The European Journal of Comparative Economics

Vol. 9, n. 1, pp. 133-175

ISSN 1824-2979

The rise of emerging economies in the EU15 trade

Guillaume Gaulier, Françoise Lemoine, Deniz Ünal[1]

Abstract

The EU15 manufacturing trade with developing and emerging economies has now overtaken its trade with high-income countries. This trade has strengthened the European specialization in high-end products and medium-high technological sectors. The EU15 exports have been increasingly concentrated on its neighbours, while its imports from Asia were the most dynamic. The regional integration has favoured the technological and quality upgrading of the EU15 *imports* from its neighbours, while its imports from Asia were characterised by the surge of high-technology goods at low prices. The EU has increasingly concentrated its trade on the large emerging economies and especially on Russia and China.

JEL Classification: F1; F14; F5

Keywords: Trade; developing and emerging economies; European Union; export prices; high-technology

Introduction

In the past two decades, developing and emerging economies (DEEs) have become major players in the world economy and in international trade. They have become the most dynamic exporters of manufactured goods and services, eroding the dominant position of the developed countries in world markets.

A common characteristic of the new comers is their relatively low level of income which shapes their position in the international division of labour and is expected to induce far reaching changes in the pattern of supply and demand. The global economic crisis which burst at the end of 2008 has strengthened even more the position of the large emerging economies which have proved remarkably resilient to the shock. Their growth prospects have raised the expectations that they could become the drivers of global demand, since recovery in advanced economies is highly uncertain.

Many studies have analysed how the advanced economies have coped with the rise of these new players. They focus on the consequences of the competition from the DEEs on the positions of the advanced economies in international trade. Our analysis focuses on the EU15 trade with the DEEs and considers that the new comers have also offered expanding markets. The paper examines how the DEEs have contributed to the global trade performance of the UE15 between 1995 and 2008.

Several questions are raised. In what the EU15 trade with the developing and emerging economies actually differ from its trade patterns with advanced economies (in terms of production stage, technology level, quality range)? What are the strengths and weaknesses of the EU15 in these trade relations? What are the dynamics of the EU trade with the different emerging areas which are highly heterogeneous? How the major

[1] Guillaume Gaulier is economist at the Central Bank of France and Research Associate at CEPII, Françoise Lemoine (corresponding author, francoise.lemoine@cepii.fr) is economist senior at CEPII, Deniz Ünal is economist at CEPII.

European countries are positioned in these different markets and especially in the six large emerging markets?

In order to characterise the position of partners in the international division of labour our analysis of trade flows goes beyond the classification by industrial branches. We have used the following criteria to set up product classifications: stage of production (primary, intermediate, consumption and capital goods), price/quality ranges (down-market, middle-market and up-market goods) and technological levels. Combining all these different criteria provides an in-depth view of the evolution of the trade patterns between the EU15 and the emerging economies in the past decade.

The paper is organised as follows. The first section sketches out the rise of the DEEs in the world economy and in the foreign trade of the Triad (the EU15, Japan and the US). The second section examines how the EU15 trade with the DEEs differs from that with high-income countries and is influencing its specialisation. The third section focuses on the analysis of the EU15 trade flows which were by far the most dynamic ones, i.e. with the DEEs located in Europe and its periphery and in Asia. The fourth section examines the trade relations between the four major European exporters (Germany, France, the UK and Italy) and the six largest emerging economies (Brazil, Russia, India, China, Mexico and Turkey).

1. The EU15 trade with emerging economies: 1995-2008

1.1 Shifts in world production and trade

The present study uses a definition of developing and emerging economies (DEEs) based on their income per capita. The DEEs are those which had a per capita in 1995 below the threshold set by the World Bank (9,386 US dollars in 1995 [see World Bank, 2009]). According to this definition, the present group is relatively large and heterogeneous, but it is however narrower than some other classifications (UNCTAD for instance) which include into the group of "emerging and developing economies" countries which have crossed the threshold decades ago (namely South-Korea, Hongkong, Singapore, Taiwan). In the present grouping, some countries have reached a GDP per capita which put them, in 2008, above the level of poor countries but are still well below the average level of high income countries.

Developing and emerging economies are here assigned to four geographical areas: Europe & Periphery, Asia, America and Africa (see **appendix A.1** for geographic classification). Within the group of DEEs we have also distinguished six "large emerging economies" (LEEs) defined as those accounting for more than 1% of world GDP in 2008 (in current dollars): Brazil, Russia, India, China, Mexico and Turkey.

Although the high-income country group retains a dominant position in the world economy, the DEEs have gained an increasing weight in the world GDP and trade (**Table 1**). Between 1995 and 2008, their share in the world GDP (in current dollars) rose from 19% to 31%, which still falls short from their population share (85%), and the gap with advanced economies in terms of income per capita is still huge (on average from one to seven). Their rise in world exports was even faster than in production (from 24% to 40%), and has significantly eroded the position of rich countries in world

markets of manufactured goods. Their progress in world imports has also been significant (from 25 to 34%) although somewhat slower.

The LEEs has played a crucial part in this progress. While China has accounted for a large chunk of it, the other five countries have also recorded an increase in world production (excepted Brazil), exports and imports. Besides the six LEEs, the other emerging economies have also been on a fast track, with economic and trade performance substantially above the world average. Their shares increased in world GDP (from 10% to 14%); in world exports (from 16% to 22%) as well as imports (from 17% to 20%). Emergence has thus not been circumscribed to the largest economies.

Table 1 - Developing and Emerging Economies (DEEs) compared to High Income (HI) countries: population, income per capita, share in world GDP and in world trade (all products)

	Population (millions)		**Income per capita** (PPP, USD)		**Share in world GDP** (current prices)		**Share in world exports** (%)		**Share in world imports** %		**Trade Balance** (billion USD)	
	1995	2008	1995	2008	1995	2008	1995	2008	1995	2008	1995	2008
HI countries	**916**	**993**	**27 530**	**35 397**	**81**	**69**	**76**	**60**	**75**	**66**	**45**	**-902**
DEEs	**4 784**	**5 708**	**3 098**	**5 172**	**19**	**31**	**24**	**40**	**25**	**34**	**-45**	**902**
from which												
LEEs	2 604	2 980	2 830	5 578	9	17	8	18	8	14	43	645
China	*1 216*	*1 317*	*1 829*	*5 546*	*2.5*	*7.1*	*3.1*	*9.4*	*2.6*	*5.8*	*26*	*543*
India	*921*	*1 141*	*1 428*	*2 720*	*1.2*	*1.9*	*0.6*	*1.2*	*0.7*	*1.8*	*-5*	*-88*
Brazil	*164*	*196*	*7 636*	*9 305*	*2.6*	*2.6*	*0.9*	*1.3*	*1.0*	*1.1*	*-6*	*28*
Mexico	*93*	*110*	*9 730*	*12 954*	*1.1*	*1.8*	*1.6*	*1.9*	*1.2*	*1.6*	*18*	*43*
Russia	*149*	*141*	*7 849*	*14 831*	*1.1*	*2.8*	*1.8*	*3.0*	*1.3*	*1.9*	*23*	*175*
Turkey	*62*	*76*	*8 231*	*11 584*	*0.8*	*1.2*	*0.4*	*0.9*	*0.7*	*1.2*	*-12*	*-57*
World	**5 700**	**6 701**	**7 026**	**9 650**	**100**	**100**	**100**	**100**	**100**	**100**	**0**	**0**

Notes: World trade includes intra-EU15 trade flows. Income per capita is in international 2005 US$.

Source: CEPII, CHELEM-INT-GDP database.

1.2 The DEEs have overtaken high-income countries in the EU15 trade

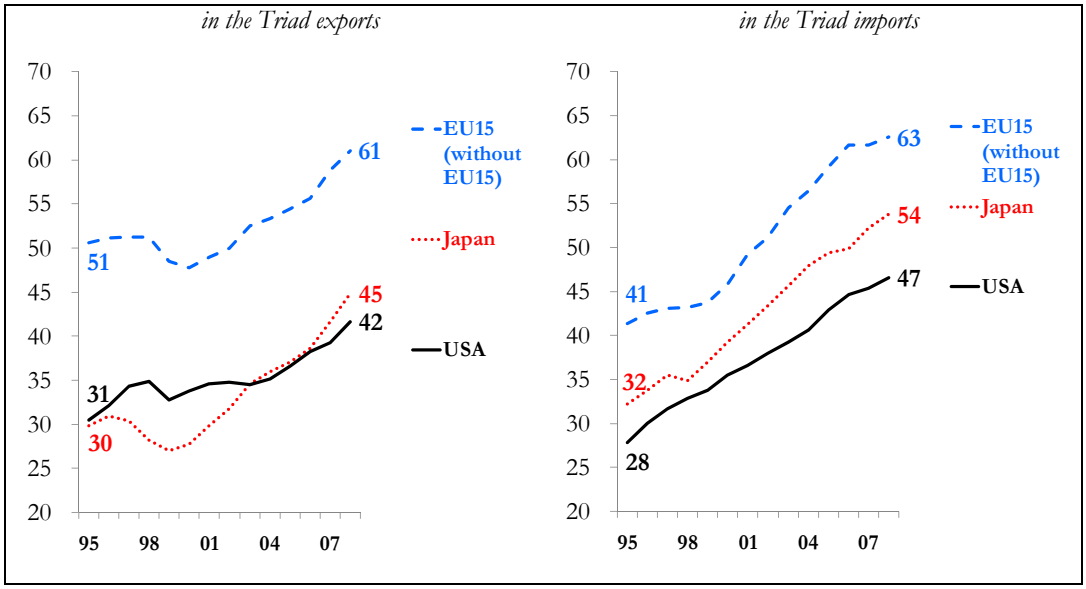
Several studies have shown how Europe has faced the challenges of globalisation and coped with the rise of new players [Fontagné et alii, 2008; Havik and Mc Morrow, 2006; Denis et alii, 2006; Curran and Zignago, 2009]. They conclude that, up to the mid-2000s, the EU has resisted better to the competition from low-income countries than the USA or Japan did. They explain this resilience by the EU15 specialisation in up market products: although the DEEs have considerably diversified their exports, they are mainly positioned in down-market products and have not directly threatened the EU15 strong positions.

These studies mainly focus on the consequences of the competition from DEEs on the positions of advanced economies in international trade. Our analysis focuses on EU15 trade with DEEs and considers that these new comers have also offered expanding markets and have been new partners in the international division of labour. The paper examines to what extent trade with the DEEs has contributed to the global trade performance of the UE15 between 1995 and 2008.

Two major trends stand out from **Figure 1**. First, since the end of the 1990s, there has been an outstanding rise of the DEEs in the foreign trade of the Triad in manufactured products[2]. Second, compared with the two others, the EU15 has kept a relatively stronger trade orientation towards these new players, which accounted for 61% in its exports in 2008, much more than in Japan's exports (45%) or in the US exports (42%). From 1995 to 2008, two-thirds of the EU15 export growth came from developing and emerging markets (half in the case of the US). This is part of a traditional "geographical specialisation" which has been a structural characteristic of European trade [Cheptea et alii, 2008]. In the EU15 imports, the rise of emerging economies has been outstanding (gaining 22 percentage points) and in 2008, they accounted for two-thirds of the EU15 imports (without intra-EU trade), that is in substantially more than in the case of Japan (54%) and of the US (47%).

In 2008, the DEEs have overtaken the high-income countries in the EU15 external trade and account for more than 60% of the EU15 exports and imports.

Figure 1 - DEEs' share in the foreign trade of the Triad - 1995 to 2008 (manufacturing flows, %)



Source: Authors' calculations from CEPII, CHELEM-INT database.

Symmetrically, Europe holds a relatively strong position in the foreign trade of the DEEs and is both their largest market and supplier, far ahead of the US and Japan.

[2] Unless otherwise indicated, the analysis in the following sections pertains to trade in manufactured products.

Since the mid-1990s the DEEs have rapidly switched the direction of their foreign trade away from the Triad (**Table 2**). The US and Japan were hit relatively more than the EU15 by this movement.

