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Trade in Goods and Services between the EU and the BRICs

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Abstract

This policy paper, prepared as part of the Background Study for the European Competitiveness Report 2009, analyses the external trade in goods and services between the EU and the BRICs. The paper starts with the analysis of the global position of the EU and the BRICs in world trade (using the IMF DOT and UN COMTRADE databases) and moves subsequently to a more detailed analysis of regional (individual EU countries' trade with the BRICs), commodity and industry-specific trade specialization patterns, using the Eurostat Comext database. The key features of services trade are addressed as well.

Keywords: *foreign trade, trade specialization, competitiveness, European Union, Brazil, Russia, India, China*

JEL classification: *F10, F14, F23*

Trade in goods and services between the EU and the BRICs

1 Trade in goods

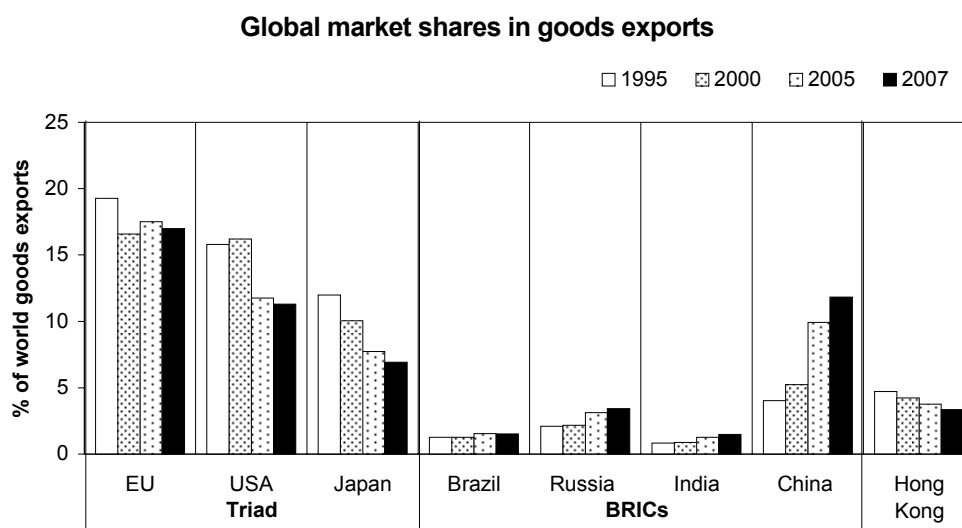
1.1 Introduction

This section analyses the external trade in goods between the EU and the BRICs. We start with the global position of the EU and the BRICs in world trade (using the IMF DOT and UN COMTRADE databases) and move subsequently to the more detailed analysis of regional (individual EU countries' trade with BRICs), commodity and industry-specific trade specialization patterns using the Eurostat Comext database.

1.2 Global trade in goods

The EU is the world's leading exporter of goods. In 2007, extra-EU exports amounted to EUR 1200 billion – about 17% of total world exports – not including intra-EU dispatches. With imports of EUR 1370 billion (18.1% of the world total – not including intra-EU dispatches), the EU is also the second largest importer, only closely behind the United States whose imports totalled EUR 1500 billion in 2007 (18.5%) – see Figures 1.1 and 1.2. The rapid growth of Chinese exports over the past two decades has made China advance to rank two in the global list of world exporters (11.8% of total; including Hong Kong even 15.3%), overtaking both the USA and Japan (Figure 1.1). In terms of imports, China is still behind the EU and the USA but ahead of Japan (Figure 1.2).

Figure 1.1

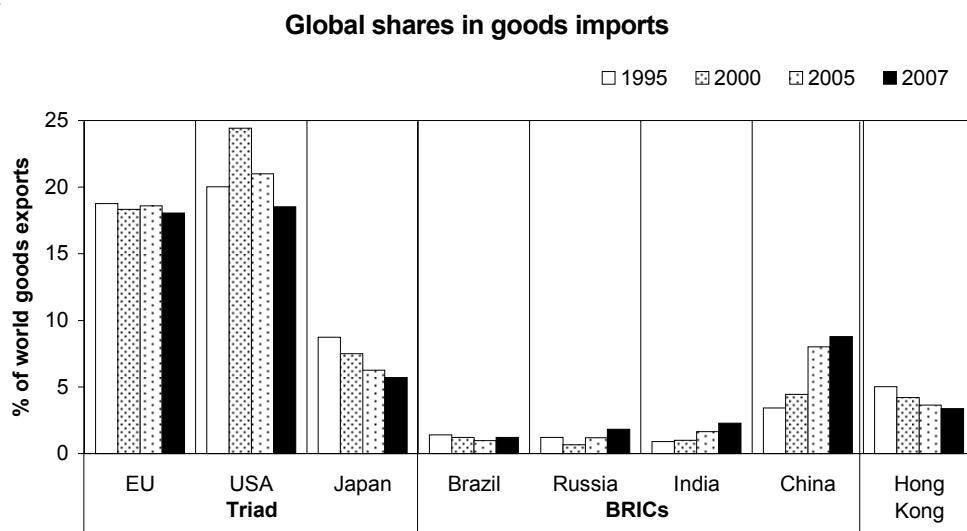


Source: IMF, Directions of Trade, wiiw calculations. Calculation of market shares based on extra-EU exports only.

Differing growth rates in exports and imports over the past two decades have caused a significant reallocation of market shares among the countries of these two country

groupings, mainly from the Triad to the BRICs.¹ Figure 1.1 shows that the export market shares of the Triad have all significantly decreased over the period 1995 to 2007. In the case of the EU, the share in global exports decreased from 19% in 1995 to 17% in 2007 with the strongest decline in the period 1995-2000.² In fact, the EU global export market shares seem to have stabilized since then and even show a slight increase between 2000 and 2007. The loss in export market shares over the last two decades is more pronounced in the case of the USA and Japan. Market shares declined to 11.3% in the case of the USA, down more than 4 percentage points (pp) compared to 1995. Japan recorded a loss of 5pp of its share in global exports, leaving it with a market share of 7% in 2007. Comparing the losses in market shares of the Triad countries, the EU was relatively successful in defending its market share.

Figure 1.2



Source: IMF, Directions of Trade, wiiw calculations. Calculation of market shares based on extra-EU imports only.

The decline of global market shares in goods exports of industrialized countries, which reached its peak around 1993 (WTO – World Trade Report, 2008), coincides with the emergence of new players on the world markets. These new players include all four BRIC countries. With regards to merchandise trade, the pre-eminent role of China as an exporter stands out. During the period 1995-2007 China's market share in global exports almost tripled, from 4% to 11.8%. Parallel to – and mainly caused by – the rise of China as a world class export power, the market share of Hong Kong (including re-exports) decreased steadily over the period 1995-2007. This is explained by the development of special economic zones (SEZ) in Southern China and the relocation of export-orientated manufacturing production from Hong Kong to these Chinese SEZ. Furthermore, China

¹ All growth rates, market shares, etc. are calculated from nominal values due to the lack of appropriate deflators. This affects mainly Russian exports and the related trade surpluses due to fluctuating energy prices.

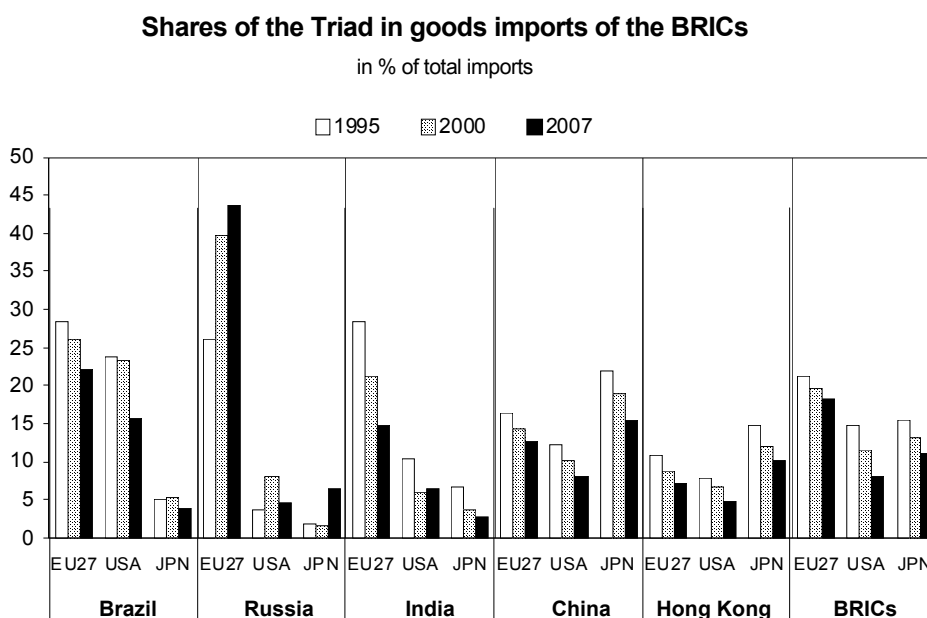
² Since the interest here is with the EU as an aggregate, global export shares are calculated based on world trade excluding intra-EU trade.

made intensive use of Hong Kong's port for the dispatchment of its exports. With the development of the ports in Shanghai and Shenzhen the role of Hong Kong as entrepôt for the trade of mainland China has decreased (Klau and Fung, 2006). Nevertheless, Hong Kong's re-exports are still significant, totalling about EUR 240 billion (3.3% of total) in 2007.

1.3 Bilateral trade relations between Triad countries and the BRICs

The EU's leading role in international trade also sticks out when bilateral relations between the Triad and the BRICs are regarded. The comparison of shares in total imports of the BRICs reveals that the EU has the highest market shares among the Triad countries – with the notable exception of China (Figure 1.3). In China, Japan accounts for roughly 15% of imports, compared to 12.8% of the EU (and 8% of the USA). This can be explained by the high degree of trade integration in Asia. In Russia, the EU had an impressive import market share of 44% in 2007, up from 40% in the year 2000, and far ahead of the USA and Japan which are not major trading partners for Russia. Japan also has a higher market share in Hong Kong's imports, for the same reason as for China, but in both cases the EU has still a larger market share than the USA. Interestingly, the EU also occupies a higher market share in Brazilian imports than then USA, with the differential in market share increasing from less than 3 pp in 2000 to approximately 6.5 pp in 2007. Both the EU and the United States experienced a decline of their market share in Brazilian imports over the period 2000-2007 which is in line with the general tendency in the BRICs. Notable exceptions are the rise of the EU's import market share in Russia and the stabilization of the US share in India's import market.

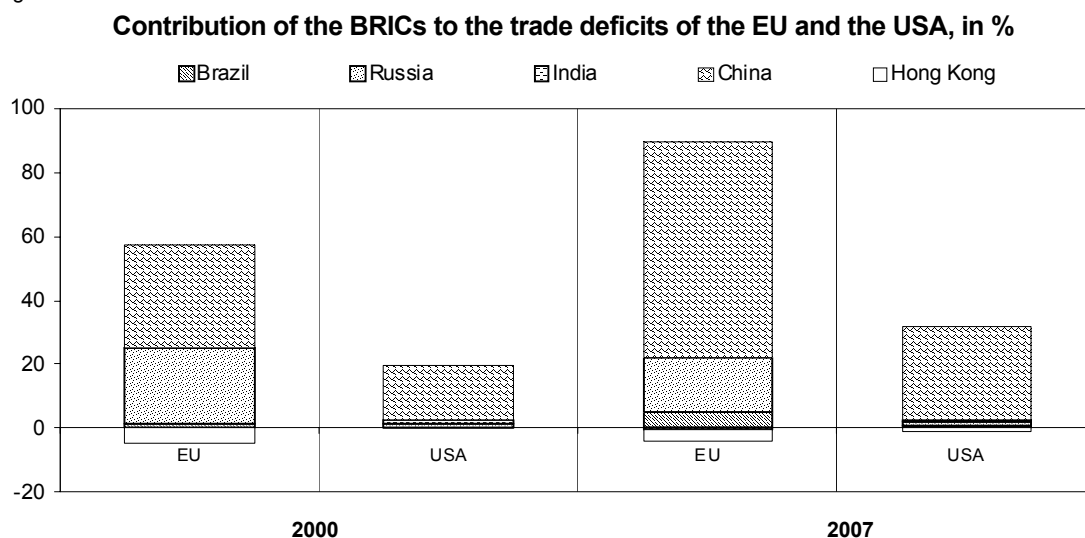
Figure 1.3



Source: UN Comtrade, wiiw calculations.

It appears that EU companies make intensive use of the trade channel to serve the markets of the BRICs and are also quite successful as compared to the USA and Japan, which are less favourable positioned in most of the BRICs in terms of import market shares.

Figure 1.4



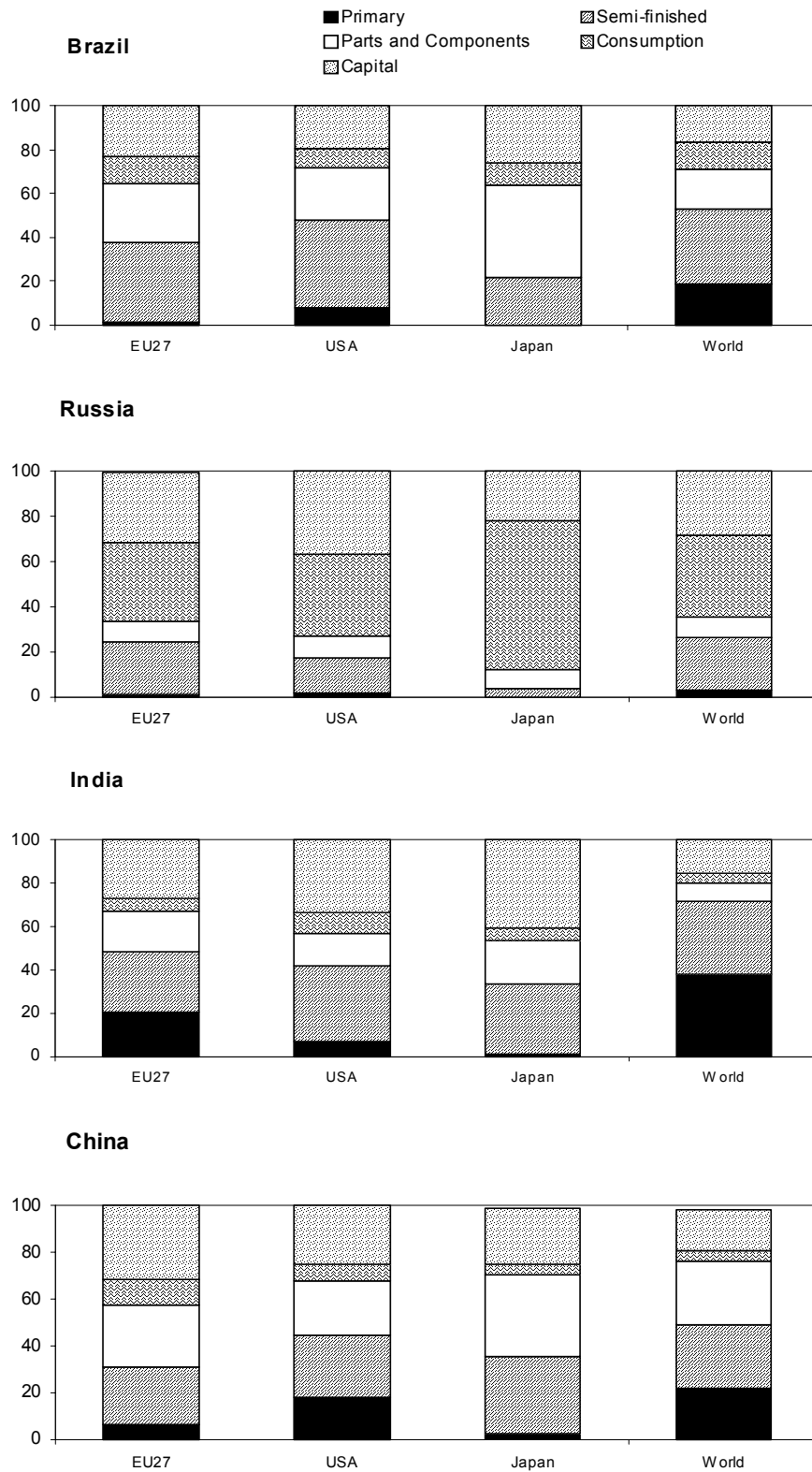
Source: UN Comtrade, wiiw calculations.

