potential exports for CEEC.

Furthermore, it is observed that the absence of highly disaggregated data causes some indexes to perform poorly. In such circumstances, the Funke-Ruhwedel index underestimates the degree of product differentiation, considering all changes in a product category to be an increase in exports of the same product variety. In contrast, Hummel and Klenow's extensive margin overestimates it, considering all changes in a product category to be an increase in product differentiation. In the case of transition countries, however, the latter performed better.

⁴⁹ The choice of another base country would only change the level, but the pattern of changes will be the same.

⁵⁰ David Hummels, Peter Klenow, *op. cit.*

The analysis of quality upgrading and restructuring reveals that although CEEC countries as a whole have higher quality products and were able to improve quality more than the CIS, the changes in quality were not significant enough to have an effect on the rate of closing the gap between actual and potential exports for both groups of countries.

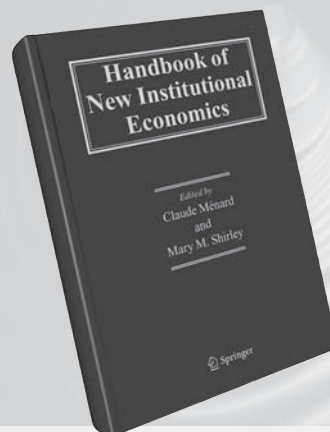
The better results for the CEEC than for the CIS are partly the consequence of the liberalisation agreements, as suggested by the analysis of different parts of exports. The Europe Agreements forced the CEEC to compete with market economies. In conjunction, they have received the largest FDI among all emerging markets. Prosi⁵¹ argues that technology transferred by FDIs to CEEC meets the factor proportions and skills of advanced economies, not those of labour intensive economies. These factors caused the CEEC to perform much better than the CIS both in increasing product variety and in improving the quality of their exports. On the other hand, the CIS customs union does not lead to either of these since it does not encourage trade with market economies. It is an attempt to preserve the status quo under the CMEA.

Although the CEEC's achievements are better, they also underperformed. There is still a need to improve the quality of their products. Simple tariff cuts by the Europe Agreements are apparently insufficient to do this. In fact, given their factor abundance relative to the EU, the Europe Agreements forced some CEEC to specialise in labour intensive low quality products. Although Martin⁵² considers this potential for the *maquiladora* syndrome unlikely for more advanced countries such as the Czech Republic, Poland and Hungary, the substantial increases in exports of labour intensive products from Bulgaria, Romania, Latvia and Lithuania found in this paper should be noted with caution. In this context, it can be said that the widely reported high skill in some of these CEEC is either overestimated or not yet exploited. Rosati⁵³ suggests the lack of capital as the leading cause. FDI was high, but considering how obsolete their capital was after the fall of socialism, it apparently was not enough.

⁵¹ Gerhard Prosi: Economic Cooperation between Members of the European Union and New Democratic Countries of Europe, in: Communist Economies and Economic Transformation, Vol. 10, No. 1, 1998, pp. 111-118.

⁵² R. Martin: Central and Eastern Europe and the International Economy: The Limits to Globalization, in: Europe-Asia Studies, Vol. 50, No. 1, 1998, pp. 7-26.

⁵³ Dariusz Rosati: Emerging Trade Patterns of Transition Countries: Some Observations from the Analysis of Unit Values, in: MOCT-MOST, Vol. 8, 1998, pp. 51-67.



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