In 2008, the share of the EU15 in the DEEs trade is still larger than its share in global trade. The difference measures the relative intensity of the EU15 trade with the DEEs, which is high both on export and import side (ratio 1.4). The relatively intensity of trade with the DEEs is lower in the case of the US (0.9 and 1.1 respectively on exports and imports) as well as in the case of Japan (1.0 and 1.2 respectively).

During the period, trade between the DEEs themselves and especially between the LEEs expanded at an accelerated pace.

Table 2 - Direction of trade of Developing and Emerging Economies (manufacturing, %)

	DEEs Exports		DEEs Imports	
Partners	**1995**	**2008**	**1995**	**2008**
High income countries	70	61	76	63
TRIAD:	57	48	62	48
EU15	*26*	*25*	*36*	*30*
USA	*22*	*18*	*14*	*10*
Japan	*9*	*5*	*12*	*8*
Other HI countries	13	13	14	15
Developing and emerging economies	30	39	24	37
LEEs*	9	12	8	18
Other DEEs	21	27	16	19
World	100	100	100	100

**Brazil, Russia, India, China, Mexico, Turkey.*

Source: CEPII, CHELEM-INT database

1.3 In what does this trade differ? Intra- versus inter-industry trade

In the present section, we consider the foreign trade pattern of the EU15 taken as a single entity (excluding intra-EU15 trade) and examine how trade with the DEEs has influenced the recent evolution its overall trade pattern. In order to provide an in-depth analysis of the EU15 trade during the, we have constructed a data base covering the period from 1995 to 2008, derived from Comext. The Comext data at HS 6digit level have been aggregated into industry groups and industries, classified by production stages and by technological levels. We have also calculated indicators for types of trade (one way trade, horizontal and vertical two way trade) and classified the trade flows according to price/quality ranges.

In order to characterise EU15-DEE trade, it is helpful, first, to consider the relative importance of the different types of trade (see **appendix A.5**): one-way trade (inter-industry trade), two-way trade (intra-industry trade) in vertically differentiated products ("exchange of quality") and two-way trade in horizontally differentiated products ("exchange of variety") [Fontagné and Freudenberg, 1997].

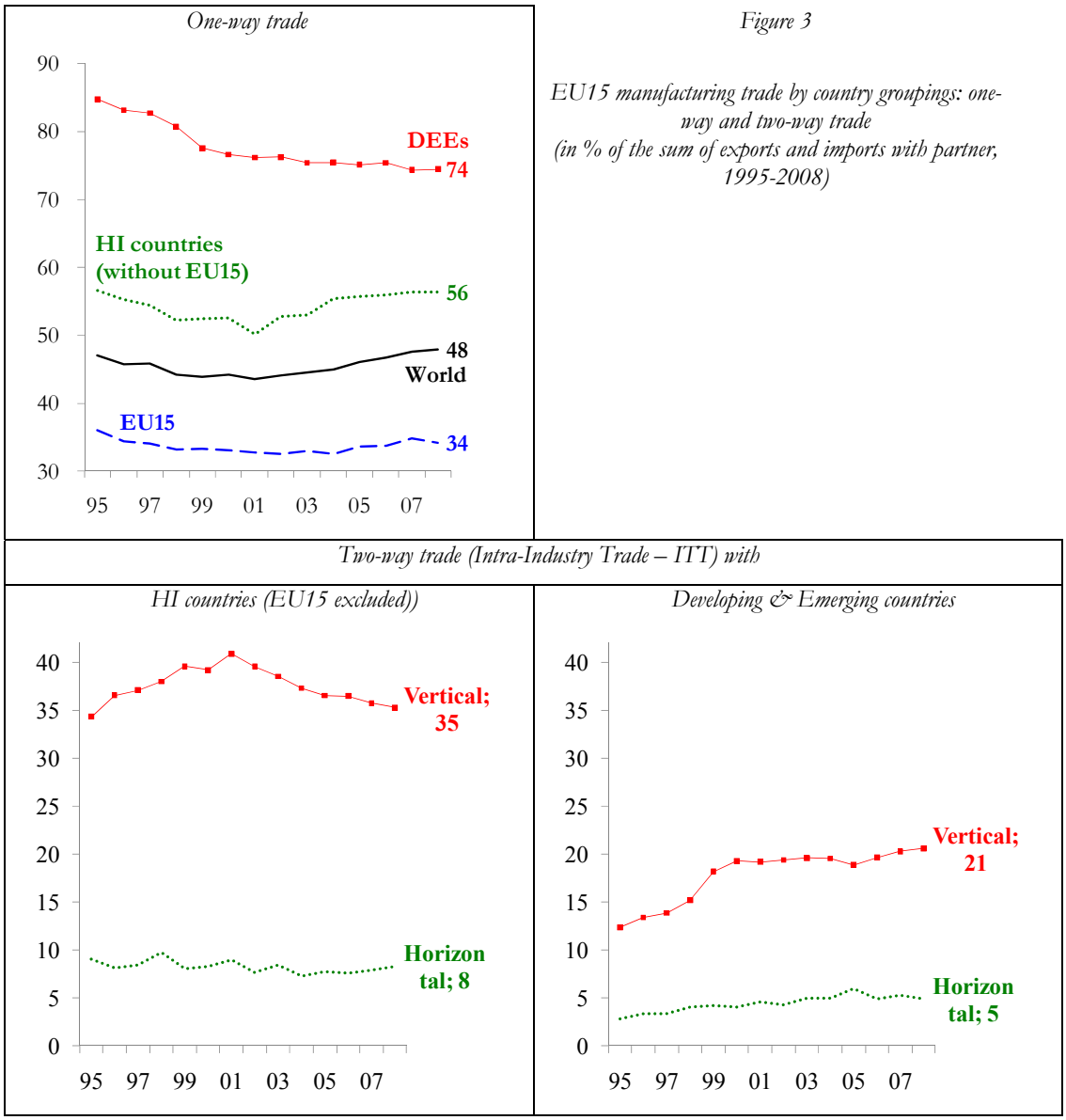
One-way trade reflects mostly traditional complementarities and specialisation along sectoral comparative advantages. This type of trade is expected to be the dominant one between countries having different levels of economic development (North-South trade) and its importance is expected to decrease when the production structures of the partners are converging. Indeed, it still hold an overwhelming importance in the EU15 trade with emerging and developing economies, but its share significantly declined from 85% in 1995 to 74% in 2008 (**Figure 3**).

Symmetrically, intra-industry trade (IIT) refers to exports and imports which take place within the same product and is expected to gain importance as the economic distance between partners is reduced. A major distinction pertains to two-way trade in vertically differentiated products and two-way in horizontally differentiated products. In the first case, partners exchange products belonging to the same group but which have different unit values, and do not share the same production function: they exchange qualities. In the second case, they exchange "varieties" of products having similar unit values and the same production function. Trade between advanced economies is mainly two-way trade (it accounts for 66% of intra-EU15 trade), predominantly vertical but also in horizontal differentiation. As a result of the modernisation of the manufacturing sector in emerging economies, two-way trade in vertically differentiated products increased significantly but still takes a smaller part than in trade with high-income partners. Moreover, due to the economic distance still existing between the partners, "exchange of variety" is still relatively limited (5%). Emerging economies and the EU15 do not compete in the same quality segment [Fontagné *et alii*, 2008].

To sum up, since the mid-1990s, the trade pattern of the DEEs has been on a converging trend with that of the high-income economies, however, the nature of trade is still quite different.

Figure 3

EU15 manufacturing trade by country groupings: one-way and two-way trade
(in % of the sum of exports and imports with partner, 1995-2008)



Source: Authors' calculations from Eurostat Comext database.

1.4 Effects of trade with the DEEs on the European specialization

Our analysis of the EU15 trade patterns will focus on two criteria: quality range and technological content. It will address two related questions: to what extent the EU15 trade pattern with the DEEs differ from that with high-income countries; how trade with the DEEs has influenced the evolution of the EU15 specialisation.

Strengthening the EU15 exports in up-market goods …

Recent literature has underlined that its global specialisation in up-market goods has helped the EU15 to maintain its world market shares, because this quality range has been less exposed to price competition from new comers [Curran & Zignago, 2009; European Commission, 2008; Fontagné et alii, 2008]. Indeed, as shown in **Table 3**, the

EU15 has achieved its fastest increasing and largest trade surplus in up-market products, which has more than compensated its ballooning trade deficit in low-quality/low-price range.

The structure of the EU15 trade by price/quality range with the DEEs has remained quite different from its trade with high income countries. Exports to the DEES are quite evenly distributed across price/quality range, while those to high-income countries are biased toward middle- and up-market goods. In imports from emerging countries, there is a strong bias towards low-price/quality goods, which, in 2008, accounted for 51% of manufacturing imports from DEEs against 28% from the high income countries.

Interestingly, the share of the DEEs has increased in all price/quality ranges, in both exports and imports. This trade has accentuated the EU15 specialisation in high-end manufactured goods and it provides the EU15 its biggest and fastest rising trade surplus. In 2008, the DEEs have overtaken the high-income countries as a destination for European high price/quality goods and ensure 60% its trade surplus in this product range.

Table 3 - EU15 manufacturing trade by quality/price range (extra-EU15 trade)

	2008				2008-1995 change			
Quality/price range	Low	Medium	High	Total	Low	Medium	High	Total
	% total world				point of %			
Total exports	**27.0**	**34.3**	**38.7**	**100.0**	**-2.9**	**+3.0**	**-0.1**	**0.0**
HI countries	8.8	15.6	19.2	43.7	-4.8	-3.1	-5.3	-13.2
DEEs	18.2	18.7	19.4	56.3	+1.9	+6.1	+5.2	+13.2
Total imports	**41.9**	**32.6**	**25.5**	**100.0**	**+2.1**	**+0.7**	**-2.8**	**0.0**
HI countries	10.8	13.3	14.7	38.8	-7.1	-6.3	-8.3	-21.7
DEEs	31.1	19.3	10.8	61.2	+9.1	+7.0	+5.5	+21.7
	Billion Euros				Billion Euros			
Total trade balance	**-115.8**	**84.9**	**222.1**	**191.3**	**-99.5**	**+62.2**	**+147.8**	**+110.4**
HI countries	-5.1	56.3	88.0	139.2	+1.1	+44.8	+62.2	+108.0
DEEs	-110.7	28.7	134.1	52.1	-100.6	+17.4	+85.6	+2.4

*Note: Some figures in this table differ from those in **Figure 1** because of the use of different data bases and the exclusion of non classified products in quality/price ranges.*

Source: Authors' calculations from Eurostat Comext database.

... and in medium-high technology sectors

Considering the technological level of trade, a European Commission report [2008] concluded that European performance in high-technology exports is mixed. On the one hand, the EU15 market share for this type of products is slightly lower than its overall market share; on the other hand, the EU15 is now the leading exporter, having

overtaken the US. Against this backdrop, we analyse how the technological level of the trade with emerging economies has evolved.

In a first step, the analysis refers to the OECD classification of manufacturing industries which distinguishes four categories of products (see **appendix A.3**, broad definition): high-technology industries (HT), medium-high technology industries (MHT), medium-low technology industries (MLT) and low-technology industries goods (LT).

Medium-high technology sectors, which make up the bulk of the EU15 exports (45% in 2008) and ensure a rapidly increasing surplus, clearly constitute the strength of EU15 [Curran & Zignago, 2009]. This reflects the EU15 comparative advantages in machinery, chemicals and transport equipment. By contrast, at the two ends of the technology ladder (low and high-technology levels) the EU15 has recorded increased trade deficit from 1995 to 2008 (**Table 4**).