Despite falling market shares in the BRICs, their importance as trading partners for the Triad countries is on the rise – the result of much faster export and import growth rates of these countries. On the export side Russia has become the main export partner of the EU among the BRICs, absorbing 7.1% of extra-EU exports, slightly ahead even of China (5.8%). For the USA and Japan, in contrast, Russia is less significant as an export market. For them, China is the major export destination among the BRICs. All Triad countries have in common that their shares of both exports destined for and imports from China increased between 2000 and 2007, with a higher share occupied in imports, surpassing 20% in the case of Japanese imports (2007). In the EU and the USA, imports from China exploded, rising by 8.8 pp and 8.3 pp to reach 16.4% and 16.9% of total imports respectively (2007). On the export side, the increase of the relative importance of China as a trading partner is much less pronounced, reaching approximately 5.8% of total EU as well as total US exports. For the EU and the USA, a by-product of these developments is the increasing trade deficit, especially with China. In 2007, the bilateral trade with China and Russia contributed 84% to the total trade deficit of the EU, up from 56% in the year 2000 (Figure 1.4). The US trade deficit exceeded EUR 700 billion and was much larger than the EUR 260 billion deficit recorded by the EU.³ The US trade deficit was considerably less biased towards the BRICs (though bilateral trade with China still accounted for 29% of the total US trade deficit).

³ The EUR 260 billion are the trade deficit for extra-EU trade as calculated from UN Comtrade. Extra-EU trade was derived by deducting intra-EU exports and imports from trade with the world. The EUR 260 billion might exaggerate the extra-EU trade deficit because reported intra-EU exports are higher than reported imports. The EU trade deficit as reported by the IMF's Directions of Trade database amounted to EUR 159 billion in 2007. The deficit of the United States is also lower according to this dataset (EUR 623 billion).

Figure 1.5

Imports of the BRICs by broad economic categories, 2007



Source: UN Comtrade. BEC Classification. Motor spirits are not allocated to any of the BEC categories and are therefore omitted.

There are several factors contributing to China's strong export performance. One of the factors is that the Triad countries provided China with the necessary capital goods, technology and know-how to diversify and upgrade domestic industrial and export capacities. An indication for this is the very high share of capital goods in China's imports from the Triad countries, especially from the EU (Figure 1.5). The same is also true for Chinese imports from the United States (although less so for imports from Japan).

The import of capital goods, however, cannot be the sole catalyst for China's exceptional trade performance as the other BRICs have at least equally high shares of capital goods from the Triad countries. A distinctive feature of Chinese trade is the high share of parts and components (P&C), particularly on the import side. The trade in P&C constitutes a deep form of economic integration because it entails the geographic separation of the production process of goods. In contrast, this form of trade integration is much less developed in Russia and also India.⁴ The split-up of the trade according to broad economic categories, which reflect different stages of production, also shows that China's and India's trade is characterised by a very low share of imports of consumption goods. Consumption goods only account for 4.4% of China's and 4.6% of India's aggregate goods imports. Compared to these very low shares, both China and India import relatively more consumption goods from the EU (10.7% and 6% respectively). In contrast, consumption goods are the major category in Russian imports accounting for 36% of total imports in trade with the world and only slightly less in bilateral trade with the EU.

1.4 Country-specific patterns of EU-BRICs trade

With a share of 17%-18% in world trade the EU is indeed a trading giant. Yet about two thirds of EU trade represent intra-EU dispatches (intra-EU exports and imports) which are *not included* in the above percentages; for the EU new member states (NMS) which joined in 2004 and 2007 respectively the share of intra-EU trade is even higher (and that of BRICs correspondingly lower).⁵

Table 1.1 provides an overview of the overall EU trade with individual BRICs, the Triad and the rest of the world (RoW), separately for EU15 ('old' EU member states prior to 2004 enlargement) and the NMS12, during the period 2000-2008. Altogether, the BRICs accounted for just 6% of total EU exports in 2008 – less than exports to the USA (6.2%) – but their share doubled since the year 2000. The growing importance of BRICs is even more visible in EU imports: an increase of import shares from 6.3% in 2000 to 11.6% of

⁴ For an analysis of the role of trade in parts and components in shaping Chinese trade patterns see section 1.8. In a similar contrast to China, the role of intra-industry trade in Russia is extremely low – see Fertö and Soos (2008).

⁵ The rest of this section is based mainly on the Eurostat Comext database. The subsequent analysis covers total EU trade (both intra- and extra) since we are interested not only in the EU as a whole but in the performance of individual EU countries (e.g. NMS relative to BRICs) as well.

Table 1.1

Overview of total EU goods trade

Partner	EU15									Trade Balance					
	Exports			Imports			Trade Balance			EUR bn					
	EUR bn		shares	EUR bn		shares	EUR bn		shares	2000	2007	2008			
	2000	2007	2008	2000	2007	2008	2000	2007	2008	2000	2007	2008			
Brazil	16.6	20.7	25.5	0.7	0.6	0.7	17.6	31.3	34.1	0.7	0.9	0.9	-1.0	-10.6	-8.6
Russia	19.9	74.0	85.1	0.8	2.1	2.4	45.7	109.0	126.0	1.8	3.1	3.4	-25.8	-35.0	-40.9
India	13.4	28.4	30.1	0.5	0.8	0.8	12.4	24.9	27.5	0.5	0.7	0.8	1.0	3.5	2.6
China	25.5	69.2	75.3	1.0	2.0	2.1	70.3	211.0	223.7	2.8	6.0	6.1	-44.8	-141.8	-148.4
BRICs	75.4	192.3	216.0	3.0	5.5	6.1	146.0	376.2	411.3	5.8	10.7	11.3	-70.6	-184.0	-195.3
Japan	44.9	42.5	41.0	1.8	1.2	1.1	87.1	72.0	68.3	3.5	2.0	1.9	-42.2	-29.5	-27.3
USA	232.5	253.3	241.0	9.3	7.3	6.8	199.0	175.2	179.5	7.9	5.0	4.9	33.4	78.0	61.5
RoW	477.6	675.8	710.9	19.0	19.4	19.9	513.4	685.3	739.9	20.3	19.4	20.2	-35.8	-9.5	-29.0
EU15	1556.1	2065.2	2073.9	62.1	59.2	58.1	1478.7	2012.8	2014.9	58.6	57.0	55.1	77.5	52.4	58.9
NMS12	121.3	260.7	277.3	4.8	7.5	7.8	100.2	215.5	231.0	4.0	6.1	6.3	21.1	45.2	46.0
EU27	1677.4	2324.5	2359.8	66.9	66.6	66.1	1578.9	2223.1	2255.9	62.5	62.9	61.7	98.5	101.4	103.9
exEU27	830.4	1163.8	1208.9	33.1	33.4	33.9	945.6	1308.7	1399.0	37.5	37.1	38.3	-115.2	-144.9	-190.1
WORLD	2507.9	3488.2	3568.7	100.0	100.0	100.0	2524.5	3531.8	3654.9	100.0	100.0	100.0	-16.6	-43.5	-86.2

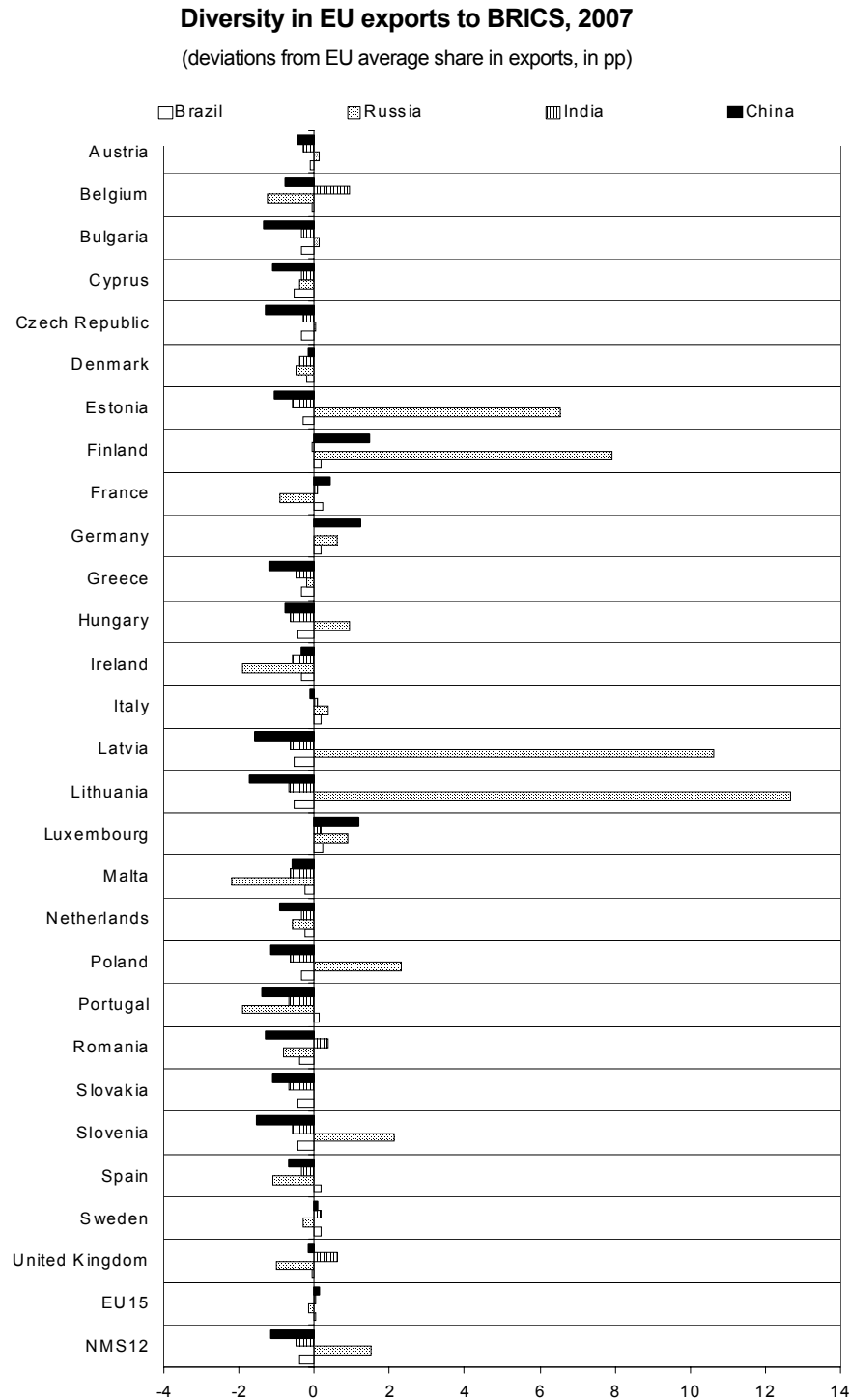
Partner	NMS12									Trade Balance					
	Exports			Imports			Trade Balance			EUR bn					
	EUR bn		shares	EUR bn		shares	EUR bn		shares	2000	2007	2008			
	2000	2007	2008	2000	2007	2008	2000	2007	2008	2000	2007	2008			
Brazil	0.3	0.6	0.9	0.2	0.2	0.2	1.0	1.4	1.5	0.5	0.3	0.3	-0.8	-0.8	-0.6
Russia	2.8	15.1	20.1	1.9	3.8	4.6	18.1	35.0	47.3	9.5	7.5	9.1	-15.2	-19.9	-27.2
India	0.3	1.1	1.4	0.2	0.3	0.3	0.5	1.4	1.9	0.3	0.3	0.4	-0.2	-0.3	-0.5
China	0.4	2.7	3.1	0.2	0.7	0.7	4.4	20.6	24.0	2.3	4.4	4.6	-4.0	-17.8	-20.9
BRICs	3.7	19.5	25.5	2.5	4.9	5.8	23.9	58.3	74.7	12.6	12.5	14.4	-20.2	-38.8	-49.2
Japan	0.6	1.3	1.4	0.4	0.3	0.3	5.0	6.2	6.5	2.6	1.3	1.3	-4.4	-4.8	-5.1
USA	5.7	8.1	8.3	3.9	2.0	1.9	7.3	6.1	6.9	3.8	1.3	1.3	-1.5	2.1	1.4
RoW	19.0	56.4	64.6	12.8	14.2	14.6	23.4	54.9	63.7	12.3	11.8	12.3	-4.4	1.6	0.9
EU15	99.0	236.2	252.7	67.1	59.3	57.2	111.2	267.6	281.5	58.7	57.4	54.3	-12.2	-31.4	-28.8
NMS12	19.6	76.9	88.6	13.3	19.3	20.1	18.8	74.1	84.3	9.9	15.9	16.3	0.8	2.8	4.3
EU27	118.7	312.8	341.8	80.4	78.6	77.4	130.0	341.0	366.4	68.6	73.1	70.7	-11.4	-28.2	-24.6
exEU27	29.0	85.4	99.8	19.6	21.4	22.6	59.5	125.4	151.8	31.4	26.9	29.3	-30.5	-40.0	-52.0
WORLD	147.6	398.3	441.6	100.0	100.0	100.0	189.5	466.5	518.2	100.0	100.0	100.0	-41.9	-68.2	-76.6

Partner	EU27									Trade Balance					
	Exports			Imports			Trade Balance			EUR bn					
	EUR bn		shares	EUR bn		shares	EUR bn		shares	2000	2007	2008			
	2000	2007	2008	2000	2007	2008	2000	2007	2008	2000	2007	2008			
Brazil	16.9	21.3	26.3	0.6	0.5	0.7	18.7	32.7	35.5	0.7	0.8	0.9	-1.8	-11.4	-9.2
Russia	22.7	89.1	105.2	0.9	2.3	2.6	63.8	144.0	173.3	2.3	3.6	4.2	-41.0	-54.9	-68.2
India	13.7	29.5	31.5	0.5	0.8	0.8	12.8	26.3	29.4	0.5	0.7	0.7	0.8	3.2	2.1
China	25.9	71.9	78.4	1.0	1.9	2.0	74.6	231.6	247.6	2.7	5.8	5.9	-48.8	-159.6	-169.2
BRICs	79.1	211.8	241.4	3.0	5.4	6.0	169.9	434.6	485.8	6.3	10.9	11.6	-90.8	-222.8	-244.4
Japan	45.5	43.8	42.4	1.7	1.1	1.1	92.1	78.1	74.8	3.4	2.0	1.8	-46.6	-34.4	-32.4
USA	238.2	261.4	249.4	9.0	6.7	6.2	206.3	181.3	186.3	7.6	4.5	4.5	31.9	80.1	63.1
RoW	496.6	732.2	775.4	18.7	18.8	19.3	536.8	740.1	803.7	19.8	18.5	19.3	-40.2	-7.9	-28.3
EU15	1655.2	2301.4	2326.6	62.3	59.2	58.0	1589.9	2280.4	2296.5	58.6	57.0	55.0	65.3	21.0	30.1
NMS12	140.9	337.6	365.8	5.3	8.7	9.1	119.0	289.6	315.5	4.4	7.2	7.6	21.9	48.0	50.3
EU27	1796.1	2637.3	2701.7	67.6	67.9	67.4	1708.9	2564.1	2621.9	63.0	64.1	62.8	87.2	73.2	79.8
exEU27	859.4	1249.2	1308.6	32.4	32.1	32.6	1005.1	1434.1	1550.7	37.0	35.9	37.2	-145.7	-184.9	-242.1
WORLD	2655.5	3886.5	4010.3	100.0	100.0	100.0	2714.0	3998.2	4172.6	100.0	100.0	100.0	-58.5	-111.7	-162.3

Source: Eurostat-Comext, wiiw calculations. Note: EU15 and NMS12 do not add to EU27 due to reporting errors.

total EU imports in 2008, largely thanks to a growing importance of imports from China which accounts for half of EU imports from BRICs. The BRICs gained market shares in the EU mainly at the expense of the USA and Japan (especially in EU imports). Generally, EU exports to BRICs are less important than imports: the latter account for a bigger share of overall EU imports and explain also EU trade deficits.