Table 4 - EU15 manufacturing trade by technological level*, 1995-2008 (extra-EU15 trade)

	2008					2008-1995				
Technology level	**Low**	**Medium-low**	**Medium-High**	**High**	**Total**	**Low**	**Medium-low**	**Medium-High**	**High**	**Total**
	% world					**point of %**				
Total exports	**15.0**	**18.5**	**44.8**	**21.7**	**100.0**	**-7.2**	**3.3**	**-1.2**	**+5.1**	**0.0**
HI countries	6.7	8.0	17.6	11.2	43.5	-6.0	-0.5	-7.2	+0.6	-13.2
DEEs	8.2	10.6	27.1	10.5	56.5	-1.2	+3.9	+6.0	+4.5	+13.2
Total imports	**22.3**	**21.7**	**29.5**	**26.5**	**100.0**	**-5.6**	**+5.1**	**-2.9**	**+3.3**	**0.0**
HI countries	3.6	7.2	13.5	14.2	38.5	-5.7	-0.5	-11.5	-5.0	-22.7
DEEs	18.7	14.5	16.0	12.3	61.5	+0.1	+5.7	+8.6	+8.3	+22.7
	Billion Euros					**Billion Euros**				
Total trade balance	**-49.9**	**4.0**	**262.8**	**-7.8**	**209.1**	**-46.7**	**-4.1**	**+167.6**	**+4.1**	**+120.8**
HI countries	48.2	25.6	82.6	-10.6	145.8	+23.1	+14.8	+61.3	+15.0	+114.2
DEEs	-98.1	-21.6	180.2	2.8	63.2	-69.8	-18.9	+106.3	-10.9	+6.7

*Notes: See **appendix A.3** for the technological level classification (broad definition). Some figures in this table differ from those in **Figure 3** because of the use of different data bases and the exclusion of non classified products in the technological classification.*

Source: Authors' calculations from Eurostat Comext database.

There has been an upgrading of the technological level of the EU15 trade with the DEEs, both on the export side (as European exports have been crowded out of the markets of LT industries, predominantly textile products) and on the import side (as industrial capacities in the DEEs have moved toward more technologically advanced products).

In 2008, the EU15 pattern of imports from the DEEs still differs from that with high-income countries. LT industries, although in relative decline, account for the biggest EU15 import category from the DEEs, and are the source of its largest and rapidly growing trade deficit.

The growth of the EU15 exports in medium-high technology industries to the DEEs has contributed to strengthen its specialisation in this product category, which is the only one in which the EU15 holds a substantial and structural surplus with the new comers. In the high-technology industries, the growth of the EU15 exports was outpaced by that of imports so that the EU15 surplus almost disappeared in 2008. The rise of trade with DEEs thus appears to be an important factor driving the changes in the technological specialisation pattern of the EU15 trade: its strengths in medium-high-technology and its recent weakening in high-technology industries.

2. The drivers of trade: Emerging Europe and Asia

The EU15 trade with developing and emerging economies is heavily and increasingly concentrated on two areas: Europe & Periphery and Asia. Other emerging areas (the Gulf & Sub Saharan Africa and America) account for a relatively small and stable share of the EU15 trade (around 6-7% each, **Table 5**).

The overwhelming share of the EU15 trade with DEEs (for short "Emerging" economies) thus takes place with two areas which display very different geographic and economic characteristics. The GDP per capita is more than twice higher in emerging Europe & Periphery (10.000 dollars PPP) than in emerging Asia (about 4000).

Table 5 - Direction of the EU15 trade, 1995-2008 - (manufactured products, without inra-EU15)

	Exports %		Imports %		Trade Balance (billion Euros)	
	1995	2008	1995	2008	1995	2008
High income countries	**68.2**	**50.8**	**50.4**	**33.1**	**+32.0**	**+140.4**
Asia-Oceania	21.1	11.7	18.7	11.0	-5.5	-12.0
Europe & Periphery	19.4	13.8	12.0	8.8	+20.9	+40.7
Gulf & Sub Saharan Africa	2.3	3.4	0.2	0.7	+8.4	+29.6
America	25.4	21.8	19.5	12.6	+8.3	+82.1
DEEs	**51.7**	**65.6**	**33.0**	**52.9**	**+50.3**	**+46.8**
Asia-Oceania	**10.6**	**10.9**	**11.8**	**22.7**	**-14.3**	**-176.7**
China	3.0	5.8	4.9	16.1	-12.1	-146.8
India	1.5	2.0	1.4	1.9	-0.9	-2.5
Other Asia-Oceania	6.2	3.1	5.4	4.7	-1.4	-27.4
Europe & Periphery	**25.6**	**40.6**	**14.2**	**23.4**	**+35.2**	**+152.6**
EU-NMS	11.3	20.4	7.3	14.2	+10.8	+44.3
Turkey	2.7	3.7	1.7	2.7	+2.8	+6.7
Other Mediterranean countries	5.7	5.1	2.2	2.2	+12.5	+29.0
Russia	3.6	7.1	2.0	2.7	+4.9	+45.2
Other Europe & Periphery	2.2	4.2	1.0	1.5	+4.2	+27.4
Gulf & Sub Saharan Africa	**8.1**	**7.7**	**3.0**	**2.3**	**+18.7**	**+56.9**
Arab & Persian Gulf countries	2.9	2.9	0.5	0.5	+9.3	+27.0
Sub Saharan Africa	5.2	4.8	2.4	1.8	+9.5	+29.8
America	**7.4**	**6.4**	**4.0**	**4.5**	**+10.7**	**+14.0**
Mexico	1.0	1.8	0.5	0.7	+1.9	+11.1
Brazil	2.5	2.1	1.4	1.4	+3.5	+4.8
Other America	3.9	2.6	2.1	2.3	+5.3	-2.0
Total LEEs*	**14.4**	**22.5**	**12.0**	**25.4**	**+0.1**	**-81.4**
World	100.0	100.0	100.0	100.0	-82.3	-187.2

**LEEs, large emerging economies are here China, India, Brazil, Mexico, Russia and Turkey.*

Source: Authors' calculations from Eurostat Comext database.

2.1 Geographical asymmetry

On the one side, the EU15 exports to emerging Europe & Periphery expanded much faster than to emerging Asia & Oceania and, as a result, were almost four times

bigger in 2008, against only twice bigger in 1995. The EU15 exports to its emerging neighbours increased from 25.6% to 40.6% of its total manufacturing exports. The best export performance was achieved with the countries which entered the Union since 2005-2008 as well as with Russia and Turkey. During this period, as these countries entered in a process of economic liberalisation, which enlarged their share in world imports of manufactured goods, the EU15 industries were the best placed to take advantage of their demand. The enlargement process and the neighbourhood policy have proved successful in opening these new markets to the EU15. Trade with 'Other Mediterranean" emerging countries had been much less dynamic.

On the other side, the surge in the EU15 imports came mainly from emerging Asia. This region's share in EU manufacturing imports skyrocketed from 11.8 to 22.7%. Trade with China and, to a much lesser extent with India, was responsible for this increase. The other Asian emerging economies recorded a dwindling share. The surge in EU15 imports from Asia must be interpreted in the light of the reorganisation of industrial production in the region. China has become a production base for manufacturing firms of matured economies (Japan, Taiwan, and South-Korea) and is now a major supplier of final goods [see Gaulier *et alii*, 2006].

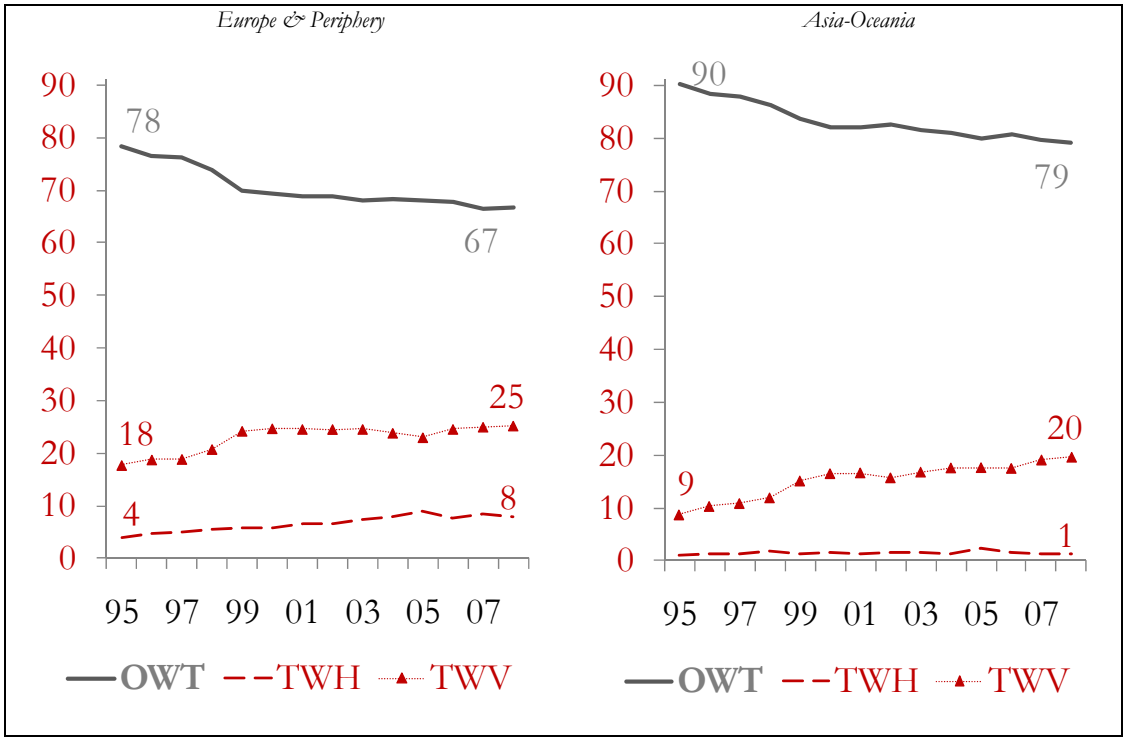
This geographic asymmetry in the export and import trends shows up in trade balances. The EU15 has recorded ballooning deficits with emerging Asia, which accounts for almost all its manufacturing trade deficit with emerging economies, while its trade with emerging Europe & Periphery has kept on a surplus. The Eastward enlargement and the neighbourhood policy proved helpful to strengthen the EU15 position in international trade and to cushion some consequences of the increased competition from emerging Asia. In fact Europe & Periphery is the only emerging area with which the EU15 has recorded structural trade surpluses. With emerging countries in America and in the Gulf and Sub-Saharan Africa, the EU also recorded a deficit in 2008, contrasting with its surplus in 1995.

2.2 Intra-industry trade

Another difference lies in the in the nature of the EU15 trade with the two areas. With both areas, the importance of inter-industry (one-way) trade dwindled, which reflected the convergence process (**Figure 4**). But inter-industry trade remained significantly larger in trade with Emerging Asia (79% in 2008) than with Emerging Europe (67%), as could be expected given the gap between the levels of income of the two regions. Moreover, looking at intra-industry trade, it stands out that two-way trade in horizontally differentiated products expanded at an accelerated pace between the EU15 and Emerging Europe: exchange of varieties jumped from 1% to 8%, a share which is similar to that existing between the EU15 and high-income countries. By contrast the EU15 intra-industry trade with emerging Asia still consists almost exclusively of two-way trade in vertically differentiated products: the partners exchange more and more the same products belonging to different quality/price ranges, but did not developed exchange of quality. Two way trade in horizontally differentiated products remained marginal (1%).

A closer analysis into the trade patterns shows the quality ranges and the technological levels which have been the engine of the EU15 trade with these two areas.

Figure 4 - EU15 manufacturing flows by type of trade, 1995-2008 - with DEEs in Europe & Periphery and in Asia-Oceania



** See **appendix A.5** for the classification by type of trade.*
OWT, one-way trade
TWH, two-way trade in horizontally differentiated products
TWV, two-way trade in vertically differentiated products

Source: Authors' calculations from Eurostat Comext database.

2.3 Trade with Emerging Europe & Periphery

Since 1995, the EU15 trade with emerging Europe & Periphery has undergone far-reaching changes: both exports and imports were marked by an improvement in their technological content together with an upgrading of their position on the price/quality ladder. The trade patterns thus reflect the processes of economic convergence between the EU15 and its periphery and the progress of regional integration.

The leading role of medium-high technology industries

On the export side, Medium-high technological industries remained by far the most important category with 46% of the EU15 exports to emerging Europe & Periphery in 2008 (**Figure 5)**. This category encompasses mainly machinery and motor vehicles. During this period, automobile manufacturers in the EU built up strong production linkages with new members and strengthened their relationship with Turkish car industry. The high-technology sectors also took a growing importance (from 11% in 1995 to 16% in 2008), a trend mainly due to electronic goods and to a lesser extent to pharmaceutical products. The share of low technology goods shrunk rapidly with the decline of traditional exports (mainly of textile products).

On the import side, the share of low-technology industries, which were the most important ones in 1995, dropped sharply from 39 % to 21%, as textile products imported from China have crowded out imports from the East and the South of the EU15. Medium-high technology industries were the most dynamic category and have become the most important one in 2008 (34% of the total). Again, this reflects the rise of the sector "transport equipment" which was one of the key drivers of trade between the EU15 and emerging Europe & Periphery during this period. The regional division of labour within this industry has boosted the EU15 imports of parts & components as well as of finished vehicles. In fact, the new members (in central Europe) have become mainly suppliers of car parts and components, while Turkey has remained mainly a supplier of finished vehicles [Lemoine and Ünal, 2009]. High-technology sector imports were also on a relatively fast track (from 4% to 12%) mainly due to electronic products.

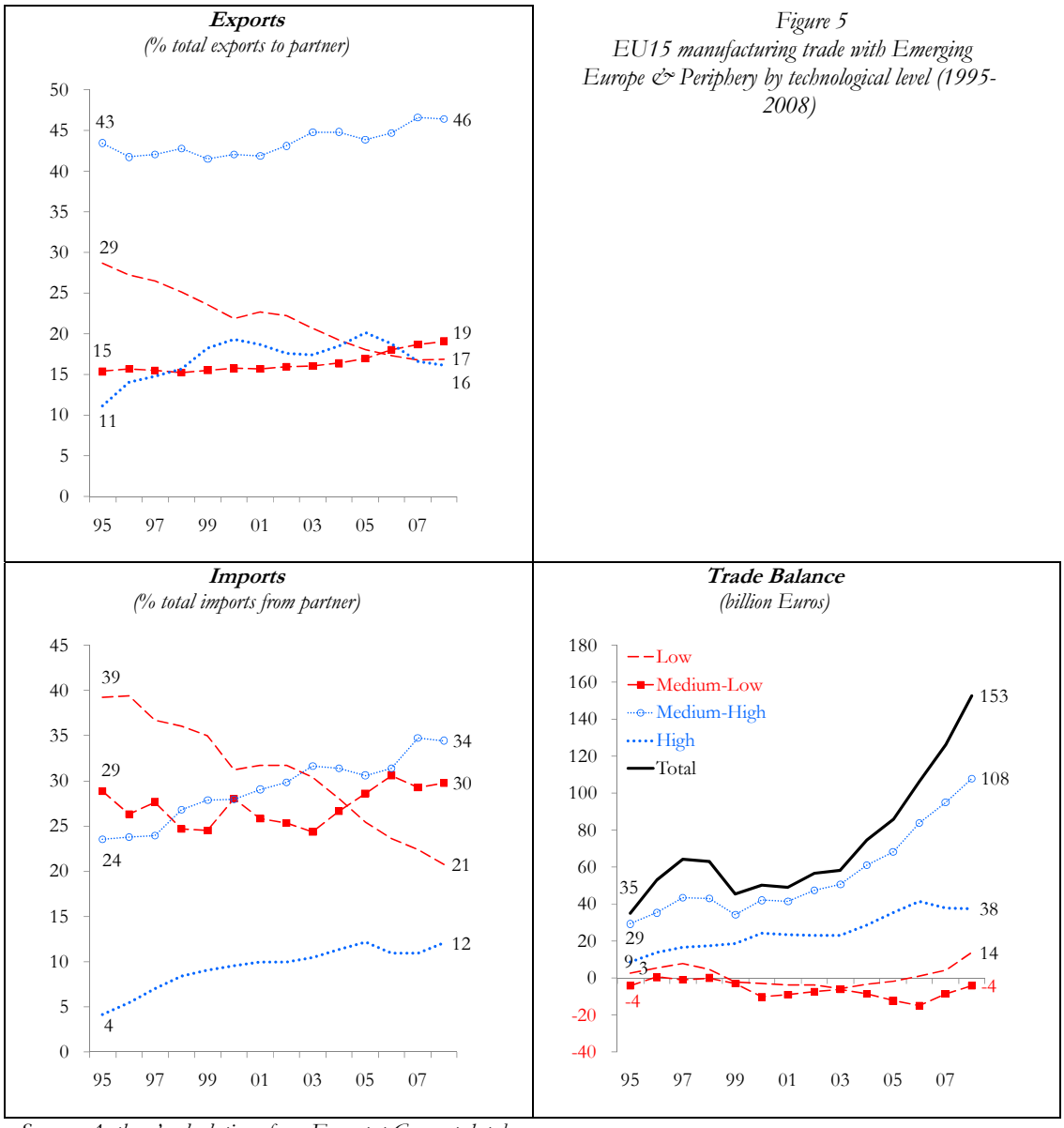


Figure 5
EU15 manufacturing trade with Emerging Europe & Periphery by technological level (1995-2008)

Source: Authors' calculations from Eurostat Comext database.

Climbing up the quality ladder

On the export side, the pattern of the EU15 exports to emerging Europe & Periphery by quality range moved away from low- to medium-quality range. As a result, the structure has become more evenly distributed across the quality ranges (**Table 6**).

On the import side also, the share of down market products diminished rapidly (to 45.5% in 2008, from 56.8% in 1995) while that of high-price /quality range increased to 21.8% (from 12% in 1995), and that of medium-price/quality goods to 32.7 % (from 30.5%). This upgrading took place in all stages of production, and was most remarkable in the case of parts & components [see Gaulier *et alii*, 2009]. Imports from the new members were responsible for most of this shift as the eastward enlargement has accelerated their catch-up process and strengthened their productive links with European industries. Regional integration has thus enabled the emerging new members to carve their place in the value-added chain and to climb up the price/quality ladder. The question is whether the emerging Europe's industries, thanks to their quality upgrading, have broken away from price competition from other regions, namely from Asia.

At the same time, the integration of emerging economies within an enlarged Europe has improved the competitiveness of European industries which have found rapidly expanding markets in the neighbourhood [Curran & Zignago, 2009; Fontagné and Gaulier, 2008; Sachwald, 2005]. The EU15 has achieved its most rapidly expanding trade surpluses with emerging Europe & Periphery in high quality ranges and in capital goods.

Table 6 - EU15 manufacturing trade with Emerging Europe & Periphery by stage of production and price/quality range

Production stage	Price/ quality range	EXPORTS		IMPORTS		TRADE BALANCE	
		%	point %	%	point %	billion Euros	
		2008	1995-2008	2008	1995-2008	2008	1995-2008
Semi-finished		**32.8**	**-2.5**	**40.3**	**-7.4**	**29.1**	**+25.3**
goods	Low	10.4	-1.6	19.2	-8.9	-9.9	-2.9
	Medium	11.3	-0.1	13.0	-0.9	12.7	+10.4
	High	11.1	-0.8	8.1	+2.3	26.3	+17.8
Parts &		**19.1**	**+2.8**	**19.8**	**+9.7**	**28.0**	**+18.0**
Components	Low	7.1	+0.6	9.6	+3.2	3.7	+1.4
	Medium	6.4	+1.8	5.4	+3.2	13.0	+9.7
	High	5.6	+0.4	4.7	+3.3	11.3	+6.9
Consumption		**24.4**	**-2.6**	**29.2**	**-7.5**	**24.2**	**+21.4**
goods	Low	9.5	-4.2	11.2	-7.4	9.6	+8.3
	Medium	7.7	+0.3	11.4	-2.0	1.1	+2.7
	High	7.2	+1.3	6.5	+1.9	13.4	+10.4
Capital		**23.7**	**+2.3**	**10.7**	**+5.1**	**76.2**	**+57.6**
goods	Low	8.0	-0.0	5.4	+1.7	20.4	+14.6
	Medium	8.7	+2.2	2.8	+2.0	31.1	+24.8
	High	7.0	+0.2	2.5	+1.5	24.7	+18.2
Total		**100.0**	**0.0**	**100.0**	**0.0**	**157.4**	**+122.3**
manufacturing	Low	35.0	-5.2	45.5	-11.3	23.8	+21.3
	Medium	34.1	+4.1	32.7	+2.3	57.9	+47.6
	High	30.9	+1.1	21.8	+9.0	75.8	+53.4

Source: Authors' calculations from Eurostat Comext database.

2.4 Trade with Emerging Asia

A bias towards high-technology products

The EU15 exports to emerging Asia, as to the rest of the world, have remained dominated by Medium-high technological industries (with 52% of exports in 2008, **Figure 6**). This is the only category in which the EU15 holds a structural trade surplus with emerging Asia. The second most important category is high-technology industries which recorded a remarkable rise of from 19% to 27%, resulting in a strong bias towards this product category: in 2008, the EU15 exported relatively twice more high-technology goods to emerging Asia than it did to emerging Europe & Periphery. One of

the reason pertains to the product composition of exports, as most transport equipment exported to Asia belongs to aircraft industry, classified as high-tech sector, while exports to neighbours comprise mainly vehicles, classified in the medium-high technological industries. But, more generally, the composition of the EU15 exports to Asia appears skewed in favour of high-tech industries and away from low-tech ones. Using a narrower definition of high-technology content (at the detailed product level, see **appendix A.3** for this narrow definition) shows that the share of high-tech *products* in the EU15 exports to emerging Asia (15.6%) was almost three times larger than in exports to emerging Europe & Periphery (6.0%, **Table 7**).

One interpretation of the difference between the technological levels of the EU15 exports to emerging Asia and emerging Europe is that transfer of technology to distant countries tends to be incorporated in the exported goods, because the costs of relocating production increase with the distance [Keller and Yeaple, 2009]. By contrast, technology transfer to neighbour countries tends to be made through direct investment, and there has been indeed large flows of FDI in the EU new members and in other neighbour countries (Central Europe and Turkey).

Similarly, on the import side, the technological level of traded goods has improved significantly. Low-technology sectors plummeted from 55% to 38% of the EU15 imports and the high technology sectors have rocketed from 18% in 1995 to 30% in 2008 (see **Figure 6**).

The EU15 trade with emerging Asia has thus been driven by high-technology sectors. **Table 7** based on the narrower definition of high-technology products shows that this trend has been the result of surge of trade in electronic goods, which now account for approximately 29% of the EU15 exports and imports to/from the region. The sector has been at the core of an intensified international division of labour within Asia, which moved the final stages of production from mature economies to emerging ones, and namely to China [Gaulier *et alii*, 2006]. As a result, telecommunication equipment, computers and office machinery have become the two most important sectors in the EU15 imports from emerging Asia. Asia thus holds a much stronger position as a supplier of technologically sophisticated goods than emerging Europe & Periphery. In 2007, 8.1% of Asian goods imported by the EU15 were high-tech goods against less than 3.3% of goods from Europe & Periphery.