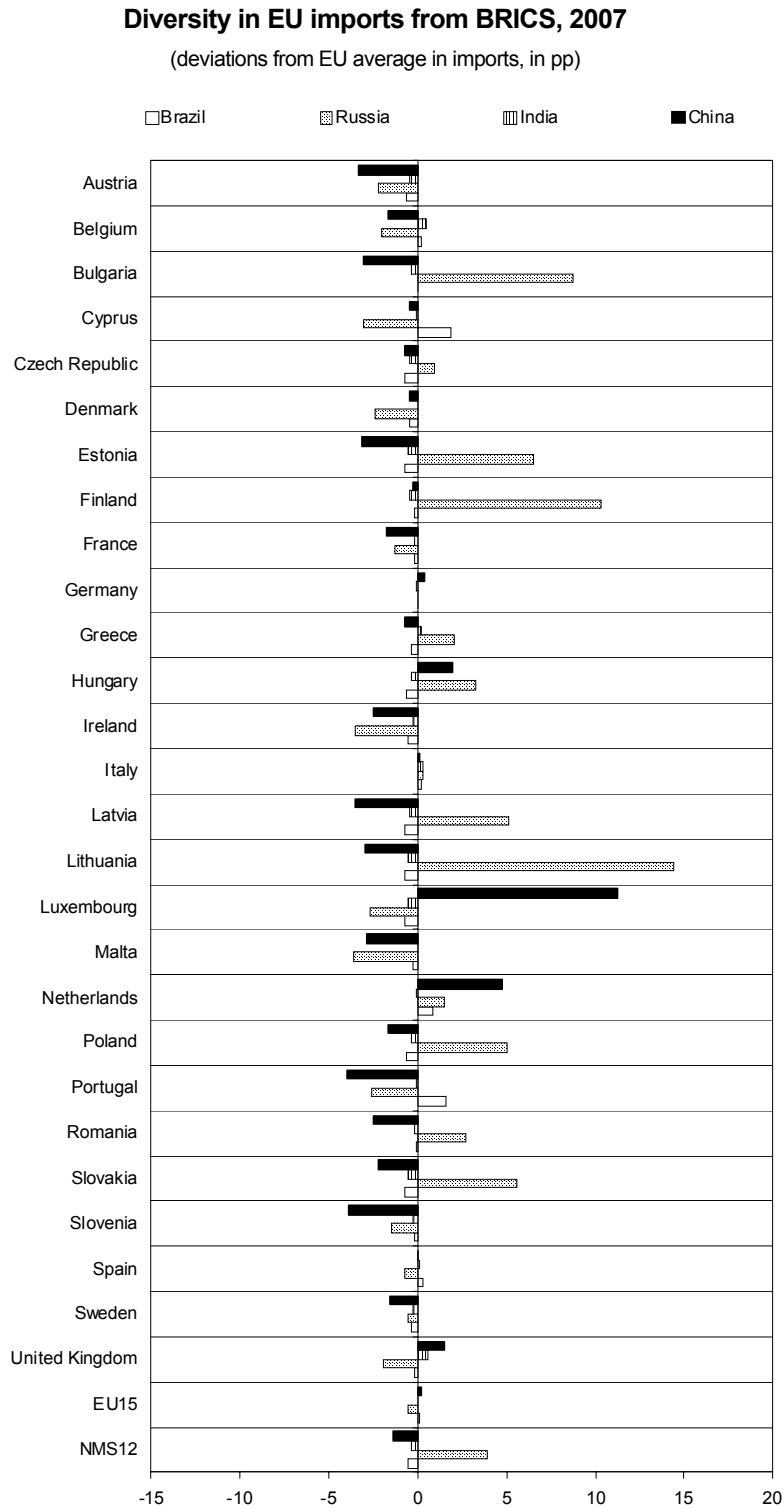
Figure 1.6



Source: Eurostat Comext, wiw calculations.

From the perspective of EU trade policies, the analysis of trade statistics shows that China and Russia are the main EU trading partners among BRICs and thus represent key challenges (though, as will be shown below, both for markedly different reasons).

Figure 1.7



Source: Eurostat Comext, wiiw calculations.

EU trade with BRICs grew faster than average during the period 2000-2008, especially regarding exports to Russia and India (EU exports to Brazil were rather sluggish). Again, NMS exports have been more dynamic than the EU average. In particular, NMS exports to China and Russia were growing rather fast. Also EU imports from the BRICs (again mainly from China and Russia) were rapidly rising with NMS' imports increasing more than EU average (Table 1.1).

Except for India, the EU has trade deficits with all BRICs (EUR 245 billion in 2008). The largest (and rising) trade deficits have been recorded in trade with China and Russia (the latter is fluctuating in line with energy prices). The NMS have trade deficits with all BRICs and their main BRICs' trading partner has not been China (as it is the case for EU15) but Russia (with respect to both exports and imports).

In general, the NMS have been trading relatively less with the BRICs than EU15 countries do (except NMS' trade with Russia). Indeed, a higher share of BRICs in some EU countries' exports and imports results largely from their more trade exposure towards Russia (e.g. the three Baltic States, Finland, Bulgaria, Poland, Slovakia, Slovenia and Germany – see Figures 1.6 and 1.7). There is much less diversity in EU's trade exposure regarding other BRICs: Finland, Germany and Luxembourg export relatively more (than EU average) to China. Luxembourg, the Netherlands, Hungary and the United Kingdom import relatively more from China. However, the divisive role of Russia in EU member states trade is exceptional in this respect (crucial for some EU countries, negligible for others). Imports from China are relatively important for Hungary, the Netherlands and United Kingdom yet the differences with respect to other EU countries are much smaller than in the case of Russia (Figure 1.7).

Obviously, the above differences in relative trade exposure of individual EU member states towards individual BRIC countries have important implications for the formulation of common EU policies: EU member states with lower trade exposure have a lower stake in policy formulation regarding particular BRIC and/or may be guided less by commercial interests than by other issues (security and environmental concerns, human rights, etc).⁶

1.5 Sectoral composition of EU-BRICs goods trade

The bulk of overall EU exports – about 91% of the total – represent manufacturing industry products. In exports to BRICs, the EU's focus on manufacturing is even more pronounced: about 95% of EU exports to BRICs are manufacturing products. The only exception are exports to India where the share of manufacturing amounted to just 78% of total EU

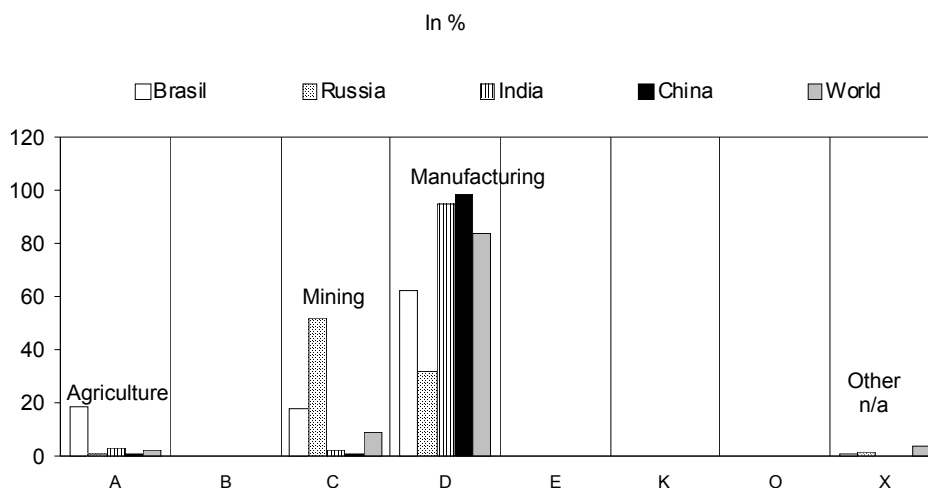
⁶ The Baltic States and several other NMS may serve as an example: despite their strong trade exposure to Russia they are less prone to compromise trade for other policy issues.

exports in 2007; exports of mining and quarrying accounted for 18.7% of the total (in 2000 even 33.6% of the total).⁷ Exports of other industries are small (e.g. agriculture, hunting and forestry: 2.6% of EU exports – mostly to Russia) or virtually non-existent.

EU imports from BRICs are somewhat more diversified, although manufacturing industry products prevail as well, especially in imports from India and China (Figure 1.8). Apart from manufacturing industry, imports of mining and quarrying products are important – in particular from Brazil (17.8% of EU imports in 2007, mostly non-energy mining products to Belgium, the Netherlands and Germany) and especially imports from Russia (52.1% of EU imports from Russia – mostly crude oil and natural gas). It is interesting to note that imports from China (and Japan) consist almost exclusively of manufacturing products; agriculture plays a more prominent role only in EU imports from Brazil (18.9% of the total – see Figure 1.8).

Figure 1.8

Structure of EU imports from BRICs by NACE sectors, 2007



Note: including intra-EU trade. A-X represent NACE sectors.

Source: Eurostat Comext, wiiw calculations.

There is not much difference in broader sectoral structures of NMS and EU15 trade with BRICs. However, the NMS' exports are in general even more specialized on manufacturing industry, this specialization pattern is even more pronounced in their trade with the BRICs. As far as imports are concerned, the striking feature are relatively low NMS' manufacturing imports from Russia (less than 20% of total NMS imports from Russia in 2007) and the correspondingly high share of mining and quarrying products – especially of crude oil and natural gas. This pattern did not change much in the last couple of recent years: the share of manufacturing in NMS' imports from Russia even declined between

⁷ These are predominantly non-energy mining products exports from Belgium (presumably diamonds).

2000 and 2007.⁸ Together with declining import shares from Brazil, this is a unique development regarding not only the structure of NMS overall imports, but also contrasting with the structure of imports from China and India.

1.6 Specialization patterns in EU-BRICs manufacturing industry trade

Owing to its overwhelming role, the rest of this section will focus on EU-BRICs manufacturing industry trade. We start with the analysis of commodity composition of manufacturing exports and imports at 2-digit NACE level, and then move on to more detailed specialization patterns (at NACE 3-digit industry-group level) while trying to identify EU competitive strengths and weaknesses with respect to the BRICs.

EU manufacturing trade has been fairly diversified, yet the following 3 industries (at 2-digit NACE level) play the leading role in both EU exports and imports: chemicals (NACE 24), machinery and equipment (NACE 29) and motor vehicles (NACE 34). Besides, trade with food products and beverages (NACE 15), basic metals (NACE 27) and electrical machinery (NACE 31) is also fairly important in the overall EU trade.⁹

Figures 1.9a and 1.9b show the relative specialization patterns in EU's manufacturing trade with the BRICs and the rest of the world (extra-EU). In exports to BRICs, the EU is underrepresented (in terms of differences in individual industries' shares in exports to BRICs relative to the structure of overall EU exports – Figure 1.9a) mainly in food products and beverages (NACE 15 – except Russia), in coke and refined petroleum (NACE 23), and in chemicals (NACE 24, except Brazil). Besides, with a difference in export share of about -10 pp, there was very little EU exports of motor vehicles (NACE 34) to India. On the other hand, the EU has a huge positive specialization (above average export shares) with regard to BRICs in exports of machinery and equipment (NACE 29 – especially to India and China), and in other transport equipment (NACE 35, except exports to Russia). China represents also an important market for EU exporters of electrical machinery and apparatus (NACE 31 – see Figure 1.9a).

The structure of EU imports from BRICs is much more focused on just a few industries (Figure 1.9b; note the different scale of the two figures). Food and beverages (NACE 15) dominate EU imports from Brazil, coke and refined petroleum (fuels: NACE 23) as well as

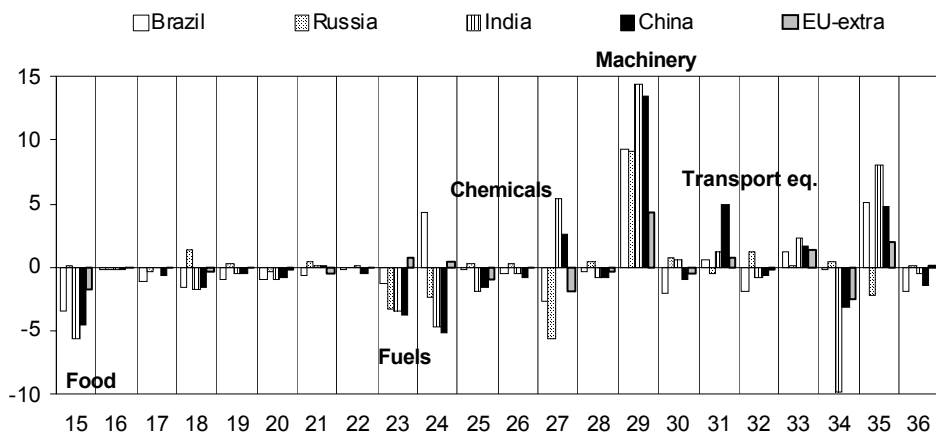
⁸ However, at the end of the 1980s – before the start of transition – the NMS (then members of the Soviet-dominated Council of Mutual Economic Assistance) imported much more manufactured products from the USSR (Russia) – see Havlik, 1990). Russia complains that its declining share of manufacturing in NMS imports is one of the adverse consequences of their EU (pre-) accession trade policies and EU enlargement – see Glinkina and Kulikova (2008).

⁹ The structure of extra-EU trade is rather similar except that extra-EU exports concentrate even more heavily on chemicals (NACE 24), machinery and equipment (NACE 29), and other transport equipment (NACE 35) whereas extra-EU imports focus less on machinery (NACE 29), motor vehicles (NACE 34) and more on wearing apparel (NACE 18), coke and refined petroleum (NACE 23), office machinery (NACE 30) and instruments (NACE 33) – see Annex.

basic metals (NACE 27) EU imports from Russia (note that this is in addition to unprocessed energy products such as oil and gas). The office machinery (NACE 30) and radio, TV, communication equipment (NACE 32) dominate imports from China. EU imports from India display a relative specialization on textiles (NACE 17), wearing apparel (NACE 18) and other manufacture, including furniture, games and toys, sports goods and jewellery (NACE 36). In relative terms, EU imports much less motor vehicles from the BRICs. Already at this level of detail one can see an impressive technological upgrading of China's exports (i.e. EU imports from China) compared to other BRICs and also compared to the rest of the world (including USA and Japan); we shall illustrate this feature with more detailed arguments below.

Figure 1.9a

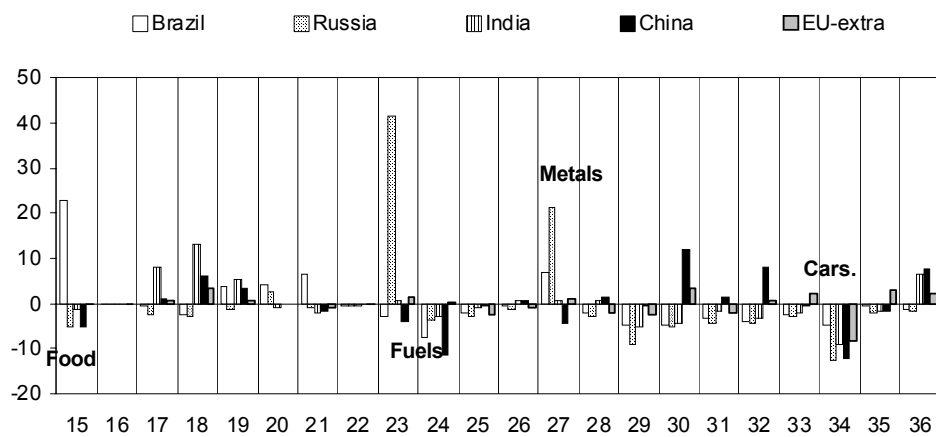
Structure of EU manufacturing exports to BRICs by NACE 2-digit industries, 2007
(differences to total exports in pp)



Source: Eurostat Comext, wiiw calculations.

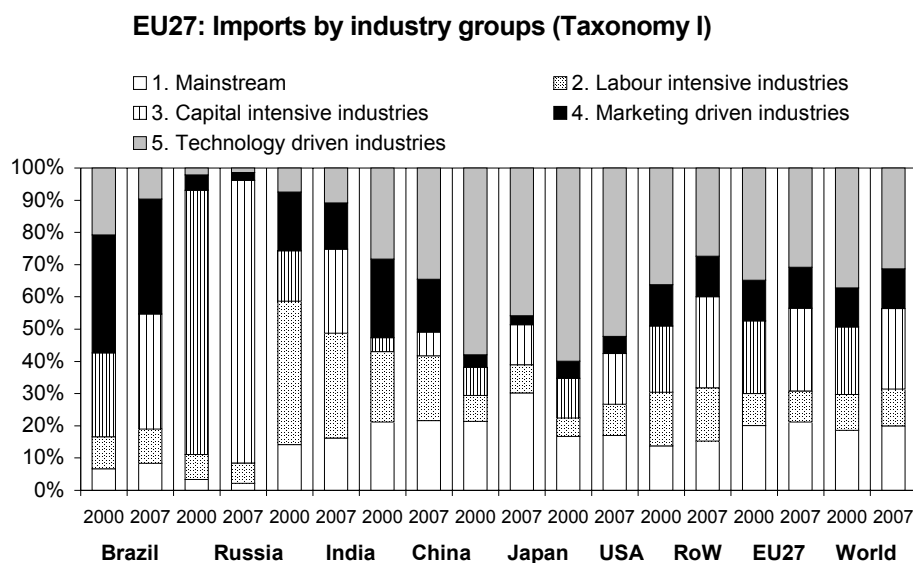
Figure 1.9b

Structure of EU manufacturing imports from BRICs by NACE 2-digit industries, 2007
(differences to total imports in pp; note different scale)



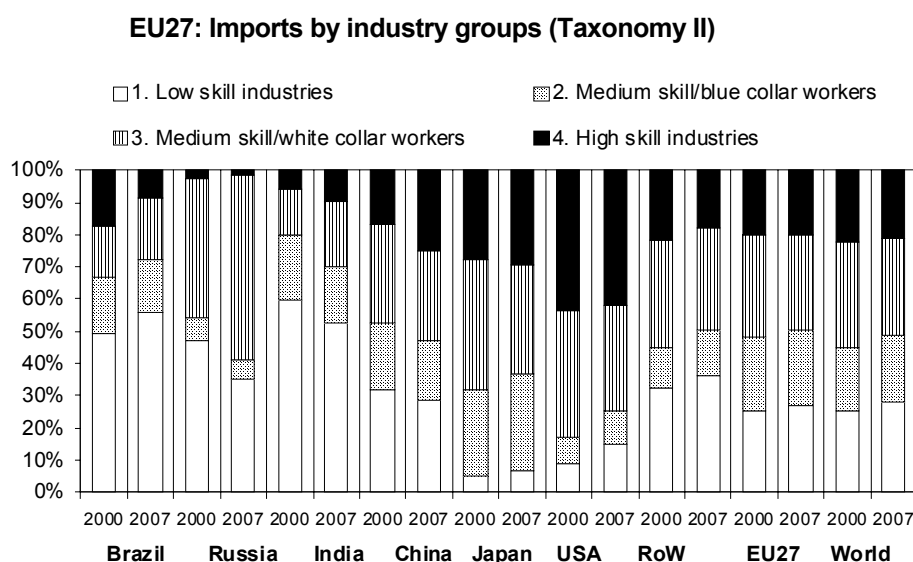
Source: Eurostat Comext, wiiw calculations.