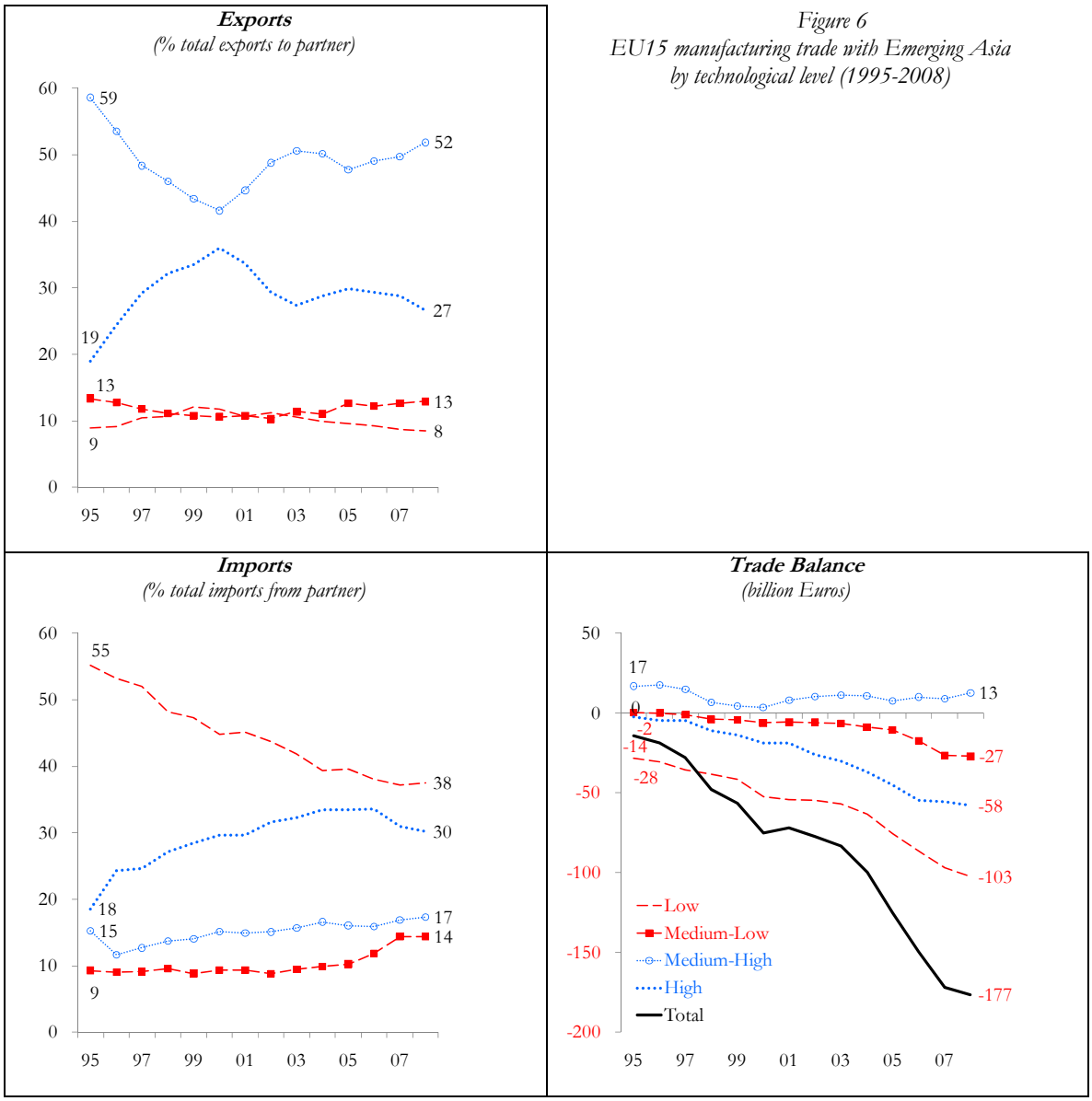


Figure 6
EU15 manufacturing trade with Emerging Asia by technological level (1995-2008)

Source: Authors' calculations from Eurostat Comext database.

Table 7 - EU15 trade with DEEs in Europe & Periphery and in Asia: - high-tech products'* share by industries, 2008

	Europe & Periphery		Asia-Oceania	
	HT	Total	HT	Total
EXPORTS	**6.0**	**100.0**	**15.7**	**100.0**
Energy	0.0	3.3	0.0	0.4
Food-Agriculture	-	6.2	-	2.7
Textiles	-	6.2	-	2.2
Wood-Paper	0.0	5.7	0.1	3.7
Chemicals	1.1	18.4	1.3	15.0
Mining-Metallurgy	-	6.1	-	7.0
Machinery	0.9	21.2	2.1	29.0
Electrical machinery	0.5	5.7	1.0	7.8
Electronics	2.7	11.1	4.4	16.2
Transport equipment	0.8	16.2	6.8	16.1
IMPORTS	**3.3**	**100.0**	**8.1**	**100.0**
Energy	0.4	13.3	0.0	1.2
Food-Agriculture	-	5.5	-	4.5
Textiles	-	10.1	-	21.5
Wood-Paper	0.0	6.3	0.0	12.1
Chemicals	0.2	10.3	0.6	9.1
Mining-Metallurgy	-	9.9	-	4.1
Machinery	0.4	11.5	0.1	10.4
Electrical machinery	0.4	6.5	0.4	5.0
Electronics	1.7	11.2	6.8	28.9
Transport equipment	0.2	15.3	0.2	3.1

** See **appendix A.3** for high-tech products (narrow definition) and **appendix A.2** for industries definition.*

Source: Authors' calculations from Eurostat Comext database.

"Exchange of qualities"

A most remarkable trend in EU15 trade with emerging Asia is that while exports shifted to higher price/quality goods, imports remained dominated by low-price/quality goods. These diverging trends can be interpreted as an improvement of the EU15 "terms of trade" with this area (**Table 8**).

The EU15 exports to emerging Asia clearly shifted away from low- towards medium- and high- price/quality range. Indeed in 2008, the EU15 exports to this group

of countries contain relatively much more high-end goods (45%) and less low-end goods (21%) than exports to emerging Europe & Periphery (for which the corresponding figures were 31% and 35%). This bias in favour of up-market goods is observed in all production stages and seems to conflict with the usual observation according to which the demand for quality increases with the level of income of importers.

Two reasons can be put forward to explain this apparent paradox. First, the geographic distance and the costs of entry into distant markets are likely to have a selection effect on exports and exporters, raising the price/quality level of the exported goods [Baldwin and Harrigan, 2007; Crozet *et* alii, 2008]. Second, a large proportion of intermediate goods are imported by emerging Asian countries for processing and assembly, which drives up their quality/price level as the final product is to be exported to rich countries. And indeed, exports of high quality/price in parts and components (P&C) were the fastest growing export segment of the EU15 to emerging Asia during this period which gives ground to this second reason.

Table 8 - EU15 manufacturing trade Emerging Asia - by stage of production and price/quality range

Production stage	Price/quality range	EXPORTS % 2008	EXPORTS point % 1995-2008	IMPORTS % 2008	IMPORTS point % 1995-2008	TRADE BALANCE billion Euros 2008	TRADE BALANCE billion Euros 1995-2008
Semi-finished		**25.8**	**+0.6**	**21.4**	**-2.9**	**-32.2**	**-29.1**
goods	Low	8.4	-1.0	12.2	-2.4	-26.3	-22.0
	Medium	6.1	-0.9	5.3	-1.8	-8.4	-7.3
	High	11.3	+2.5	3.8	+1.3	2.5	+0.1
Parts &		**30.5**	**+7.2**	**15.4**	**+3.3**	**-8.4**	**-11.5**
Components	Low	4.8	-2.8	9.9	+2.4	-23.9	-22.9
	Medium	9.1	+1.6	3.6	+1.4	0.5	-1.5
	High	16.6	+8.5	1.9	-0.5	15.0	+12.8
Consumption		**12.0**	**+1.5**	**38.7**	**-13.0**	**-101.8**	**-76.3**
goods	Low	2.5	-0.6	25.7	-8.7	-74.3	-55.6
	Medium	4.8	+2.7	12.0	-2.0	-30.1	-22.9
	High	4.7	-0.6	1.1	-2.3	2.5	+2.2
Capital		**31.7**	**-9.4**	**24.5**	**+12.6**	**-34.5**	**-45.5**
goods	Low	5.5	-5.5	13.0	+5.4	-32.4	-32.8
	Medium	14.0	+1.3	8.3	+5.3	-7.5	-11.3
	High	12.2	-5.1	3.2	+1.9	5.4	-1.4
Total		**100.0**	**0.0**	**100.0**	**0.0**	**-176.9**	**-162.5**
manufacturing	Low	21.2	-9.9	60.8	-3.3	-156.9	-133.2
	Medium	34.0	+4.7	29.1	+2.9	-45.5	-43.0
	High	44.8	+5.2	10.1	+0.4	25.4	+13.7

** See **appendix A.4** for the classification by production stages.*

Source: Authors' calculations from Eurostat Comext database.

Interestingly, even the consumer goods exported to emerging Asia encompass a relative large proportion of medium- and high-price/high-quality goods (**Table 8**). Consumer goods are under-represented in exports to emerging Asia (12%, compared with 24% to emerging Europe & Periphery), which can be explained by the low level of income per capita combined with the low share of household consumption in GDP in East Asian, and by high custom tariffs. To penetrate the low-income markets, the European exporters have to target the upper-income households. Despite the rise of a local middle-class in the populous Asian emerging economies, only the categories at the

top of the income distribution can afford European consumer goods [World Bank, 2007].

Turning to the import side, a completely different picture stands out. Between 1995 and 2007, the EU15 imports from emerging Asia remained heavily concentrated (up to 61%) in low-price/low-quality products. Their share was hardly reduced compared to 1995, while that of middle-rang products increased slightly. It is generally observed in international trade that the price of goods is positively related to the development level of the exporter, and given the economic rise of emerging Asia during this period, one could have expected an improvement of its position in the quality ladder.

For Asian exporters, climbing up the technological ladder and upgrading the price-quality level of their products proved to be two distinct processes. The strong specialisation of emerging Asia in down-market goods reflects mainly the position of China, which account for 70% of the EU15 imports from emerging Asia in 2007. Several research works have underlined that China was specialised in the lowest segment of the market and that this position did not changed dramatically between 1995 and 2004 [Fontagné *et alii*, 2008; Lemoine and Ünal-Kesenci, 2008].

All in all, the structure of imports from Asian emerging economies, by quality range and technological level, has to be interpreted in the light of the reorganisation of industry within the Asian region, as the firms in mature economies have offshored large parts of their production processes to China. Developed countries (Japan, Taiwan, and South Korea) moved their production lines to China which has become a production hub for high-technology (mainly electronic) goods [Rodrik, 2006; Zeng and Williamson, 2007]. Even imports of high-tech goods (narrow definition) from emerging Asia remained heavily concentrated in low-price/low-quality segment (about 60% in 2007).

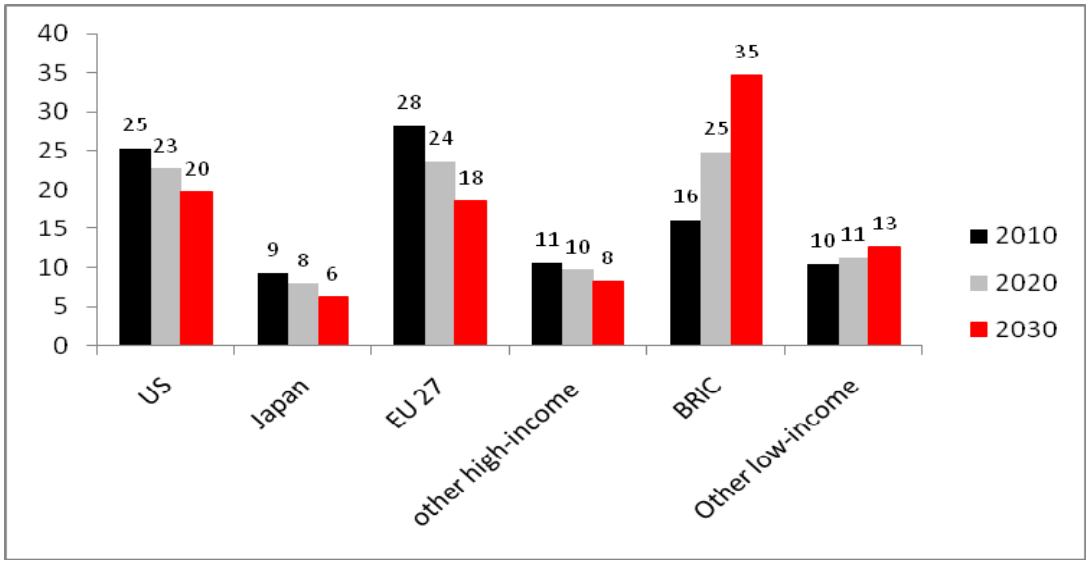
3. Trade with the Large Emerging Economies

3.1 The LEEs taking the lead

Indeed, in the recent years, the EU15 periphery has undergone a radical change as several countries have joined the EU and some of them have reached a level of GDP per capita which puts them among the high-income countries (the Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Malta, Poland, Slovak Republic which have a GDP per capita above $12,196 in 2009, WDI May 2011). Many of them have been severely affected by the global crisis since 2008 and they cannot be expected to offer rapidly expanding markets in the years to come as they did in the past decade. Russia and Turkey have proved more resilient and able to recover. In the south of Mediterranean, it is yet to be seen whether the political changes which have been taking place since early 2010, will pave the way for an economic take-off of the region.