Figure 1.10a



Source: Eurostat Comext, wiiw calculations.

Figure 1.10b



Source: Eurostat Comext, wiiw calculations.

The analysis of EU trade at the more detailed (NACE 3-digit) level employs the classification of industries according to factor inputs (Taxonomy I) and labour skills (Taxonomy II) inputs (see Peneder, 2003).¹⁰ Figure 1.10a shows the structure of EU imports from BRICs, Japan, USA, the rest of the world and the EU (intra-EU trade) by industry groupings classified according to factor inputs and the shares of individual

¹⁰ The list of 3-digit NACE industries and their allocation to industry groupings according to both taxonomies can be found in the Annex.

groupings in total imports (Taxonomy I).¹¹ In EU imports from Brazil (and even more so in imports from Russia) the capital-intensive industries prevail, just as labour-intensive industries prevail (though their share is diminishing) in imports from India. However, the share of this group of industries in EU imports from China is much lower whereas the technology-driven industries increasingly dominate: the share of this group of industries in EU imports from China was in 2007 already higher than in intra-EU imports. Needless to say, the shares of this group of industries are even higher in EU imports from Japan and USA, but – in contrast to China – they both have declined between 2000 and 2007.

Regarding the industry classification by labour skills (Taxonomy II), the low-skill industries dominate in EU imports from Brazil and India (Figure 1.10b), medium-skill industries in imports from Russia (refined petroleum is included here). EU imports from China are divided into low- and medium-skill industries (both with declining shares) while the group of high-skill industries recorded rapidly rising shares between 2000 and 2007 - again providing evidence for Chinese technological upgrading. The labour skills structure of EU imports from China is becoming similar to the structure of intra-EU trade.

1.7 Revealed comparative advantages of BRICs and the EU

The diversification and upgrading of exports from the BRIC countries have resulted in their comparative advantage gains.¹² Although all BRICs maintain revealed comparative advantages (RCAs) in Triad's trade in labour-intensive industries,¹³ the positive RCAs are not limited to these. Trade data of the BRICs indicate that they have comparative advantages (positive RCAs) also in marketing driven industries (except for Russia in trade with the EU and the United States and Brazil in trade with Japan; Russia's positive RCAs in marketing driven industries in trade with Japan can be largely attributed to fish product exports), which are predominantly food and beverages. In the case of China, the RCA

¹¹ We do not discuss here the structures of EU exports because there are no larger differences among the BRICs and other regions (technology-driven, capital-intensive and mainstream industries prevail in EU exports).

¹² The RCA analysis here is again based on the industry classification by Peneder (2003). Not captured is the possibility that within, for example, a technology-driven industry, the labour-intensive steps of productions are located in the BRICs with the intention to re-export. The UN Comtrade database is used for computing BRICs' RCAs.

RCAs are calculated according to the Balassa's formula
$$RCA_{ci} = 100 \cdot \ln \left(\frac{\frac{X_{ci}}{M_{ci}}}{\frac{\sum_i X_{ci}}{\sum_i M_{ci}}} \right);$$
 where X (M) are exports

(imports), c denotes a partner country and i the respective industry grouping (RCAs were calculated from individual 3-digit NACE industry trade data) – see Balassa (1965). Positive (negative) RCA values indicate a comparative (dis-) advantage. The use of a different version of the RCA index (e.g. Lafay's – see Baumann and di Mauro, 2007) would lead to similar conclusions regarding comparative advantages.

¹³ Russia is an exception among the BRICs in this respect since it has a comparative disadvantage also in labour-intensive industries in trade with the EU and the United States.

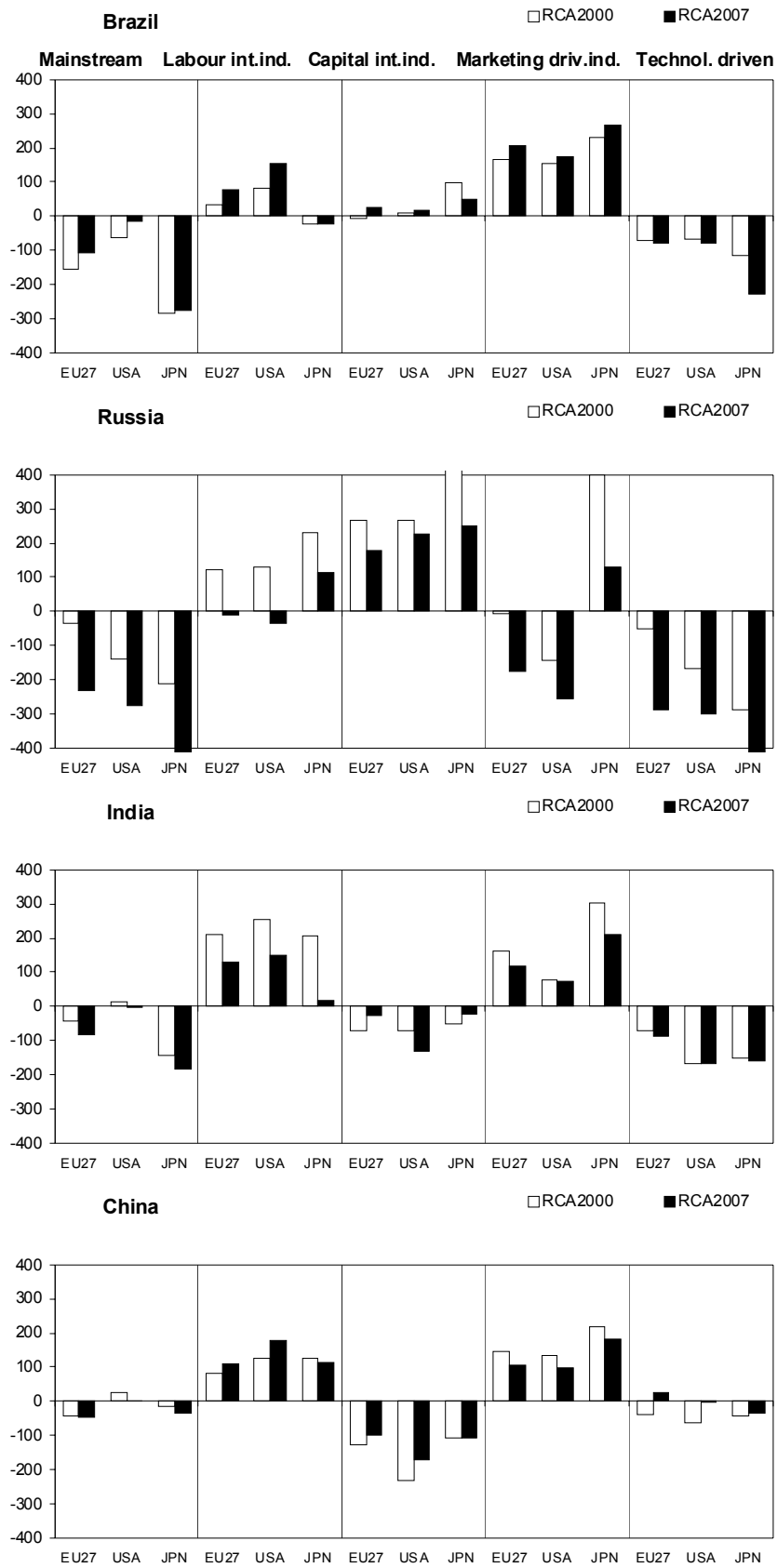
calculations for 2007 already points towards a (small) comparative advantage in technology driven industries. In contrast to trade developments with other BRIC countries, the RCAs of the Triad countries are frequently shrinking in trade relations with China between 2000 and 2007; in the case of the EU this part of RCAs has already been lost. This may explain the worries about the EU's capacity to keep its competitive edge in high tech products (cf. European Commission, 2008).

The above analysis has shown that BRICs trading and trade specialization patterns are far from identical: Brazil has positive RCAs in marketing-driven (food processing) and, though less so, labour-intensive (textiles) industries (Figure 1.11). Russia has positive RCAs only in capital-intensive industries, mostly due to strong exports of refined petroleum and diverse metal products. This indicates that Russia was much less successful in diversifying its exports than the other BRICs. There are highly negative RCAs in mainstream and especially in technology-driven industries in Russia. Note that positive RCAs in labour-intensive industries' trade with the EU and the USA disappeared by 2007 – perhaps a consequence of the rapidly rising unit labour costs in Russia). China's RCA patterns are less pronounced, but there is a comparative disadvantage in capital-intensive industries with all Triad countries, whereas China holds positive RCAs in labour-intensive industries (e.g. wearing apparel) and marketing-driven industries (e.g. games and toys, sports goods). Chinese negative RCAs in technology driven industries are much smaller than those observed in other BRICs; comparative disadvantages in trade with the USA disappeared in this group of industries; in trade with the EU it became even positive by 2007. This feature of Chinese trade, i.e. the relative strength in exporting technology-driven industries, may be surprising but is fully in line with the literature on Chinese trade which found that China's exports are indeed technologically more advanced than its level of income would suggests (Rodrik, 2006) and that its export bundle is more similar to those of developed countries than those of countries with similar levels of income (Schott, 2006). India's distribution of RCAs is very similar to those of Brazil (except the former slightly negative RCAs in capital-intensive industries, especially in trade with the USA).

From the EU point of view (and using the same definition of RCAs), but this time using again trade data from the Eurostat Comext database), the RCA patterns in EU trade with BRICs are also rather diverse (Figures 1.12a and 1.12b). There were positive RCAs in mainstream and technology driven industries in EU trade with Brazil and India (Figure 1.12a). There were also positive RCAs in all industry groupings – except capital-intensive industries – in EU trade with Russia (and still an overall trade deficit). Last but not least, negative RCAs in both labour-intensive and marketing-driven industries persisted in EU trade with China. Moreover, the (small) positive RCA in technology-driven industries turned negative between the years 2000 and 2007 – another sign of Chinese technological upgrading. As shown in Figure 1.12b, the latter can be traced virtually in all groups of industries classified by labour skills. In contrast to other BRICs, the EU's RCAs in trade

Figure 1.11

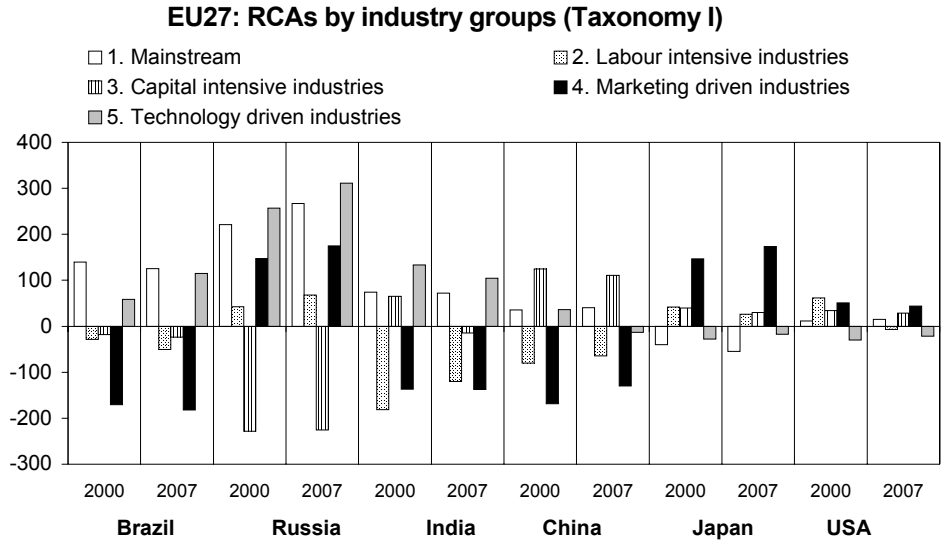
Revealed Comparative Advantages of the BRICs in trade with the Triad



Source: UN Comtrade, wiiw calculations.

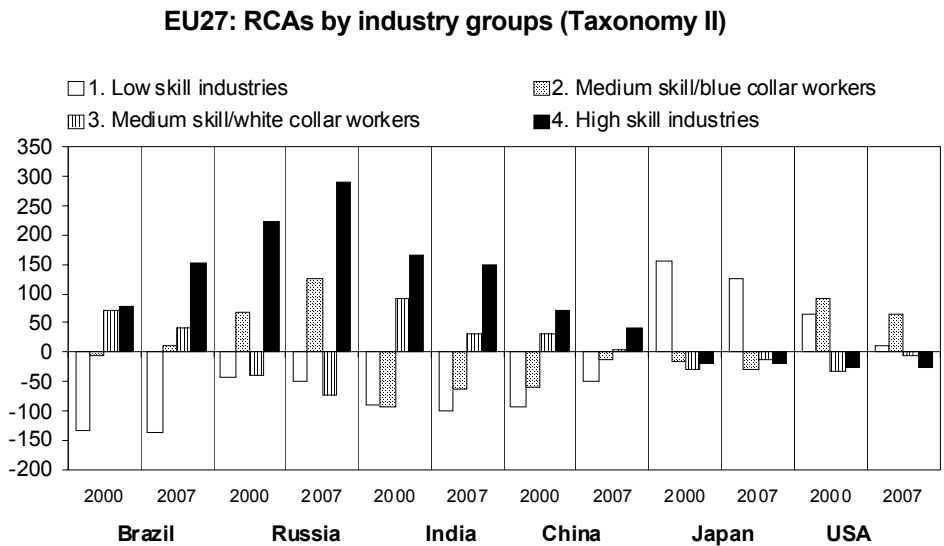
with China (and less so with India) are diminishing – this is true even for EU’s positive RCAs in medium- and high-skill industries. Nevertheless, the EU still enjoyed positive RCAs in trade with BRICs in these two groups of industries – in contrast to the EU trade with both Japan and the USA where RCAs were negative.

Figure 1.12a



Source: Eurostat Comext, wiiv calculations.

Figure 1.12b



Source: Eurostat Comext, wiiv calculations.

Last but not least, we analyse also patterns of competition at EU markets by looking at changes in import prices (so-called unit value ratios – UVR – see Box 1.1 the definition) and market shares during the period 2000-2007 by the same industry groupings used above. We compare the performance of individual BRICs with Japan, USA, NMS and the EU15 on the overall EU market (consisting of both extra and intra-EU trade). It is often claimed that BRICs (especially China) compete at EU markets mainly with low prices and correspondingly low

quality products (that means with below average prices and thus negative UVRs) and in this way increase their market shares. On the other hand, if both prices (positive UVRs) and market shares increase, one can speak of successful quality competition (see Landesmann and Wörz, 2006). In this purpose, we have calculated the average changes in UVRs and market shares for each country for the periods 2000-2002 and 2005-2007 in order to smooth out possible outliers. The results for selected industry groupings by Taxonomy I are shown in Figure 1.13a (labour-intensive and technology-driven industries) and in Figure 1.13b (Taxonomy II: low-skill and high-skill industries – see Annex).