The global crisis has strengthened the positions of the large emerging economies (LEEs, *i.e.* Brazil, Russia, India, China, Mexico, and Turkey) in the world and according to most prospective studies, this is a long term structural shift (**Figure 7**). This section turns to the analysis, the EU15 trade with these LEEs which are likely to be its fastest expanding markets in the years to come.

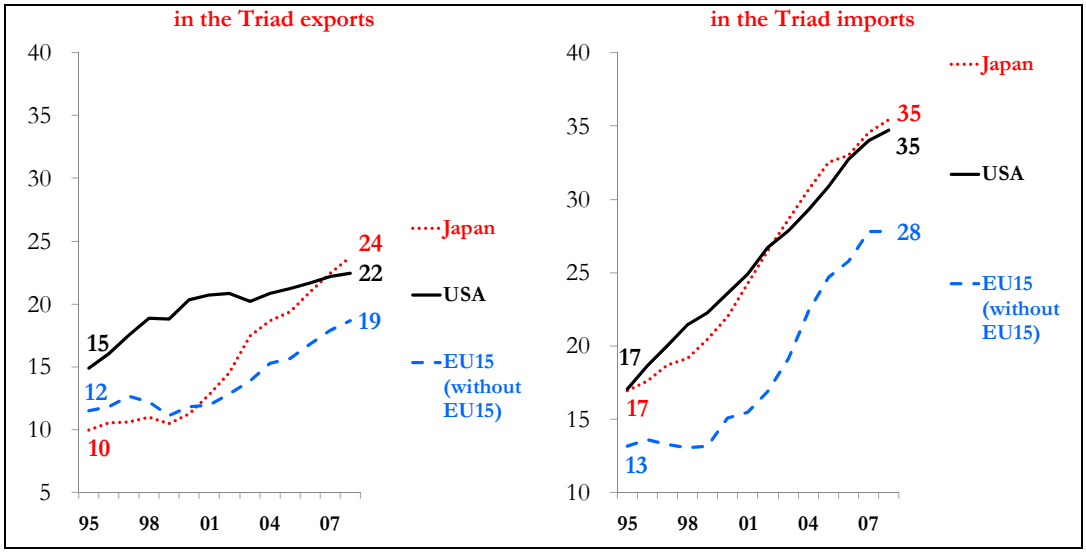
Figure 7 - 2010-2030: share of world GDP - (GDP in current international $)



Source: Fouré et alii*, 2010.*

As shown in figure 8, from 1995 to 2008, the Triad's trade with the six LEEs increased at an accelerated pace. Japan and the US have been relatively more oriented towards these markets than the EU15 which has been more oriented towards Central and Eastern Europe (**Figure 8**). We will analyse the EU15 exports to each of the six LEEs in order to elicit what have been the driving forces of the European presence in these dynamic markets. We will focus on the performance of the four largest European trade powers, Germany, France, the UK and Italy.

Figure 8 - LEEs'* share in the manufacturing trade of the Triad - 1995 to 2008 (%)



**Brazil, Russia, India, China, Mexico, Turkey.*

Source: Authors' calculations from CEPII, CHELEM-INT database.

3.2 Russia: the largest emerging market for Europe

Several major trends in the LEE trade with the Triad can be drawn from **Table 9.**[3]

Only China, India and Turkey, increased their global imports at a rate well above world average. Their share in world imports increased substantially, while this was not the case of Brazil; Mexico and Russia.

All the LEEs, except Russia, turned away from the Triad and sourced a growing proportion of their imports from the rest of the world. The share of the Triad plummeted from 61.4% in 1995 to 50.7% of their global imports. The US accounted for most of this loss.

Geography matters. The largest bilateral trade flows still take place between neighbours: between Japan and China, the EU15 and Russia, the US and Mexico. Hence, for the EU15, Russia is a more important market than China, while the reverse is true at world level.

The EU15 has resisted better than the US and Japan to the diversification of the LEEs' trade away from the Triad, observed above. This was due the EU15 strong export performance in two directions: Russia and China. Russia has been the EU15 leading market. From 1995 to 2008, the expansion of the EU15 exports to Russia was larger than to China, while the reverse was true at world level. In 2008, the EU15 provided Russia with 45% of its imports of manufactured goods, versus 37% in 1995. In China, the European exporters maintained their position, while Japan and the US receded. In other markets, the EU exporters achieved contrasted performance. They did not keep up with the strong import demand of India and Turkey, which both diversified their suppliers and deprived the EU15 from the dominant positions it had in the two markets (its share in Indian imports, fell from 33% to 24%; in Turkey' imports from 52% to 41%). The EU15 also lost its dominant position in Brazil (its share fell from 48% to 26%). Its small share in Mexico's imports remained stable (13%).

All in all, for the EU15 as a whole, exports to the LEEs have been increasingly concentrated in two markets, Russia and China, which were the two drivers of its exports. By contrast, the strong links with Turkey and India have weakened, and trade with American LEEs suffered from the relatively slow growth of their global import demand.

[3] The following analysis concerns, like the tables it refers to, trade in manufactured products.

Table 9 Share of the Triad in LEEs manufacturing imports - (in % of LEEs' manufacturing imports from the world)

	2008				
	EU15	**USA**	**Japan**	**Triad**	**World**
LEEs	**24.7**	**14.6**	**11.4**	**50.7**	**100.0**
China	6.5	3.5	8.7	18.7	40.0
Russia	7.5	0.5	1.0	9.0	16.6
Mexico	1.9	7.4	0.6	9.9	14.3
India	2.6	1	0.5	4.1	10.7
Turkey	3.9	0.4	0.2	4.5	9.5
Brazil	2.3	1.7	0.4	4.4	8.9
	1995-2008 changes				
LEEs	**-1.3**	**-7.6**	**-1.8**	**-10.7**	**0.0**
China	+1.0	-0.5	-1.2	-0.7	-5.6
Russia	+1.4	-0.2	+0.7	+1.9	-1.8
Mexico	+0.2	-5.3	-0.5	-5.6	-2.9
India	-0.9	+0.1	-0.3	-1.1	1.6
Turkey	-1.0	-0.3	-0.1	-1.4	1.4
Brazil	-2.0	-1.3	-0.4	-3.7	-3.9

Source: Authors' calculations from CEPII, CHELEM-INT database.

Russia and China rank first in the exports of each of the four major European exporters, Germany, France, Italy, the UK, although they display contrasted performance and different geographic patterns of exports (**Table 10**).

Germany has strengthened its already dominant position in the European exports, thanks to its exports to China and Russia. German exports to China achieved an outstanding growth and were responsible for most of the European advance in this market. In 2008, almost half China's imports from the EU15 came from Germany. China has overtaken Russia as a market for German goods, which reflects a specific orientation of trade compared to the EU average. German export growth to other LEEs stood more or less below the European average.

Italy still ranked second in the EU15 exports to the LEEs in 2008, but had lost ground since 1995. Russia remained by far its major emerging market, followed by Turkey. The growth of Italian exports to most LEEs was significantly below the European average during this period.

The French exports to the LEE group are in 2008 at par with the Italian exports (around 12% of total EU15), but France's major emerging market since 1995 has been China. France has remained China's second European supplier, although, its share slightly diminished (from 13.9 to 12.7%). Russia was its second fastest growing market,

but its exports to this country have remained relatively low by European standards. French exporters are relatively more oriented towards Turkey, India and Brazil, with better that average European performance in the two latter markets.

In 2008, the UK stood far behind the France in every LEE market, except in India, but achieved better export growth in Russia and China between 1995 and 2008, where the British exporters strengthened their positions, while it receded in the other markets.

The EU15 countries recorded a better than average export performance. They are somewhat more oriented towards Russia which was their fastest expanding market, but are much less oriented towards China. Contrary to the "big four" they achieved a much faster expansion of their exports to Mexico and Turkey than to China and their share in the EU15 exports to these markets strongly increased.

Table 10 - Four biggest EU countries: Breakdown of manufacturing exports to LEEs (% of LEEs manufacturing imports from the EU15)

	Germany	Italy	France	UK	Rest EU15	EU15
	2008 (%)					
LEEs	**37.7**	**12.7**	**11.5**	**7.1**	**31.0**	**100.0**
Russia	11.8	4.1	2.7	1.9	11.0	31.4
China	12.0	2.4	3.3	1.9	6.3	25.9
Turkey	5.4	2.8	2.2	1.0	5.2	16.5
Brazil	3.0	1.3	1.3	0.8	2.9	9.3
India	2.9	1.2	1.2	1.2	2.4	8.9
Mexico	2.6	1.1	0.8	0.4	3.1	8.0
	1995-2008 change (point of %)					
LEEs	**+3.5**	**-4.5**	**-0.6**	**-0.6**	**+2.2**	**0.0**
Russia	+3.6	+0.4	+0.3	+0.5	+1.3	+6.2
China	+4.8	-1.0	+0.4	+0.6	+0.3	+5.1
Turkey	-1.2	-1.2	-0.4	-0.7	+1.2	-2.3
Brazil	-2.9	-2.7	-0.4	-0.4	-2.0	-8.4
India	-0.7	-0.2	-0.1	-0.5	+0.1	-1.4
Mexico	-0.2	+0.3	-0.4	-0.1	+1.4	+0.9

Source: Authors' calculations from Eurostat Comext database.

3.3 What has driven the exports to the LEEs?

We turn now to the characteristics of the EU15 export flows which have driven to the LEEs.. Which technological level, which stage of production, which quality range has been the most dynamic?

Medium-high technology goods exports to Russia

The EU15 exports recorded their biggest increase (**Table 11**) in MHT sectors to Russia (Machinery, Motor vehicles and Chemicals) and in HT goods to Russia (electronics, pharmaceuticals). The next biggest increases took place in exports to China of MHT industries (Motor vehicles, Chemicals) and of HT industries (mainly Aeronautics). The other fastest growing HT exports were directed to India (electronics) and Turkey (pharmaceuticals, electronics).

Germany has built its export performance on MHT and HT industries and holds a growing share in the EU15 exports in these two categories of products (**Table 12**). Italy's strength in the large emerging markets comes from its exports of MHT goods (machinery) as it was still the second supplier of these products in 2008, although its share decreased (from 10.8% to 6.8%). France holds a strong position HT goods (thanks mainly to Aeronautics) for which it stands as the second supplier of the LEEs with a share rising from 19% to 22%. However due to the weakness of its machinery exports, France lagged far behind Italy in MHT exports to the LEEs.

Table 11 EU15 manufacturing exports to LEEs by technological level* - Detail by importing country (in % of total LEEs' manufacturing imports from EU15)

	Low	Medium-Low	Medium-High	High	Total
	2008				
LEEs	**11.4**	**14.8**	**53.7**	**20.0**	**100.0**
Russia	5.8	3.6	16.2	5.5	31.1
China	1.8	3.1	15.4	5.8	26.1
Turkey	1.8	2.9	8.9	3.0	16.6
Brazil	0.6	1.4	5.2	2.1	9.3
India	0.7	1.7	4.4	2.1	8.9
Mexico	0.8	2.1	3.6	1.5	8.0
	1995-2008 change				
LEEs	**-6.5**	**2.3**	**-0.9**	**5.1**	**0.0**
Russia	-4.0	0.9	6.8	2.4	6.1
China	0.5	0.8	2.2	1.7	5.1
Turkey	-1.2	0.1	-1.7	0.6	-2.2
Brazil	-1.7	-0.4	-5.9	-0.4	-8.4
India	+0.1	-0.2	-2.0	+0.7	-1.5
Mexico	-0.1	+1.1	-0.3	+0.2	+0.9

** Broad definition, see **appendix A.3** for the technological level classification*

Source: Authors' calculations from Eurostat Comext database.