In labour-intensive industries, there was a uniform trend of declining import prices at the EU market – except for imports from ‘old’ EU member states (EU15) where UVRs increased above average. At the same time, only China (and so India) gained market shares whereas the USA and Japan (and even more so EU15) suffered considerable market share losses. India, and even more China, gained both market shares in the EU in labour-intensive industries with a successful price competition. Brazil and Russia just kept their market shares despite falling prices of their labour-intensive exports. In technology driven industries, EU imports from the BRICs (except Russia) became also much cheaper during the period with falling UVRs, but only China enjoyed a sizeable market share gain (also the NMS recorded market share gain with unchanged UVRs). In contrast, Brazil and India’s market shares did not change, and both the USA and Japan lost market shares, despite falling export prices, in the EU. Russia (and even more so the EU15) managed to gain market shares in the EU with rising export prices.

China, but also India and even Russia (as well as the NMS) have been successful in the price competition also in high-skill industries and gained market shares in the EU whereas both Japan and USA lost market shares – the former despite declining export prices of its high-skill products (Figure 1.13b).¹⁴

China has been quite successful in the price competition on the EU market as it recorded the most impressive market share gains in virtually all industry groupings with falling UVRs. Moreover, China has been also quite successful in the technological upgrading of exports and emerges as the most serious competitive challenge for the EU.

¹⁴ Needless to say, EU import prices from Japan and the USA (as well as import prices from the EU15) are much higher than average import prices in virtually all groups of industries.

Box 1.1

Unit value ratios to calculate quality positioning

The calculation of relative unit values of traded products is based on the COMEXT trade database at the most detailed 8-digit level. Denoting the value of exports to the EU of commodity i by country c in year t by v_{it}^c and the quantity (measured in tons) by x_{it}^c , the export unit value is defined as

$$u_{it}^c = v_{it}^c / x_{it}^c \quad (1)$$

The unit values of country c 's exports to the EU are then compared to the unit values of total EU imports (from the world, including intra-EU trade) by calculating the logs of the unit value ratios

$$r_{it}^c = \ln (u_{it}^c / u_{it}^{EU}) \quad (2)$$

where u_{it}^{EU} denotes the unit value of total EU imports for a particular commodity i in year t . Taking the logarithm of (u_{it}^c / u_{it}^{EU}) ensures a symmetric aggregation across products for ratios larger and smaller than 1 (see below). In logs, the ratio is thus larger (smaller) than zero if the export unit value of country c is larger (smaller) than the unit value of total EU imports.

Information is not presented here at the very detailed (8-digit) product level but the unit value ratios are aggregated to the level of (3-digit NACE) industries and further to industry groupings. This is done by constructing a weighted sum of the unit value ratios r_{it}^c across the products belonging to a particular industry j (or an industry group). The weight used for a particular commodity i in such an aggregation is the share of its export value in the industry's exports of country c . Denoting the set of commodities i belonging to an aggregate j (industry or industry grouping) by $i \in I(j)$ the weights are calculated as

$$w_{it}^c = v_{it}^c / \sum_{i \in I(j)} v_{it}^c \quad (3)$$

The unit value ratio for a particular aggregate j is then

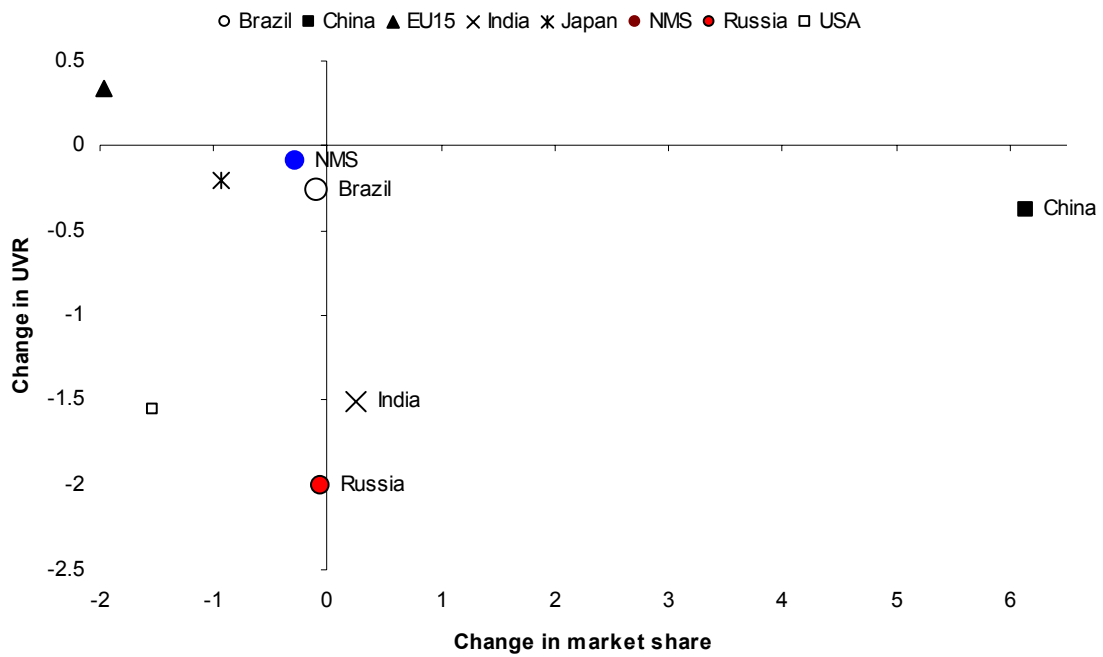
$$r_{jt}^c = \sum_{i \in I(j)} r_{it}^c w_{it}^c \quad (4)$$

This measure can be interpreted analogously to the unit value ratios for a particular commodity as mentioned above.

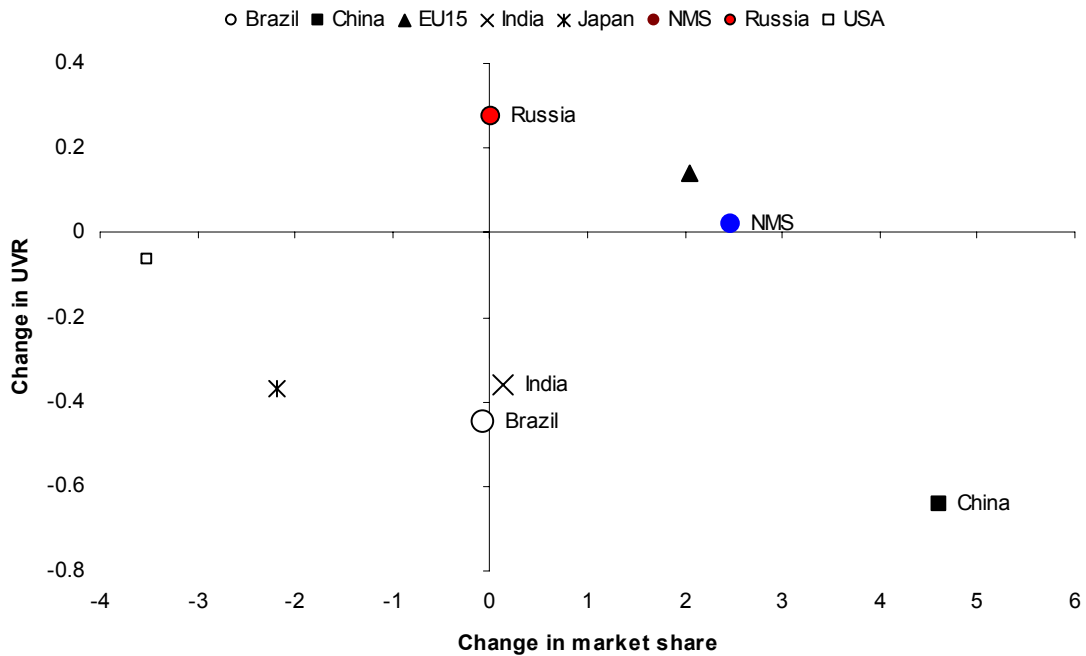
Source: Landesmann and Wörz (2006).

Figure 1.13a

**Competition on the EU market in labour-intensive industries,
changes in import prices and market shares, 2000-2002 compared to 2005-2007**



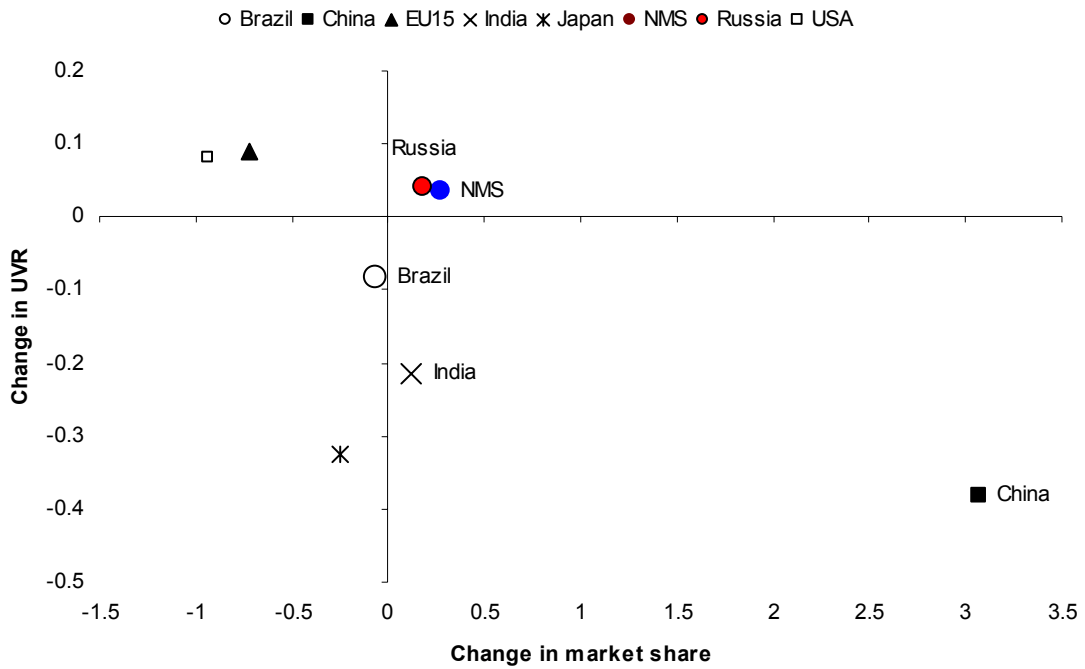
**Competition on the EU market in technology-driven industries,
changes in import prices and market shares, 2000-2002 compared to 2005-2007**



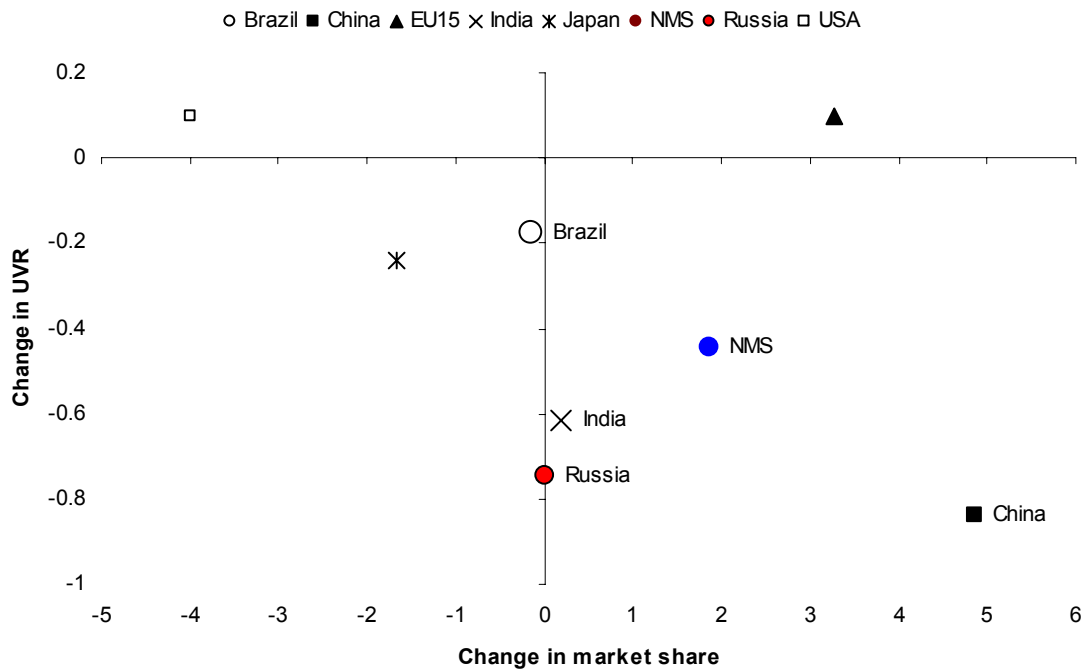
Source: Eurostat Comext, wiiw calculations.

Figure 1.13b

**Competition on the EU market in low-skill industries,
changes in import prices and market shares, 2000-2002 compared to 2005-2007**



**Competition on the EU market in high-skill industries,
changes in import prices and market shares, 2000-2002 compared to 2005-2007**



Source: Eurostat Comext, wiiw calculations.

1.8 Vertical integration of trade with China

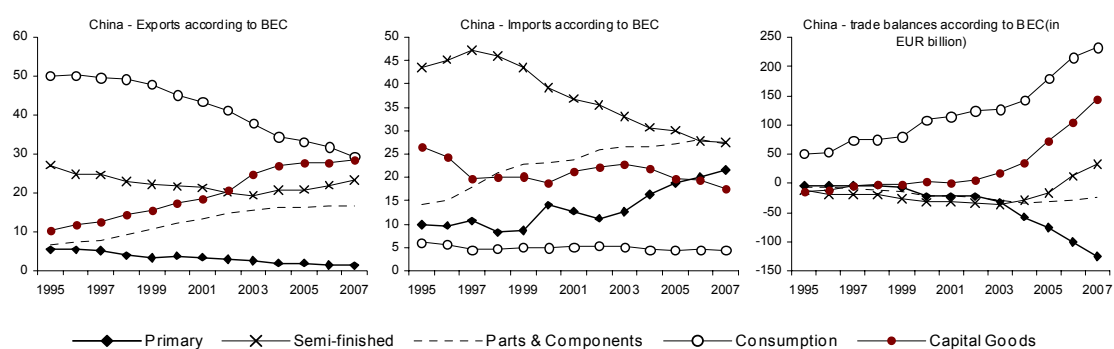
China has gained the reputation of being the workshop of the world (Sauvant, 2005) meaning that China is an attractive location for multinational firms (MNCs) to perform labour-intensive steps of the production process because of the abundant supply of relatively cheap labour. As a consequence, China has become a major platform for re-exports of international firms. The unbundling of the value chain implied by the described off-shoring strategy of MNCs results in the creation of intra-industry trade, that is, countries exchange goods of the same industry but in different stages of production. Countries engaging in this type of trade are then said to be vertically integrated.

A possibility to track the intensity of the vertical trade integration of China is to decompose Chinese trade by broad economic categories (BEC), which include primary goods, semi-finished goods, parts and components, consumption goods and capital goods. The centre of interest in the context of vertical trade integration is the share and development of parts and components (P&C) in total trade (Gaulier et al., 2007). In the case of China, the trade in (P&C) is clearly on the rise, both in exports and imports (Figure 1.14). It has a more prominent role, however, in imports, where together with semi-finished goods it is the main economic category, accounting for 27% of total imports. The higher share of P&C in imports is explained by the fact that final assembly in many industries is a labour-intensive process and therefore often located in a low-wage country. For China's trade structure this implies strong imports of P&C and relatively more exports of final goods, especially consumption goods but increasingly also capital goods. Consumption goods in turn, are China's most important economic category on the export side, although losing ground to capital goods and P&C. China's trade structure, including the trade balance, confirms China's role as a manufacturing base for re-exports.

Figure 1.14

China's trade structure according to broad economic categories, 1995-2007

(in % of total trade in goods, balances in EUR billion)

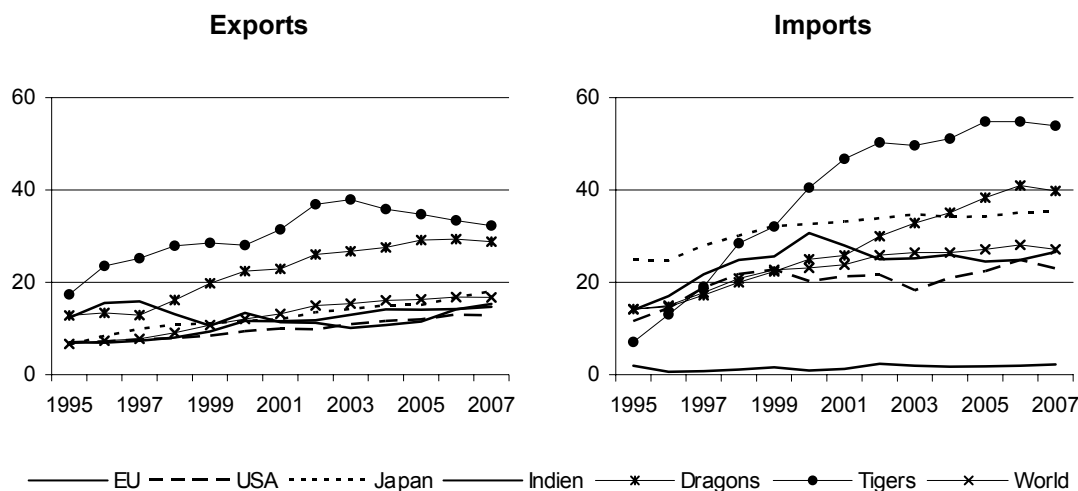


Source: UN Comtrade, wiiw calculations.