Table 12 - EU15 manufacturing exports to LEEs by technological level* - Detail by exporting EU country (in % of total LEEs' manufacturing imports from EU15)

	Low	Medium-Low	Medium-High	High	Total
	2008				
EU15	**11.4**	**14.8**	**53.7**	**20.0**	**100.0**
Germany	2.6	4.8	24.1	6.3	37.8
Italy	2.8	2.3	6.8	0.9	12.8
France	1.1	1.5	4.6	4.3	11.5
UK	0.6	1.3	3.7	1.5	7.1
Rest EU15	4.4	4.8	14.6	7.0	30.8
	1995-2008 change				
EU15	**-6.5**	**+2.3**	**-0.9**	**+5.1**	**0.0**
Germany	-2.1	+0.2	+3.3	+2.1	+3.5
Italy	-0.2	-0.1	-4.0	-0.2	-4.5
France	-0.5	+0.3	-1.7	+1.4	-0.6
UK	-0.5	+0.5	-0.6	-0.1	-0.6
Rest EU15	-3.2	+1.4	+2.0	+2.0	+2.2

** Broad definition, see **Methodological Appendix M.A.2** for the technological level classification*

Source: Authors' calculations from Eurostat Comext database.

Exports of capital goods to Russia, of P&C and consumption goods to China

In 2008, Capital goods remained the most important export category in the EU15 exports to the LEEs, but semi-finished goods and P&C were the most dynamic ones (**Table 13** and **Table 14**).

Looking at the different destinations reveals that the biggest increase took place in exports of capital goods to Russia, which received in 2008 almost one third of the EU15 exports, and has thus overtaken China as its most important market. Russia was also the largest market for consumption goods, absorbing half the EU15 exports in 2008, but China was by far the fastest growing destination for these goods, followed by Turkey and Mexico. The trends in the EU15 exports to China reflects on the one hand that this country has sourced more and more of its imports of capital goods from Asian countries; on the other hand that its increasing domestic demand of consumption goods has pushed up its imports from Europe [Gaulier *et alii*, 2011], a trend which has hold on since 2008.

The rising share of intermediate goods shows that the international division of labor has been an underlying factor of the EU15 exports to the LEEs. Exports of semi-finished goods as well as Parts & Components expanded rapidly to Russia and China, which have become the two most important markets. By contrast, these exports to Turkey have clearly lost steam, which reflects the relative weakening of its economic and trade relations with the EU15 in the past years.

Table 13 - EU15 manufacturing exports to LEEs by production stage - Detail by importing country

	Semi-Finished	Parts & Components	Consumption goods	Capital goods	Total
	2008				
LEEs	**27.2**	**22.8**	**20.5**	**29.4**	**100.0**
Russia	6.6	4.0	10.8	10.1	31.5
China	5.8	7.9	3.6	8.6	25.9
Turkey	5.8	3.8	3.1	3.8	16.5
Brazil	2.9	2.8	1.2	2.4	9.3
India	2.9	2.5	0.5	3.0	8.9
Mexico	3.1	1.7	1.4	1.7	8.0
	1995-2008 change				
LEEs	**+1.3**	**+2.4**	**-1.1**	**-2.6**	**0.0**
Russia	+1.9	+1.2	-0.9	+4.0	+6.2
China	+1.9	+3.3	+2.2	-2.4	+5.1
Turkey	-1.4	0.0	+0.5	-1.5	-2.3
Brazil	-1.5	-1.2	-3.6	-2.0	-8.4
India	-0.4	-0.5	+0.1	-0.6	-1.4
Mexico	+0.9	-0.5	+0.6	-0.1	0.9

Source: Authors' calculations from Eurostat Comext database.

Table 14 - EU15 manufacturing exports to LEEs by production stage - Detail by exporting country (in % of total LEEs' manufacturing imports from EU15)

	Semi-Finished	Parts & Components	Consumption goods	Capital goods	Total
	2008				
EU15	**27.2**	**22.8**	**20.5**	**29.4**	**100.0**
Germany	8.1	9.7	6.8	13.1	37.7
Italy	3.7	2.8	2.7	3.5	12.7
France	2.6	2.5	2.3	4.1	11.5
UK	2.1	1.6	2.1	1.3	7.1
Rest EU15	10.7	6.3	6.6	7.4	31.0
	1995-2008 change				
EU15	**+1.3**	**+2.4**	**-1.1**	**-2.6**	**0.0**
Germany	-0.6	+3.3	+0.7	+0.2	+3.5
Italy	-0.5	-0.6	-1.0	-2.4	-4.5
France	-0.0	-0.5	-0.1	+0.0	-0.6
UK	+0.1	-0.8	+0.8	-0.7	-0.6
Rest EU15	+2.4	+1.0	-1.4	+0.3	+2.2

Source: Authors' calculations from Eurostat Comext database.

Quality upgrading of exports

Quality upgrading has been a driving force of the EU15 exports to LEEs. The share of low-end goods in the EU15 exports fell from 34.5% to 26.1%. The middle-range products recorded the biggest expansion (reaching 35.5% of total exports in 2008), and the upper range products which make up the largest export category (38.4%) also expanded rapidly (**Table 15**).

The trend towards quality upgrading took place in exports to all LEEs, excepted to Turkey. Exports of upper-range goods recorded their biggest increase to China, secondarily to Russia. In fact, exports to China are characterized by an exceptional and increasing bias in favor of high-end goods (46% of EU15 exports to China) and away from low-end goods (17%). Exports to Mexico have also recorded a remarkable upgrading towards high range products. In a general way, quality upgrading has characterized the most dynamic export flows (to China, Russia, Mexico).

The four major exporters, as well as the rest of the EU15, improved the quality level of their exports but more or less rapidly (**Table 16**). German exporters were

particularly successful in accelerating their exports of mid-end and high-end goods, which taken together accounted for 83% of their total exports in 2008. French exporters were successful in accelerating their exports of mid-range products and were thus able to take advantage of the strong demand for this category of goods, but they have lagged behind the European average performance in high-end products.

Italy also improved its position in the price/quality ladder and the structure of its exports tended to converge with the European average. The British exports display a bias towards low-end products, but improved its performance in high-end goods. The rest of the EU15 achieved remarkable export performance in mid-range and in high-range goods.

Table 15 - EU15 manufacturing exports to LEEs by quality/price range - Detail by importing country (% of LEEs manufacturing trade with EU15)

	Low	Medium	High	Total
	2008 (%)			
LEEs	**26.1**	**35.5**	**38.4**	**100.0**
China	8.9	10.6	12.0	31.5
Russia	4.4	9.7	11.8	25.9
Turkey	5.7	5.8	5.0	16.5
Brazil	2.7	3.5	3.1	9.3
India	2.6	3.2	3.1	8.9
Mexico	2.0	2.7	3.3	7.9
	1995-2008 change (point of %)			
LEEs	**-8.4**	**+5.7**	**+2.7**	**0.0**
China	-0.4	+3.6	+2.9	+6.1
Russia	-1.3	+3.1	+3.4	+5.1
Turkey	-1.0	-0.9	-0.4	-2.3
Brazil	-4.7	-0.7	-3.0	-8.4
India	-0.8	+0.3	-0.9	-1.4
Mexico	-0.2	+0.4	+0.7	+0.9

Source: Authors' calculations from Eurostat Comext database.

Table 16 - EU15 manufacturing exports to LEEs by quality/price range - Detail by exporting country (% of LEEs manufacturing trade with EU15)

	Low	Medium	High	Total
	2008 (%)			
EU15	**26.1**	**35.5**	**38.4**	**100.0**
Germany	6.5	15.1	16.1	37.7
Italy	4.3	4.5	3.9	12.7
France	2.8	4.7	3.9	11.5
UK	2.7	1.9	2.5	7.1
Rest EU15	9.8	9.3	11.9	31.0
	1995-2008 change (point of %)			
EU15	**-8.4**	**+5.7**	**+2.7**	**0.0**
Germany	-1.5	+3.3	+1.7	+3.4
Italy	-3.7	-0.1	-0.6	-4.4
France	-0.8	+1.2	-1.1	-0.6
UK	-0.3	-0.4	+0.1	-0.6
Rest EU15	-2.1	+1.7	+2.6	+2.3

Source: Authors' calculations from Eurostat Comext database.

3.4 Prospects

To sum up, from 1995 to 2008, the EU15 succeeded in maintaining its position in the import market of the LEEs taken as a whole. Russia was a key factor for the EU15 performance in these markets, which can be explained by the geographic proximity and the nature of the Russian import demand (capital goods, MHT products). The second most important factor was German exports to China.

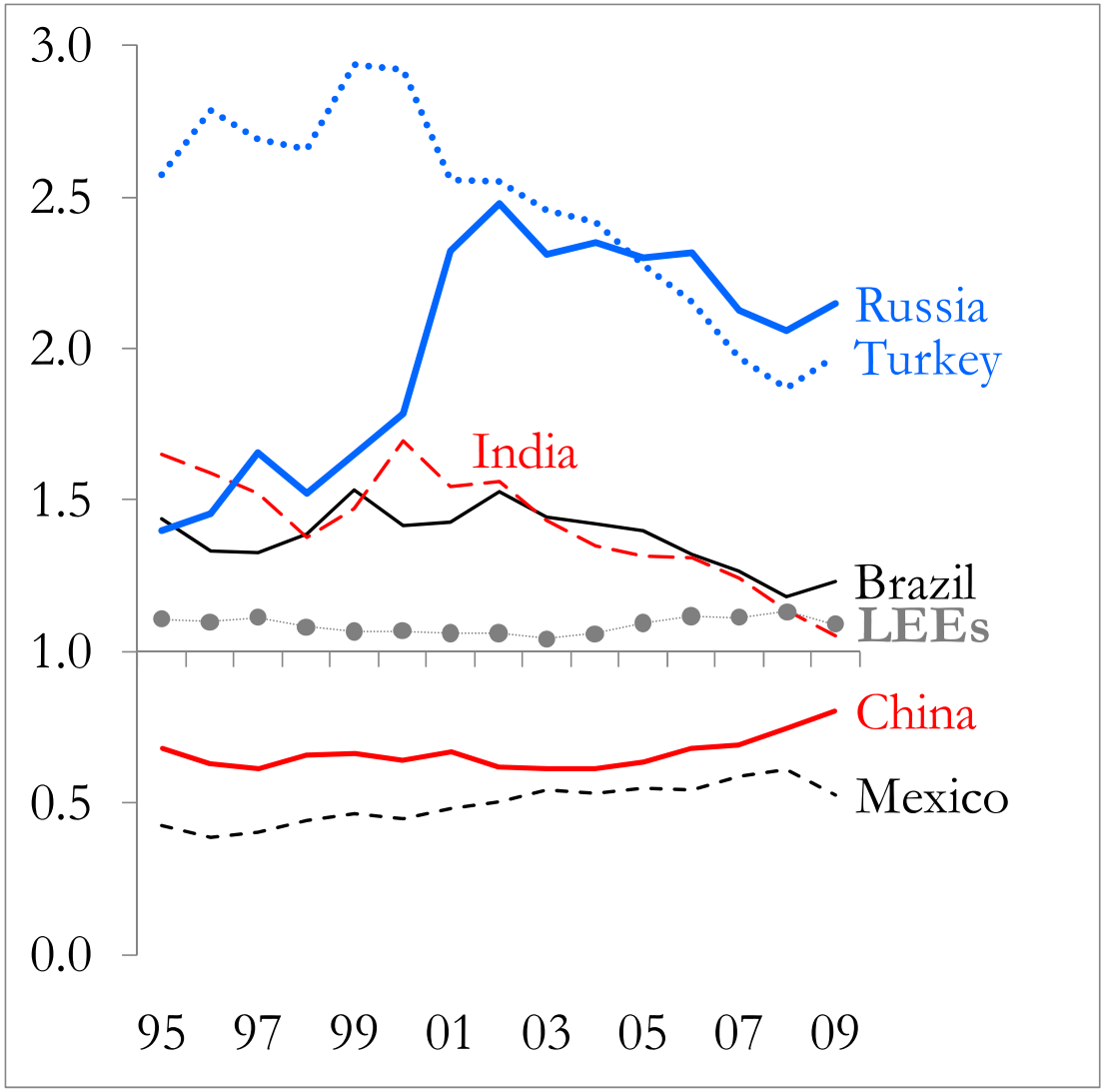
France's exports to the LEEs have kept up with the EU15 average, despite a relative weak position in Russian imports. The rapidly growing imports of consumption goods by China can be expected to provide opportunities to the French exporters in the future.

The "Big four" have increasingly concentrated their exports to Russia and China, but the other EU15 countries have directed a growing share of their manufactured exports to Mexico (a fast growing market for European goods) and Turkey.