Figure 1.15

China's major trading partners in parts and components, 1995-2007

(in % of total trade in goods)



Source: UN Comtrade, wiiw calculations.

A concept closely related to vertical trade integration is that of processing trade. Processing trade consists of the import of intermediate inputs which are further processed or finished and the re-export. Processing exports may include intermediate goods (semi-finished goods, P&S) as well as final goods. In the case of China, processing exports accounted for more than half of Chinese total exports in 2007 (China Statistical Yearbook, 2008).

Going back to the analysis of trade by economic categories and using trade with P&C as an indicator for the degree of vertical trade integration, one finds that this form of international division of labour is most advanced in regional trade, i.e. trade between South-East Asian trading partners (Figure 1.15). For exports as well as imports, China's trade in P&C is most intensive with the Asian Dragons (Hong Kong, Singapore, South Korea and Taiwan), followed by the Asian Tigers (Malaysia, Philippines, Thailand) and Japan. In comparison to China's Asian trading partners, the EU and the USA seem to make less use of China as a location for assembling and other labour-intensive tasks. This is in line with the findings of Hunya and Stöllinger (2009) who observe that EU foreign direct investment in China (as well as in other BRICs) is mainly market seeking and only to a lesser extent efficiency seeking.

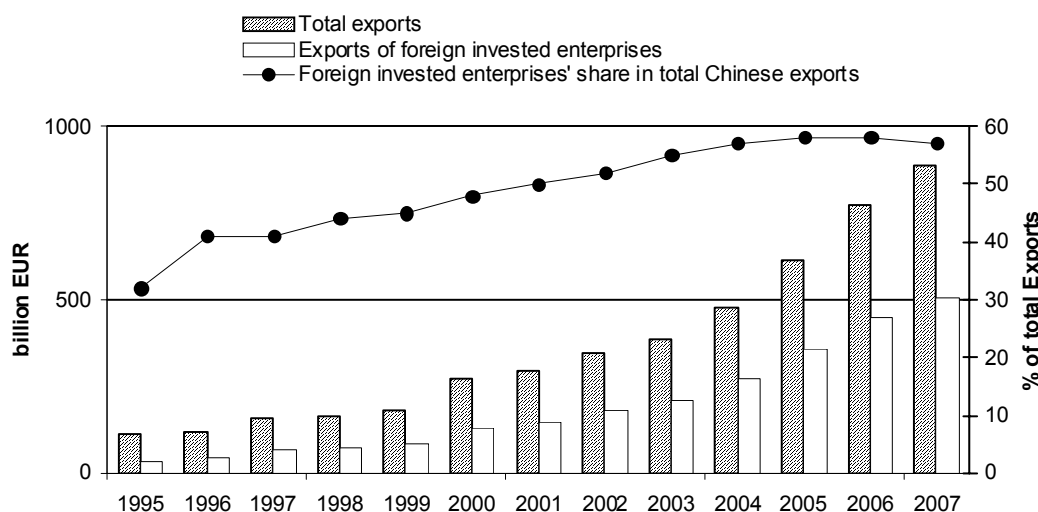
The finding of strong vertical trade integration in South East Asia is also in line with the results of other studies on this issue which also find evidence for the existence of an Asian network of intermediate goods suppliers to China (see for example Dean et al., 2008 and Gaulier et al., 2007). With respect to the extent of vertical trade integration between China and the EU, there is evidence that increased trade is not mainly driven P&C. Whereas

many middle income economies including many European countries increased their market share in the EU and did so by expanding exports in semi-finished goods, P&C and final goods, the increased share of China in total EU imports is mainly driven by final goods and to a much lesser extent by P&C (Landesmann – Stehrer, 2009). This leads to the conclusion that vertical integration and off-shoring of individual tasks of the production chain has a geographical component, so that in the case of the EU, China is not the primary candidate as an off-shoring destination.

Figure 1.16

Total Chinese goods exports and Chinese goods exports of foreign invested firms

(share in percentage – right scale)



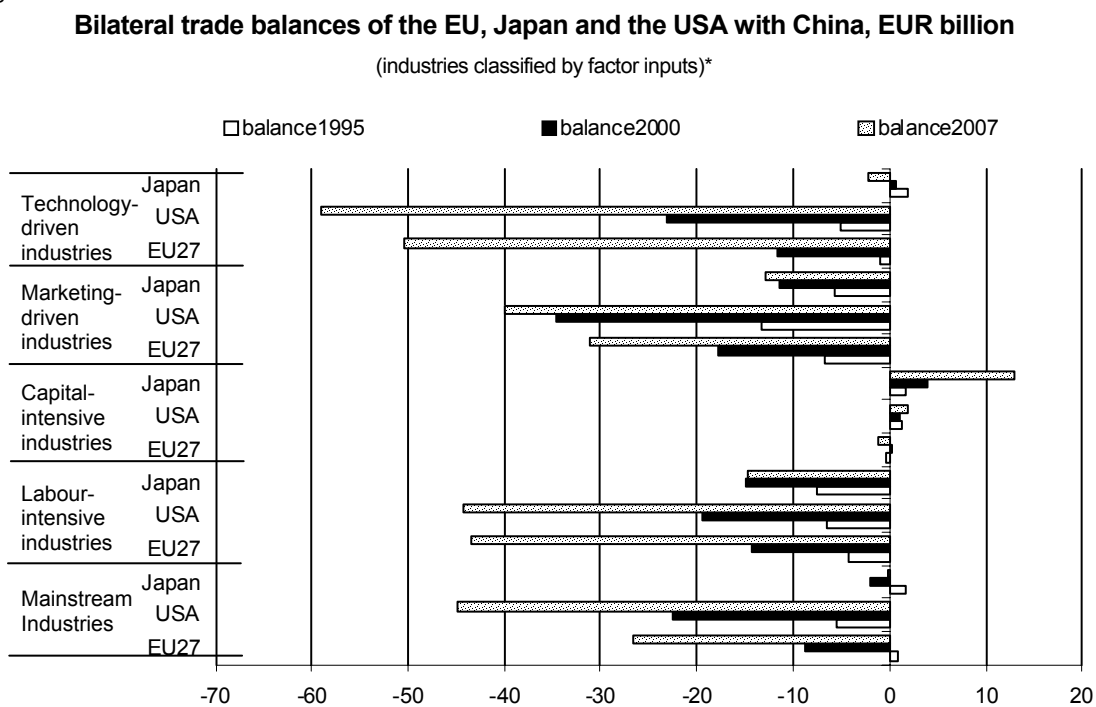
Source: China Statistical Yearbook (2008).

The intra-industry trade created by the unbundling of the production process is interrelated with the revealed comparative advantages of China. Since the more developed Asian economies, including Japan and to a lesser extent also the EU and the United States use China as an export-platform, a high share of Chinese goods exports are on the account of foreign invested firms (Figure 1.16) or constitute processing trade. There is a close link between Chinese exports by foreign invested firms and the notion of processing trade because processing trade is carried out largely by foreign invested enterprises (Dean et al., 2009).

Chinese data document that since 2002 more than half of Chinese exports can be attributed to the activity of foreign invested firms, with a peak in 2005 where their share increased to almost 60%. In 2007, the share of foreign invested firms in Chinese exports was still 57%. This high value as such already serves as an indication that the activities of foreign invested firms in China are strongly influencing Chinese trade patterns.

The impact of the activities of MNCs on the Chinese foreign trade has to be borne in mind when interpreting export patterns. In the context of competitiveness it certainly makes a difference whether EU firms lose – or actually relocate – export shares to their Chinese affiliates or whether these market shares are truly lost to ‘genuine’ Chinese manufacturers.

Figure 1.17



* Industry classification according to Peneder (2003).

Source: UN Comtrade, wiiw calculations.

Indeed, much evidence points in the direction that China’s bilateral trade balances and RCAs to a large extent reflect the comparative advantages and competitiveness of foreign firms exporting out of China. Reflecting shifts in RCAs that have occurred over the past twelve years, the EU’s and the United States’ bilateral trade deficits with China of the EU and the United States are no longer the result of negative balances in labour-intensive industries but are increasingly due to a negative balance in technology-driven industries (Figure 1.17). In 2007, the EU and the United States both had the largest deficit in trade with China in the exchange of goods attributed to technology driven industries. This feature of EU-China trade relations (which is not found for bilateral trade with Russia, India and Brazil) is, apart from the sheer size of the deficit, another source of concern for the EU.

In order to get an idea of what might drive the development of the trade balances in technology driven industries and underlying RCAs, a comparison between Chinese (global) RCAs in technology driven industries and the importance of foreign invested firms in these Chinese industries is endeavoured. Due to the fact that a geographical split-up of foreign invested firms operating in China is not available, this type of comparison can only

be made for China's aggregate trade. Chinese industry data allows calculating the share of foreign invested firms in total industry output in several industry or industry clusters. For the NACE industries most relevant for technology-driven industries (NACE 30 and NACE 32-35), the share of foreign invested firms in total industry output can be calculated for a computer and electronics cluster (including NACE divisions 30, 32 and 33) and for manufactures of transport equipment (including NACE divisions 34 and 35). The RCAs of the technology-driven industries within these NACE divisions¹⁵ show that, although far from giving a perfect match, the RCAs that China occupies in technology-driven industries are found in the computer and electronics cluster where foreign firms account for the bulk, 82%, of total industry output¹⁶ (Figure 1.18). In contrast, China still maintains a revealed comparative disadvantage in manufacture of vehicles (341) and manufacture of aircraft and spacecraft (353), the two technology-driven industries within the transport industry where the share of output of foreign invested firms, although still considerable, is much lower (45%) than in the computer and electronics cluster. Assuming that foreign invested firms rather export a higher than a lower share of their output, we read this as an evidence that the improving RCA of China in technology-driven industries are to a large extent driven by the exporting activities of foreign invested firms. This in turn means that the technological upgrading of 'genuine' Chinese exports might have been less pronounced than suggested by RCAs of trade statistics.

This result also fits well with the finding from other studies that processing trade is not only carried out predominantly by foreign-invested companies but also concentrated within technologically relatively advanced products (Dean et al., 2009). Estimates suggest that 25%-46% of every dollar's worth of Chinese merchandise exports are made up by previously imported intermediate inputs. The share of the foreign content varies considerably from industry to industry with the highest shares found in electronic computers, telecommunication equipment, computer peripheral equipment, electronic elements and devices, radio /TV/other communication equipment. As can easily be seen, these industries coincide with those for which Figure 1.18 indicates a RCA for China.

Previous work on the analyses of 'genuine' Chinese exports, that is excluding exports by foreign invested firms, suggest that their skill content has not changed substantially so that China in some sense is continuing to specialize mainly in labour-intensive goods (Amiti and Freund, 2008). Certainly, when analysing bilateral trade figure between countries, total exports must be considered, because from a balance of payments perspective the ownership status of exporting firm does not matter. It is, however, interesting to see that a considerable part of Chinese economic activity in manufacturing is on the account of

¹⁵ The classification used here is based on 3-digit NACE industries, whereas the share of foreign firms in total Chinese industrial output is available on the level of 2-digit NACE industries or clusters thereof.

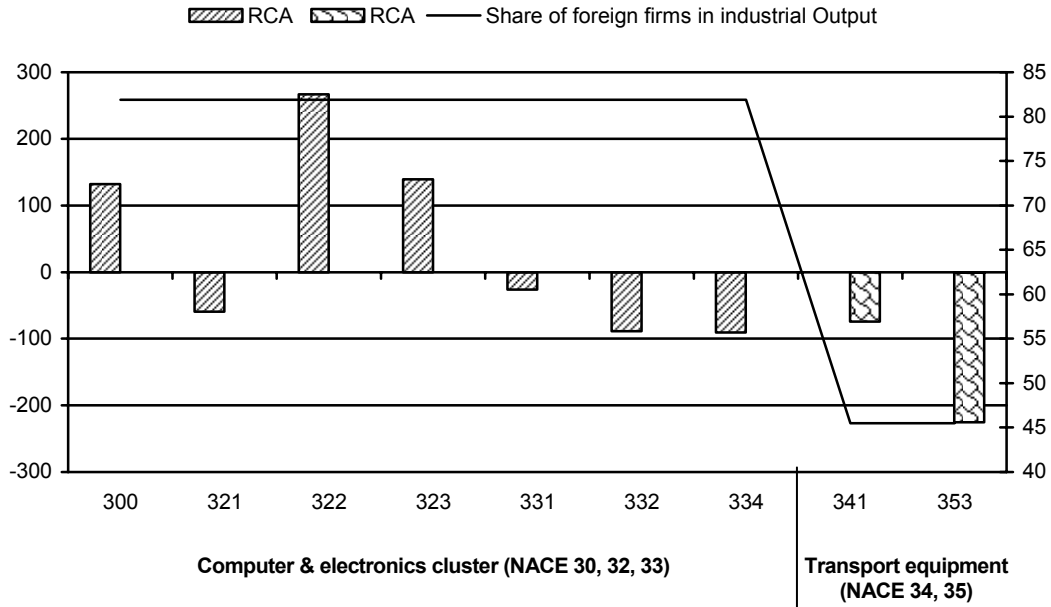
¹⁶ The technology-driven industries in the computer and electronics cluster where China has a comparative advantage in trade with the world are office machinery and computers (300), manufacture of TV and radio transmitters (322) and manufacture of TV and radio receivers (323).

foreign owned firms and that these may influence the developments of revealed comparative advantages.

Figure 1.18

RCAs of China in technology-driven goods and share of foreign firms in total Chinese industrial output for the respective industry (right scale), 2007

(in % of total)



Source: UN Comtrade, China Statistical Yearbook (2008).

1.9 Impact of the global crisis on goods trade

Initial hopes that the BRICs will be able to ‘de-couple’ from the global crisis have not materialized. The main mechanisms of transmission are rapidly declining exports and the respective multiplier effects, decreasing FDI and plummeting stock markets. The immediate impact of the global crisis was a deep contraction in BRICs’ foreign trade, visible in the data for the first quarter of 2009 (for the year 2008 as a whole, the EU’s trade with the BRICs still grew much faster than average – see Table 1.1 above). During the first three months of 2009, BRICs’ exports and imports shrank at double-digit rates (particularly in Russia, but in China as well), though there are some recent signs of bottoming out since April (the same applies to stock markets). Another effect of the global crisis has been growing protectionist tendencies for supporting domestic industry worldwide and in the BRICs in particular, such as the imposition of higher import tariffs on used cars (and a delayed accession to WTO) by Russia and the ‘buy Chinese’ initiative in China.

2 Trade in services

2.1 Introduction

In this section we analyse the developments of services trade of the BRICs. In our analysis we use the database of international trade and FDI in services (Trade in Services Database – TSD), compiled from a number of sources (Eurostat, OECD, IMF), as well as data from National Banks and statistical offices.

Trade in services is much less important than trade in goods, measured by both absolute volumes and shares in GDP (less than 10% of GDP in the case of services trade compared to 32% in goods trade on the EU average). Services are characterized by lower tradability than goods, thus shares of services trade in GDP are usually much lower than those of goods trade, even though today services account for the bulk of GDP. *Ceteris paribus*, big countries tend to have lower shares of services trade than small ones since most of the trade occurs inside the countries (the much higher shares of services trade in the EU15 and NMS12 as compared to the US and Japan are explained by the high degree of intra-EU trade – about 60% of total services trade). Hong Kong is an outlier among the BRICs in terms of services trade openness, which reflects the peculiar nature of the country's economy.¹⁷ India ranks second in terms of services openness, and the fact that the services export ratio to GDP of the country more than twice exceeds the indicators of the USA and Japan clearly indicates the global specialization of India's economy in services. Brazil, on the other hand, has quite a low share of services exports in GDP – only 1.7%; the country is more open to services imports whose share in GDP is 2.6%, but still lags behind all the other BRICs (see Table 2.1).

Table 2.1

Services exports and imports in 2007, % of GDP

	Brazil	China	Hong Kong	India	Russia	EU27	EU15	NMS12	Japan	USA
Services exports	1.7	3.6	40.9	8.2	3.0	9.5	9.5	9.8	2.9	3.6
Services imports	2.6	3.8	20.6	4.7	4.6	8.3	8.3	8.0	3.4	2.7

Source data: TSD, NSOs and central banks.

The share of the BRICs in global services trade is much lower than that of the developed countries in the benchmark: e.g., total BRICs services exports are about 4.5 times smaller than those of the EU27 (see Table 2.2). However, it is worth noting that most of the EU27 services trade is concentrated mostly inside the EU, and if we compare BRICs services trade with extra-EU trade, then the difference is significantly smaller.

¹⁷ Hong Kong has a high degree of re-exports of goods (about 90% of merchandise imports), and as a consequence a high level of related services trade.

China and India are the biggest services traders among the BRICs – together they account for nearly 60% of total BRICs services exports and imports.

Table 2.2

Services exports and imports in 2007, EUR billion

	Services exports	Services imports
Brazil	17.4	27.0
China	88.9	94.6
Hong Kong	61.8	31.1
India	65.5	38.2
Russia	28.7	43.0
Total BRICs	262.2	233.9
EU27	1177.7	1024.7
<i>NMS12</i>	85.2	69.1
<i>EU15</i>	1092.6	955.6
EU27-extra EU	513.3	427.0
<i>NMS12-extra EU</i>	23.5	19.7
<i>EU15-extra EU</i>	489.8	407.3
US	359.8	275.9
JPN	110.9	115.7

Source data: TSD.

2.2 Geographical structure of services trade

With regard to BRICs market shares, Japan is the only country where the share of BRICs in services imports is relatively high – about 10% in 2007, mostly due to imports from China and Hong Kong (see Table 2.3). In the EU27 and the US the shares of BRICs in services imports are only about 4%. However, if we compare BRICs services trade with extra-EU imports of the EU27, then the share of BRICs in EU27 imports increases to about 9% (since most of EU27 services trade is concentrated inside the EU).

The NMS12 import relatively more services from BRICs than the old member states: the share of the BRICs in total NMS12 services imports is 4.2%, i.e. 0.5 pp higher than in the EU15.

However, the situation of low market shares of the BRICs may change in the future, as all BRICs (apart from Hong Kong) have been increasing their services exports much faster than the EU27, the US and Japan. India is the absolute leader in terms of growth rates – its services exports increased more than 5 times in the period 2000-2007; China and Russia increased their services exports by 4 times during that period, and Brazil by 2.5 times.

The EU27 has been increasing its services exports noticeably faster than the US and Japan, however, this increase occurred due to intra-EU trade, while extra-EU trade during the period analysed grew half as fast in the case of the EU15 and declined in the case of the NMS12. The enlargement of the EU, which has led to lower barriers in services trade between the old and new member states, may provide a partial explanation of this trend.

Table 2.3

Geographical structure of services imports in 2007, %

Importers by columns	Brazil	China	Hong Kong*	India	Russia	Japan	US	EU27	EU15	NMS12
Brazil	-	...	0.4	...	0.0	0.2	0.8	0.4	0.4	0.1
China	...	-	23.7	...	0.3	5.1	0.0	1.0	1.1	1.0
Hong Kong	...	25.8	-	...	0.1	3.8	1.4	0.8	0.8	0.2
India	...	...	0.9	-	0.4	0.4	2.0	0.5	0.6	0.1
Russia	...	...	0.2	...	-	0.3	0.0	0.9	0.8	2.8
Total BRICs	...	25.8	25.2	...	0.8	9.7	4.2	3.7	3.7	4.2
Japan	1.6	6.4	7.6	2.2	0.5	-	5.3	1.3	1.4	1.0
US	26.8	7.9	13.2	18.2	5.2	27.2	-	12.5	12.9	6.5
EU27	23.7	18.8	12.6	19.5	43.5	16.7	38.7	63.3	72.2	63.9
EU15	23.3	18.6	12.5	19.2	34.7	16.0	37.4	59.0	59.2	57.1
NMS12	0.5	0.2	0.1	0.3	8.8	0.8	1.2	4.9	4.2	15.1
Other	48.3	41.2	41.6	60.4	58.7	47.1	53.1	23.5	22.9	31.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Data are for 2005.

Source data: TSD.

An analysis of the current geographic structure of services exports (see Table 2.4) shows that the EU27 is a more important market than the US or Japan for Brazil, China and Russia, while in Hong Kong and India the US has higher shares in the exports structures than the EU. Russia is the most dependent on the EU as a market for its services exports – the EU27 share in Russia's services exports exceeds 40%.

It is China and Hong Kong where the shares of the EU in services exports are likely to increase in the future if the trends of recent years – growth of exports to the EU outpacing significantly total services export growth – continue (see Figure 2.1). In India, Brazil and Russia other destinations but the EU account for increased services exports.

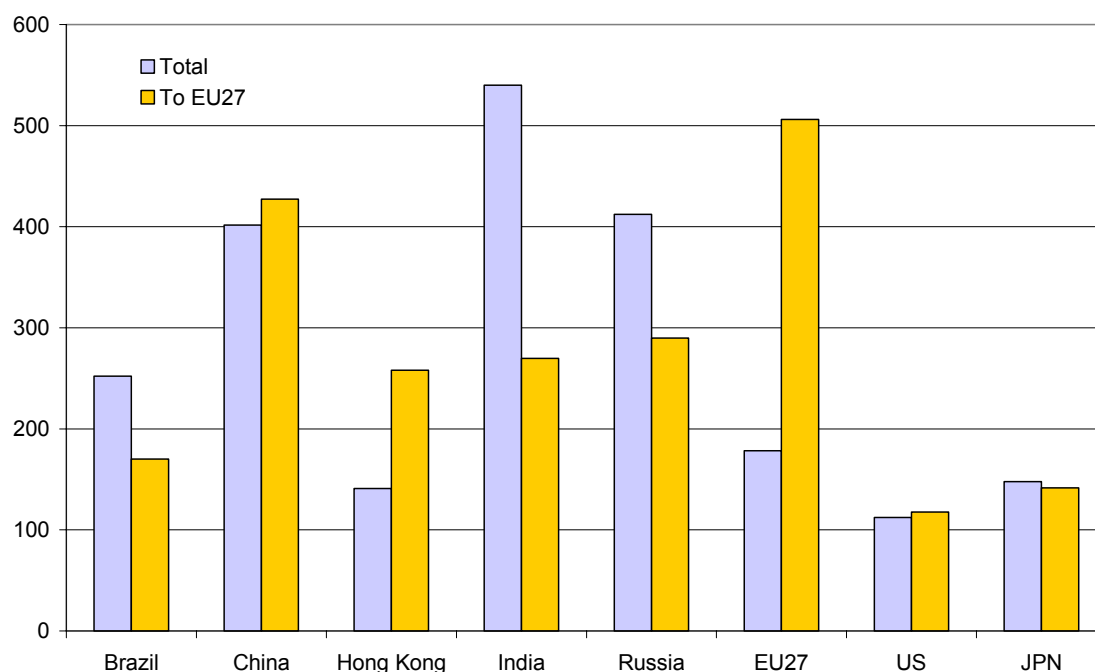
Looking at the markets for EU27 services exports among the BRICs countries, it is China and Russia which have the highest shares in EU services exports among the BRICs.

The shares of the EU27 in services imports of China, Russia and India have been increasing (see Figure 2.2): during 2000-2007, growth of services imports from the EU27

was higher than growth of total services imports by 1.5 times in China and by 1.4 times in Russia. Thus the EU is likely to continue increasing its market share in China and Russia in the future.

Figure 2.1

Services exports (total and to the EU27) in 2007, index, 2000 = 100



Source data: TSD.

Table 2.4

Geographical structure of services exports in 2007, %

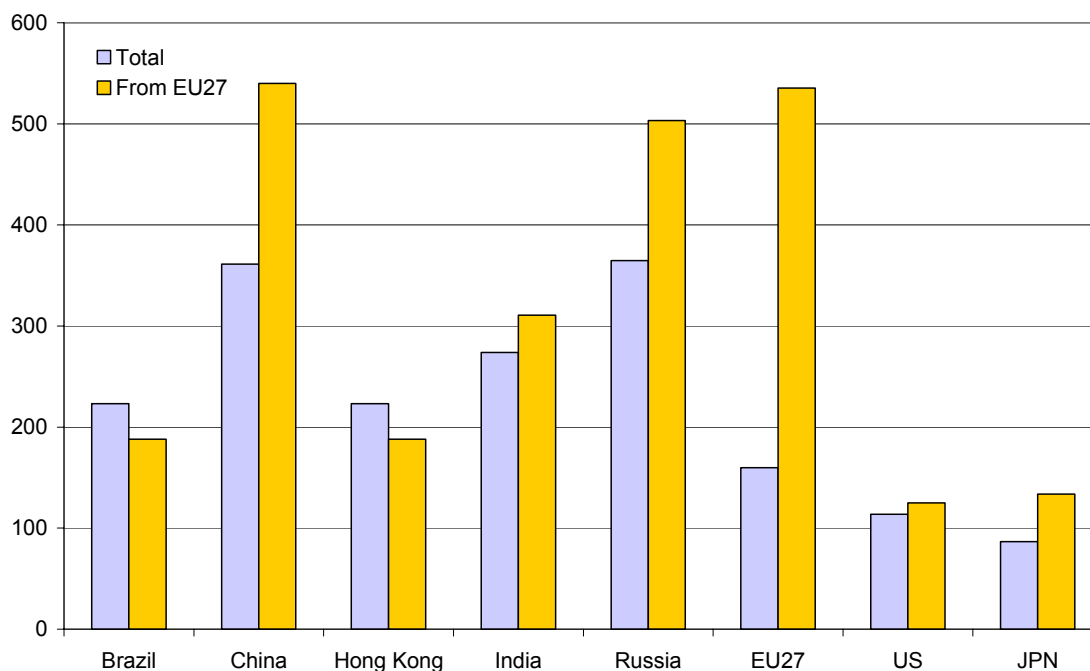
Exporters by columns	Brazil	China	Hong Kong*	India	Russia	Japan	US	EU27	EU15	NMS12
Brazil	-	...	0.2	...	0.0	0.4	2.0	0.5	0.6	0.1
China	...	-	20.2	...	1.4	5.4	0.0	1.6	1.6	0.8
Hong Kong	...	26.9	-	...	0.3	0.2	1.2	0.7	0.7	0.1
India	...	...	0.7	-	0.6	0.8	1.9	0.6	0.7	0.1
Russia	...	...	0.1	...	-	0.3	0.0	1.2	1.1	2.3
Total BRICs	...	26.9	21.2	...	2.3	7.1	5.1	4.6	4.7	3.3
Japan	1.1	6.7	5.5	0.6	1.5	-	8.3	1.6	1.7	0.8
US	17.0	5.7	15.8	10.8	8.1	23.0	-	11.8	12.3	5.3
EU27	24.0	12.9	12.6	8.3	40.3	12.5	35.5	56.6	55.4	72.4
EU15	23.7	12.2	12.5	8.1	30.3	11.8	34.2	52.4	51.7	60.2
NMS12	0.4	0.7	0.1	0.1	10.0	0.6	1.2	4.2	3.6	12.2
Other	58.2	48.5	45.0	80.5	57.8	58.1	52.3	29.6	29.5	30.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Data are for 2005.

Source data: TSD.

Figure 2.2

Services imports (total and from the EU27) in 2007, index, 2000 = 100



Source data: TSD.

2.3 Sectoral structure of services trade

In this section we look at the sectoral structure of services trade, distinguishing between traditional services (tourism and transport) and commercial services (such as financial, communication, and computer services, royalties and licence fees), which are producer-related and have been significantly increasing their shares in global services trade over the past few years.

The BRICs have rather diverse structures of services exports. Services exports of China and Russia are dominated by traditional transport and travel services – similar to the NMS12 whose services export structure differs drastically from the EU15 one (see Table 2.5). Hong Kong has the highest specialization in financial services export among all countries analysed; India specializes in exports of computer and information services; Russia exports relatively much of construction services. Interestingly, all BRICs apart from India have relatively high shares of other business services – which comprise such types of services as merchanting and other trade-related services, accounting, legal, advertising, architectural, engineering services and some others. Other types of producer-related services are exported by BRICs at a relatively low scale (with the exception of financial services in Hong Kong).

Over the period 2000-2007, the BRICs show in general decreased shares of traditional services in their exports, with the exception of Brazil and China for transport services, and Hong Kong for travel services (see Table 2.6). New patterns of specialization have been developing in Brazil and China, which significantly increased their shares of other business services, and also in India – where computer and other information services greatly gained in importance for exports.

Table 2.5

Sectoral structure of services exports, 2007, %

	Brazil	China	Hong Kong	India	Russia	Japan	US	EU27	EU15	NMS12
200 TOTAL SERVICES	100	100	100	100	100	100	100	100	100	100
205 Transport	17.2	25.6	30.2	11.1	30.0	27.7	15.6	21.4	20.8	29.5
236 Travel	20.7	30.5	16.2	12.6	24.4	21.0	24.2	22.7	21.9	32.1
245 Communication services	1.2	1.0		2.7	3.2	0.4	1.7	2.0	1.9	3.2
249 Construction	0.1	4.4			8.8	6.8	1.3	2.2	2.1	3.1
253 Insurance	2.3	0.7	0.6	1.8	1.0	0.9	2.1	1.7	1.8	0.3
260 Financial services	4.6	0.2	14.7	3.6	3.0	4.1	11.8	5.6	5.8	3.7
262 Computer and information services	0.7	3.6		44.7	2.8	0.6	2.6	4.6	4.7	3.3
266 Royalties and license fees	1.3	0.3			1.0	15.3	16.8	2.7	2.9	1.3
268 Other business services	42.1	33.1	30.1	18.6	24.4	21.7	16.7	21.3	21.4	19.9
287 Personal, cultural and recreational services	0.3	0.0			0.7	0.1	3.1	0.7	0.6	2.6
291 Government services	5.6	0.5			0.8	1.4	4.2	1.4	1.4	0.8
Other	3.0	0.2	6.0	3.5	0.0	0.0	0.0	13.7	14.7	0.2

Source data: TSD.

Table 2.6

Changes in the sectoral structure of services exports, 2000 to 2007, in pp

	Brazil	China	Hong Kong	India	Russia	Japan	US	EU27	EU15	NMS12
205 Transport	2.4	13.6	-1.4	-0.7	-7.2	-9.3	-1.3	-1.7	-2.2	4.7
236 Travel	1.6	-22.9	1.6	-8.1	-11.5	16.2	-6.9	-8.6	-8.3	-15.0
245 Communication services	0.8	-3.5		-0.9	-0.8	-0.8	0.4	0.1	0.0	1.1
249 Construction	-2.3	2.4			7.0	-1.6	0.5	-0.1	-0.2	0.9
253 Insurance	-1.0	0.4	-0.5	0.3	0.6	0.6	0.9	-0.1	-0.1	-0.5
260 Financial services	0.6	-0.1	3.9	1.9	1.9	0.0	6.4	0.1	0.1	1.6
262 Computer and information services	0.3	2.4		16.4	2.2	-1.6	0.7	1.3	1.2	2.0
266 Royalties and license fees	-46.8	0.0			0.1	0.5	2.3	-0.5	-0.5	0.7
268 Other business services	41.4	7.9	-9.3	-6.2	6.2	-3.9	0.5	-2.6	-3.2	6.0
287 Personal, cultural and recreational services	-5.3	0.0			0.7	-0.1	0.9	-0.4	-0.5	1.0
291 Government services	5.6	-0.5			0.8	0.0	-0.7	-0.1	0.0	-0.6
Other	3.0	0.2	-2.6	3.5	0.0	0.0	-3.7	12.6	13.7	-1.9

Source data: TSD.

Table 2.7

Sectoral structure of services imports, 2007, %

	Brazil	China	Hong Kong	India	Russia	Japan	US	EU27	EU15	NMS12
200 TOTAL SERVICES	100	100	101	100	100	100	100	100	100	100
205 Transport	22.9	33.3	32.7	21.9	15.8	30.9	25.3	23.4	23.2	26.6
236 Travel	22.1	22.9	35.3	17.6	37.6	21.9	21.4	25.4	25.4	26.3
245 Communication services	0.3	0.8		1.6	2.2	0.6	2.1	2.4	2.3	3.5
249 Construction	0.0	2.2			10.9	5.0	0.5	1.7	1.6	2.9
253 Insurance	3.5	8.2	1.7	2.0	1.4	2.6	11.3	1.9	1.9	1.8
260 Financial services	2.2	0.4	6.6	6.0	2.5	2.3	5.0	4.1	4.1	4.6
262 Computer and information services	6.1	1.7		5.8	1.6	2.3	3.9	2.7	2.6	3.7
266 Royalties and license fees	6.1	0.0			4.7	10.5	6.6	4.6	4.6	5.1
268 Other business services	10.3	23.4	7.3	31.8	19.6	22.0	13.8	23.9	24.1	21.8
287 Personal, cultural and recreational services	1.8	0.0			1.3	0.8	0.4	1.2	1.1	2.0
291 Government services	6.7	0.0			2.3	1.1	9.6	1.2	1.2	1.3
Other	13.2	5.1	11.9	9.6	0.0	0.0	0.0	7.4	7.9	0.3

Source data: TSD.