The trends in the EU15 export intensities to the LEEs show that Europe has by far outperformed other suppliers in the Russian market. The relative position of the EU15 in the other large emerging markets tends to converge with the world average. Export intensity to Turkey and India, still high in the mid 1990s, declined as the economic emergence of these countries was associated with a geographic diversification of their foreign trade. The EU15 export intensities to China and Mexico have come closer to the world average, despite the fact the two countries still rely heavily on their

respective regional suppliers. Interestingly, when international trade plummeted in 2009 as a result of the global crisis, the European export performance improved in four out of six of the LEEs: Russia, Turkey, Brazil and China. This pick-up has accelerated the steady upward trend in the relative intensity of the EU15 exports to China, confirming they have still room for expansion in this market.

*Figure 9 - Relative intensity of EU15 manufacturing exports to LEEs'**
1995 to 2009



**Brazil, Russia, India, China, Mexico, Turkey. Relative intensity ratio: share of a country in the EU15 exports/ the share of this country in world exports. Intra-EU15 flows are excluded from EU15 and world trade.*

Source: Authors' calculations from CEPII, CHELEM-INT database.

Conclusion

The EU15 resisted better than the US and Japan to the reshuffling of international trade in favour of developing and emerging economies. Since 1995, these new players have taken an increasing part in the EU15 trade and have now overtaken the high-

income countries, both as suppliers and markets. They accounted for two-thirds of the EU15 export growth between 1995 and 2008. The expansion of the EU15 exports to the DEEs has been associated with their technological and quality upgrading.

From 1995 to 2008, the EU15 was most successful in enhancing its exports to the emerging economies located in Europe & Periphery (Central or Eastern Europe, Mediterranean countries) as the regional integration process and the EU15 neighbourhood policy have strengthened the effects of geographic proximity, and opened new expanding markets to European firms. At the same time, the EU15 imports from emerging Asia skyrocketed, giving rise to a ballooning trade deficit which was only partially compensated by its surplus with emerging Europe & Periphery.

With Emerging Europe and Periphery, the EU15 trade pattern reflects a convergence process driven by strong productive links and the regional integration process. Both exports and imports show an upgrading of their technological as well as price/quality levels. With emerging Asia, the EU15 exports have been increasing biased towards high-technological products and high-quality/price goods. On the import side, emerging Asia has accentuated its specific position as a supplier of high-technology at low cost.

In a context of uncertain recovery in the rest of the world, the large emerging economies (Brazil, India, China, Russia, Mexico and Turkey) are expected be the Europe's most dynamic export markets in the future. Since 1995, the EU15 has succeeded in maintaining its position in these markets, which was not the case of the US nor of Japan. Russia was a key factor in the EU15 performance, which may be explained by its geographic proximity and the nature of the Russian import demand (capital goods, medium-high technology products). The second most important factor was German exports to China. Italy ranks second in the EU15 exports to the LEEs, due to its strong performance in the Russian market; but France has kept its second position in China's market. The "Big four" (Germany, Italy, France, and the UK) have increasingly concentrated their exports to Russia and China, but the other EU15 countries have directed their most dynamic exports to Mexico (a fast growing market for European goods) and Turkey.

The trends in the EU15 export intensities to the LEEs show that Europe has by far outperformed the other suppliers in the Russian market. In the other large emerging markets, the positions of the EU15 tend to converge with the world average. In 2009, when international trade plummeted as a result of the global crisis, the European export performance improved in four out of six of the LEEs. This pick-up has accelerated the upward trend in the still low intensity of the EU15 exports to China.

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Appendices

A.1 Geographical classification

The present study uses a definition of developing and emerging economies (DEEs) based on their income per capita. The DEEs are those whose per capita income was in 1995 below the threshold used by the World Bank in its definition of high income (HI) countries (9,386 US dollars in 1995 [see World Bank, 2009]).

High income countries	
Asia-Oceania	Australia, Brunei, Hong Kong, Japan, Macau, New Zealand, South Korea, Singapore, Taiwan.
Europe & Periphery	Andorra, Austria, Belgium, Cyprus, Denmark, Faroe Islands, Finland, France, Germany, Gibraltar, Greece, Iceland, Ireland, Israel, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom.
Gulf & Sub Saharan Africa	Bahrain, Kuwait, Qatar, United Arab Emirates.
America	Canada, USA.
DEEs	
Asia-Oceania	
China	
India	
Other Asia-Oceania	Afghanistan, Bangladesh, Bhutan, Cambodia, Indonesia, North Korea, Lao, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Timor Leste, Tonga, Tuvalu, Vanuatu, Viet Nam.
Europe & Periphery	
EU-NMS	Bulgaria, Czech Republic, Czechoslovakia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia.
Turkey	
Other Mediterranean countries	Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia, West Bank & Gaza.
Russian Federation	
Other Europe & Periphery	Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Georgia, Kazakhstan, Kosovo, Kyrgyzstan, Macedonia, Moldova, Montenegro, Serbia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.
Gulf & Sub Saharan Africa	
Arab & Persian Gulf countries	Iran, Iraq, Oman, Saudi Arabia, Yemen.
Sub Saharan Africa	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo-Democratic Republic, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe
America	
Mexico	
Brazil	
Other America	Argentina, Belize, Bolivia, Canal zone of Panama, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay, Venezuela.

A.2 Classification by industries and groups of industries

Industry Groups	Industry (ISIC rev.3 Code)
Energy	10='Mining of coal & lignite'
	11='Extraction of crude petroleum & natural gas'
	12='Mining of uranium & thorium ores'
	23='Coke, refined petroleum products & nuclear fuel'
	40='Electricity, gas, steam & hot water supply'
Food-Agriculture	01='Agriculture, hunting'
	02='Forestry, logging'
	05='Fishing, fish farming'
	15='Food products & beverages'
	16='Tobacco products'
Textiles	17='Textiles'
	18='Wearing apparel'
	19='Leather'
Wood-Paper	20='Wood & of products'
	21='Pulp, paper & paper products'
	22='Publishing, printing & reproduction of recorded media'
	36='Furniture; manufacturing n.e.c.'
Chemicals	241='Basic chemical products'
	2423='Pharmaceutical products'
	24-(241+2423)='Other chemical products'
	25='Rubber & plastic'
	26='Non-metallic mineral products'
Mining-Metallurgy	13='Mining of metal ores'
	14='Other mining & quarrying'
	27='Basic metals'
Machinery	28='Metal products'
	29='Machinery'
Electrical machinery	31='Electrical machinery'
Electronics	30='Office machinery & computers'
	32='Radio, TV & communication equipment'
	33='Medical, precision & optical instruments'
Transport equipment	34='Motor vehicles, trailers & semi-trailers'
	35='Other transport equipment'

A.3 Broad and narrow classifications by technological level

The definition of the technological content is based on indicators of technological intensity in OECD countries, such as R&D expenditures divided by value added, R&D expenditures divided by production.

On the basis of this definition, two types of classification of high-technology products can be made:

- at a broad category level: the indicators of technology content are calculated at the industry level and all the products within a high-tech branch are considered as "high-tech" products;
- at a detailed product level within a broad category.

The first methodology is the most widely used. Manufacturing branches ISIC rev.3, at 2 or 3 digit level are classified into 4 technological levels: high-technology, medium-high-technology; medium-low-technology; and low-technology.

	Industry	**ISIC rev.3 Code**
High technology	Pharmaceuticals	2423
	Office, accounting and computing machinery	30
	Radio, TV and communication equipment	32
	Medical, precision and optical instruments	33
	Aircraft and spacecraft	353
Medium-High technology	Chemicals excluding pharmaceuticals	24 excl.2423
	Machinery and equipment, n.e.c.	29
	Electrical machinery and apparatus, n.e.c.	31
	Motor vehicles, trailers and semi-trailers	34
	Railroad equipment and transport equipment, n.e.c.	352+359
Medium-Low technology	Coke, refined petroleum products and nuclear fuel	23
	Rubber and plastics products	25
	Other non-metallic mineral products	26
	Basic metals and fabricated metal products	27-28
	Building and repairing of ships and boats	351
Low technology	Food products, beverages and tobacco	15-16
	Textiles, textile products, leather and footwear	17-19
	Wood, pulp, paper, paper products, printing and publishing	20-22
	Manufacturing, n.e.c.; Recycling	36-37

Source: OECD (2005).

In this classification high-technology industries include all products belonging to the high-tech industry. It has to be noted that this methodology introduces a serious selection bias, since not all products in a "high-technology industry" necessarily have a high-technology content. Likewise, some products in industries with low-technology intensity may well incorporate a high degree of technological sophistication.

The second methodology first defines large high-tech industries (as described above) and then selects, within this high-tech industries and a detailed level, the products having a high content in R&D. The definition of high-tech products used in CEPII studies refers to this second way [Fontagné et alii, 1999]. The nine high-tech industries that were selected in the first step were the following:

- aerospace;
- computers, office machinery;
- electronics-communications;
- pharmaceuticals;
- scientific instruments;
- electrical machinery;
- chemicals;
- other transport equipment;
- non-electrical machinery;
- weapons.

In the second step, within these broad categories, a list of 252 products (at the 6 digit level of the Harmonised System) were identified as high-tech [see Fontagné et alii, 1999]. It has to be noted that this methodology introduces another selection bias, since it identifies the high-technology products only in the branches that are considered as high-technology: the high-technology products belonging to non technological branches are thus implicitly excluded.

The present study makes use of the two classifications.

A.4 Classification by stage of production

Production stages	Code BEC*	
	111	Food and beverages, primary, mainly for industry
Primary products	21	Industrial supplies n.e.s., primary
	31	Fuels and lubricants, primary
	121	Food and beverages, processed, mainly for industry
Semi-finished products	22	Industrial supplies n.e.s., processed
	322	Fuels and lubricants, processed
Parts & components	42	Of capital goods, except transport equipment
	53	Of transport equipment
Capital goods	41	Capital goods except transport equipment
	521	Other industrial transport equipment
	112	Food & bev., primary, mainly for household consumption
	122	Food & bev., primary, processed, for house. consumption
	51	Passenger motor cars
Consumption goods	522	Other non-industrial transport equipment
	61	Durable consumer goods n.e.s.
	62	Semi-durable consumer goods n.e.s.
	63	Non-durable consumer goods n.e.s.

** Broad Economic Categories of the United Nations.*

Source: United Nations Statistics Division (http://unstats.un.org/unsd/cr/registry).

A.5 Classification by type of trade

As a starting point of the method one makes the assumption that differences in prices within a product category mirror differences in quality [see Fontagné & alii, 2006]. Three comments have to be made regarding such assumption: (i) it is only acceptable with the most detailed trade data, where aggregation of different products within one product category is minimised. Here we rely on eight digits of Harmonised System; (ii) second, though there are good reasons leading to slight departures from a strict association of prices with quality, trade economists are accustomed to this simplification; (iii) third, prices of traded products are not known: what is the price of "men's or boys' shirts of cotton, knitted or crocheted"? It is impossible to give a general answer, as each transaction has its own characteristics (such as time, place, volume, partners, and special conditions) and thus price. This is why average unit values are used

instead of prices, namely the value of one ton of men's or boys' shirts of cotton, in this example.

Therefore we first test whether reciprocal trade flows are of an intra-industry nature (imports represent at least 10 % of exports or reciprocally); second, if the answer is positive, we test whether unit values of elementary trade flows are similar or not (up to a 15 % difference in unit values is allowed). For this second step we calculate the unit value (value/quantity) for each elementary flow at the most detailed level, then we check whether unit values are similar for each reciprocal elementary flow in order to allocate the associated trade flow to a given category of product differentiation: horizontal in case of unit value similarity, otherwise vertical. We rely on a 15% threshold [see Fontagné & alii, 2006]. All calculations are made at the product, declaring country and partner levels, and the results are aggregated thereafter only.

A.6 Classification by quality/price range

The method to classify trade flows according to "quality/price" range relies also on elementary unit-values [see Fontagné & alii, 2006]. Quality/price ranges are simply defined by percentiles in each year and for each product in the SH eight digits classification: down-market under the 33rd percentile of unit-values, up-market above the 67th percentile, and middle-market in the middle of the distribution.