Table 2.8

Changes in the sectoral structure of services imports, 2000 to 2007, in pp

	Brazil	China	Hong Kong	India	Russia	Japan	US	EU27	EU15	NMS12
205 Transport	-3.0	4.4	7.4	-23.4	1.4	2.0	-4.1	-0.6	-0.9	4.2
236 Travel	-1.3	-13.5	-15.3	3.6	-16.9	-5.8	-8.4	-5.4	-5.5	-3.6
245 Communication services	0.1	0.2		1.1	0.4	-0.4	-0.6	0.0	-0.1	0.7
249 Construction	0.0	-0.5			8.4	1.5	0.3	-0.1	-0.1	0.5
253 Insurance	1.6	1.3	-0.5	-2.2	-1.1	0.8	6.3	0.8	0.9	-0.8
260 Financial services	-1.9	0.2	3.3	-0.7	2.3	0.6	2.8	1.4	1.4	1.0
262 Computer and information services	-0.8	1.0		2.8	-1.3	-0.4	3.2	0.5	0.4	1.7
266 Royalties and license fees	-2.4	-3.6			4.3	1.0	-0.7	-0.6	-0.7	1.4
268 Other business services	-10.3	4.1	-3.7	9.3	-1.1	0.9	-1.5	-1.5	-1.3	-4.4
287 Personal, cultural and recreational services	-0.4	-0.1			1.3	-0.3	0.3	-0.7	-0.7	0.0
291 Government services	0.1	-0.5			2.3	0.0	2.3	-0.4	-0.4	-0.3
Other	13.2	5.1	11.9	9.6	0.0	0.0	0.0	6.6	7.1	-0.3

Source data: TSD.

The BRICs have a quite diverse services import structures as well (see Table 2.7). Transport services have relatively high shares in imports of China and Hong Kong, while travel services are more intensively imported by Russia and Hong Kong. Russia appears to import relatively much of construction services (which also have a high share in its exports). India outperforms the others in terms of other business services imports – their share in its import is 32%.

The share of other business services in India's imports increased significantly during 2000-2007, primarily at the cost of a major decline in the share of transport services (see Table 2.8). Brazil, on the other hand, has experienced a decline in the share of other business services in its imports. All BRICs apart from India recorded a decline in the share of transport services.

2.4 Trade balances and specialization indices

An analysis of the sectoral trade balances allows a first glance at the countries' competitiveness in different services (see Table 2.9). Among the BRICs, only Hong Kong and India are net exporters of services. All BRICs countries except India have positive balances in other business services. India, as it may be expected, has a positive balance in trade of computer and information services. Hong Kong and Russia are net exporters of transport services, with Hong Kong also having a positive balance in trade of financial services.

Table 2.9

Trade balances in 2007, EUR billion

	Trade balances in 2007, EUR billion										
	Brazil	China	Hong Kong	India	Russia	Japan	US	EU27	EU15	NMS12	
200 TOTAL SERVICES	-9.6	-5.7	30.7	27.3	-14.3	-5.0	83.9	153.0	137.0	16.0	
205 Transport	-3.2	-8.7	8.5	-1.1	1.8	-5.1	-13.4	12.4	5.7	6.7	
236 Travel	-2.4	5.4	-0.9	1.5	-9.2	-2.0	27.8	6.1	-3.0	9.1	
245 Communication services	0.1	0.1		1.1	0.0	-0.3	0.5	-0.7	-1.0	0.3	
249 Construction	0.0	1.8			-2.2	1.7	3.4	8.7	8.1	0.6	
253 Insurance	-0.6	-7.1	-0.2	0.4	-0.3	-2.0	-23.7	0.5	1.4	-1.0	
260 Financial services	0.2	-0.2	7.0	0.1	-0.2	1.9	28.7	23.7	23.7	0.0	
262 Computer and information services	-1.5	1.6		27.1	0.1	-1.9	-1.5	26.9	26.6	0.2	
266 Royalties and license fees	-1.4	0.2			-1.8	4.8	42.0	-15.2	-12.8	-2.4	
268 Other business services	4.5	7.3	16.3	0.0	-1.4	-1.4	21.9	5.3	3.4	1.9	
287 Recreational, cultural and recreational services	-0.4				-0.3	-0.8	9.9	-3.5	-4.3	0.9	
291 Government services	-0.8	0.4			-0.8	0.3	-11.6	4.1	4.3	-0.2	
Other	-3.0	-4.7	0.0	-1.3	0.0	0.0	0.0	84.7	84.7	0.0	

Source data: TSD.

To assess the countries' specialization on the EU market, we estimate specialization indices (SIs) for the years 2000 and 2007, in order to find out which sectors gained or lost market shares (see Tables 2.10 and 2.11). We estimate the indicators separately for the EU15 and the NMS12 to see whether the patterns of BRICs' specialization differ in those two markets.¹⁸ (Since EU27 services trade is dominated by the EU15 – the share of which

¹⁸ We calculate the specialization index (SI) for country i and good j at the market k as $SI_{ijk} = (X_{ijk}/X_{ik})/(X_{kj}/X_{kt})$, where t = total for all goods. The index compares the composition of exports of one country to a certain market with the

exceeded 90% both in exports and imports in 2007 – the specialization patterns of BRICs in the EU27 as a whole are approximately the same as in the EU15.)

In general, the BRICs appear to have quite few strong advantages on the EU market. China, Hong Kong and Russia turn out to have high SIs in transport services on the EU15 market, with Russia having created additional strong specialization over 2000-2007 in construction services. Brazil and India do not have any strong SIs at the EU15 market. There were no major changes in the BRICs' SIs on this market over 2000-2007.

The current pattern of BRICs' SIs on the NMS12 market is similar to the one on the market of the old member states: China and Hong Kong have strong SIs in transport services, Russia in construction (but not in transport). Brazil turns out to have a strong specialization in one sector on the NMS12 market – personal, cultural, and recreational services.

Table 2.10

Specialization indices in trade with the EU15, 2007

	Brazil	China	Hong Kong	India	Russia
205 Transport	1.8	2.5	2.0	1.2	2.6
236 Travel	1.4	0.8	0.2	1.5	0.5
245 Communication services	0.6	0.4	0.7	0.7	1.0
249 Construction	1.2	1.5	0.4	1.2	2.1
253 Insurance	0.4	0.7	0.2	0.2	0.7
260 Financial services	0.1	0.1	1.1	0.1	0.2
262 Computer and information services	0.3	0.3	0.1	2.6	0.2
266 Royalties and license fees	0.1	0.5	0.5	0.3	0.3
268 Other business services	1.1	0.9	1.0	1.0	0.9
287 Personal, cultural and recreational services	1.5	0.3	1.0	0.4	0.5

Source: TSD; wiiw calculations.

However, in contrast to the EU15, the pattern of SIs changed more significantly on the NMS12 market over 2000-2007. In 2000, only China, Hong Kong and India had strong SIs – in other business services. Over seven years they lost their specialization in these services; instead, China and Hong Kong developed specialization in transport services. Besides, Russia strengthened its position on the construction services market, and Brazil created strong SIs in personal, cultural, and recreational services.

composition of total exports that are absorbed by the market; it can be considered a relative market size measure and thus a measure of countries' specialization revealed by trade flows. Sectors in which the share of a given sector in a country's export noticeably exceeds the share of this sector at the given market (usually the index value being equal to 2 is selected as a benchmark) are considered to have strong specialization at this market.

Table 2.11

Specialization indices in trade with the NMS12, 2007

	Brazil	China	Hong Kong	India	Russia
205 Transport	1.8	2.7	2.0	1.2	1.7
236 Travel	0.4	0.3	0.1	0.5	0.5
245 Communication services	0.4	0.6	0.7	1.3	0.6
249 Construction	0.0	0.1	0.1	0.0	2.6
253 Insurance	0.0	0.1	0.2	0.0	1.7
260 Financial services	0.0	0.2	0.1	0.2	0.2
262 Computer and information services	0.4	0.1	0.3	1.2	0.3
266 Royalties and license fees	0.1	0.1	0.1	0.3	0.3
268 Other business services	0.4	0.3	1.4	1.6	1.0
287 Personal, cultural and recreational services	4.4	0.1	1.4	0.2	0.2

Source: TSD; wiiw calculations.

These trends (together with the much faster development of intra-EU services trade than extra-EU one – with extra-EU trade of the NMS12 actually falling during 2000-2007) may reveal that the recent EU integration has so far resulted in stronger services trade diversion effects than trade creation ones – possibly due to the relative increase in barriers to services trade with the rest of the world in the NMS12 after their EU accession.

3 Summary and conclusions

The key findings of the analysis of external trade in goods between the EU and the BRICs can be summarized as follows:

- the EU is the biggest world exporter; in imports it ranked second after the USA (year 2007);
- Triad countries (EU, USA, Japan) have lost market shares both globally and in the markets of the BRICs; this has been linked to the emergence of new players in international trade;
- the EU has been relatively successful in defending its market shares, especially during the period 2000-2007;
- the EU plays a more important role in BRICs' trade than vice versa;
- the EU has trade deficits with all BRICs (with the exception of India);
- among the BRICs, Russia has been the most important EU export partner, China is the largest import partner;
- EU-BRICs trade is characterized by great diversity: in general, NMS trading patterns with BRICs differ from the rest of the EU and BRICs trading patterns also differ from each other;

- among the BRICs, only China is emerging as a serious challenge to the EU's industrial competitiveness because of its dynamic export performance and the composition of its exports which is closer to that of a developed country than to countries of its peer income group;
- the technological upgrading found in Chinese manufacturing exports is to some extent the result of Triad foreign companies operating in and exporting out of China;
- the revealed comparative advantages of China are also partly shaped by the comparative advantages of foreign firms that decided to establish subsidiaries in China as well as the high share of processing trade in China's imports and exports;
- the global crisis resulted in a sharp fall of BRICs' goods exports and imports in the first quarter of 2009, but signs of a recovery are already visible. Among the BRICs, Russia was hit particularly hard.

Trade in services is much less important than trade in goods, measured by both absolute volumes and shares in GDP. The BRICs' share in global services trade is much lower than that of the EU27; in the EU15 and the NMS12 the shares of BRICs in services imports are only about 4%, which is less than their shares in goods imports. However, comparing BRICs services trade with extra-EU imports of the EU27, then the share of the BRICs in EU27 imports increases to about 9%. Among the BRICs, China and India are the biggest services traders – together they account for about 60% of the BRICs' total services exports.

The situation of low market shares of BRICs may change in the future, as all BRICs (apart from Hong Kong) have been increasing their services exports much faster than the EU27, the US or Japan. India is the absolute leader in terms of growth rates – its annual services exports increased by more than 5 times during 2000-2007. Services exports of China and Russia rose by 4 times during that period.

The EU has been quite an important market for service exporters of all BRICs apart from India (shares of the EU27 range from 13% for China to 40% for Russia), and the share of the EU27 in services exports of China and Hong Kong has been growing. On the other hand, the importance of the BRICs (in particular of China, India and Russia) for the EU's services exporters has been increasing as well; in 2007, the share of BRICs in total EU27 services exports exceeded the NMS12 share (4.6% versus 4.2%), while the share of BRICs in extra-EU services exports reached 11%.

The BRICs have rather diverse services structures, yet a similar trend for all countries can be observed: in general they have decreased shares of traditional services in their exports. New patterns of specialization have been developing in Brazil and China, which have

significantly increased their shares of other business services, and also in India, where computer and other information services have greatly gained in importance for exports.

So far, the BRICs appear to have quite few strong advantages on the EU market. China, Hong Kong and Russia specialize in transport services on the EU15 market, with Russia having created additional strong specialization in construction services over 2000-2007. The current pattern of BRICs' specialization on the NMS12 market is similar to that on the market of the old member states. However, in contrast to the EU15, the pattern of specialization has changed noticeably on the NMS12 market since 2000, when China, Hong Kong and India started specializing in exports of other business services.

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Annex

Taxonomy used in industry classifications (by factor and skill intensities)

	NACE rev.1	Taxonomy I factor inputs	Taxonomy II labour skills
Meat products	151	4	1
Fish and fish products	152	4	1
Fruits and vegetables	153	4	1
Vegetable and animal oils and fats	154	4	1
Dairy products; ice cream	155	4	1
Grain mill products and starches	156	4	1
Prepared animal feeds	157	4	1
Other food products	158	4	1
Beverages	159	4	1
Tobacco products	160	4	1
Textile fibres	171	3	1
Textile weaving	172	2	1
Made-up textile articles	174	2	1
Other textiles	175	1	1
Knitted and crocheted fabrics	176	1	1
Knitted and crocheted articles	177	1	1
Leather clothes	181	2	1
Other wearing apparel and accessories	182	2	1
Dressing and dyeing of fur; articles of fur	183	2	1
Tanning and dressing of leather	191	4	1
Luggage, handbags, saddlery and harness	192	4	1
Footwear	193	4	1
Sawmilling, planing and impregnation of wood	201	2	2
Panels and boards of wood	202	2	2
Builders' carpentry and joinery	203	2	2
Wooden containers	204	2	2
Other products of wood; articles of cork, etc.	205	2	2
Pulp, paper and paperboard	211	3	3
Articles of paper and paperboard	212	1	3
Publishing	221	4	3
Printing	222	4	3
Coke oven products	231		
Refined petroleum and nuclear fuel	232	3	3
Nuclear fuel	233		
Basic chemicals	241	3	3
Pesticides, other agro-chemical products	242	5	3
Paints, coatings, printing ink	243	1	3
Pharmaceuticals	244	5	4
Detergents, cleaning and polishing, perfumes	245	4	3
Other chemical products	246	5	3
Man-made fibres	247	3	3
Rubber products	251	1	1
Plastic products	252	1	1
Glass and glass products	261	1	1
Ceramic goods	262	2	1
Ceramic tiles and flags	263	3	1
Bricks, tiles and construction products	264	2	1
Cement, lime and plaster	265	3	1
Articles of concrete, plaster and cement	266	1	1
Cutting, shaping, finishing of stone	267	2	1
Other non-metallic mineral products	268	1	1
Basic iron and steel, ferro-alloys (ECSC)	271	3	1
Tubes	272	1	1
Other first processing of iron and steel	273	3	1

	NACE rev.1	Taxonomy I factor inputs	Taxonomy II labour skills
Basic precious and non-ferrous metals	274	3	1
Structural metal products	281	2	2
Tanks, reservoirs, central heating radiators and boilers	282	4	2
Steam generators	283	2	2
Cutlery, tools and general hardware	286	4	2
Other fabricated metal products	287	1	2
Machinery for production, use of mech. Power	291	1	4
Other general purpose machinery	292	1	4
Agricultural and forestry machinery	293	1	4
Machine-tools	294	2	4
Other special purpose machinery	295	1	4
Weapons and ammunition	296	1	4
Domestic appliances n. e. c.	297	1	3
Office machinery and computers	300	5	4
Electric motors, generators and transformers	311	1	3
Electricity distribution and control apparatus	312	5	3
Isolated wire and cable	313	1	3
Accumulators, primary cells and primary batteries	314	1	3
Lighting equipment and electric lamps	315	1	3
Electrical equipment n. e. c.	316	2	3
Electronic valves and tubes, other electronic comp.	321	5	3
TV, and radio transmitters, apparatus for line telephony	322	5	3
TV, radio and recording apparatus	323	5	3
Medical equipment	331	5	3
Instruments for measuring, checking, testing, navigating	332	5	3
Optical instruments and photographic equipment	334	5	3
Watches and clocks	335	4	3
Motor vehicles	341	5	2
Bodies for motor vehicles, trailers	342	2	2
Parts and accessories for motor vehicles	343	3	2
Ships and boats	351	2	2
Railway locomotives and rolling stock	352	2	2
Aircraft and spacecraft	353	5	4
Motorcycles and bicycles	354	1	2
Other transport equipment n. e. c.	355	1	2
Furniture	361	2	2
Jewellery and related articles	362	2	2
Musical instruments	363	4	2
Sports goods	364	4	2
Games and toys	365	4	2
Miscellaneous manufacturing n. e. c.	366	4	2

Taxonomy I

factor inputs

- 1..Mainstream
- 2..Labour intensive industries
- 3..Capital intensive industries
- 4..Marketing driven industries
- 5..Technology driven industries

Taxonomy II

labour skills

- 1..Low skill industries
- 2..Medium skill/blue collar workers
- 3..Medium skill/white collar workers
- 4..High skill industries

Source: Peneder (2003).

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