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The performance of
EU foreign trade:
a sectoral analysis

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I Introduction and summary

In the last decades, countries have become more and more interdependent through trade, production and financial market linkages. Reduction in tariffs, lower cost of transport and the opening-up of formerly closed economies have resulted in an increase in international trade, encouraging a rapid integration of global economies. New players in the world economy, notably China, India, Russia and the Eastern European countries have changed the pattern of global trade considerably. Whereas the shares of the United States and Japan in global exports have been gradually falling between 2000 and 2008, China's share has more than doubled (Table 1 and Chart 1). China's share of almost 9% in world exports in 2008 exceeded that of the United States. The share of the European Union extra exports in world exports has remained more or less constant.

The European Union has been able to maintain its global market position. Obviously, the sectoral specialisation of the European Union meets the composition of international demand. This brings us to the subject of this study: an analysis of EU

Table 1 Goods exports, 2000-2008

Shares of world exports

	2000	2001	2002	2003	2004	2005	2006	2007	2008
United States	12.1	11.8	10.7	9.6	8.9	8.6	8.6	8.3	8.1
EU-27	38.0	39.9	40.6	41.5	40.8	38.8	37.9	38.1	36.7
<i>EU-27 extra-exports</i>	<i>12.2</i>	<i>12.8</i>	<i>13.0</i>	<i>13.0</i>	<i>12.9</i>	<i>12.5</i>	<i>12.0</i>	<i>12.2</i>	<i>12.0</i>
Russian Federation	1.6	1.6	1.7	1.8	2.0	2.3	2.5	2.5	2.9
China	3.9	4.3	5.0	5.8	6.4	7.3	8.0	8.7	8.9
India	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.1
Japan	7.4	6.5	6.4	6.2	6.1	5.7	5.3	5.1	4.9
Rest of the world	36.3	35.1	34.8	34.3	34.9	36.4	36.7	36.2	37.5
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: WTO, Internationale Trade Statistics, 1997-2008, Table A06.

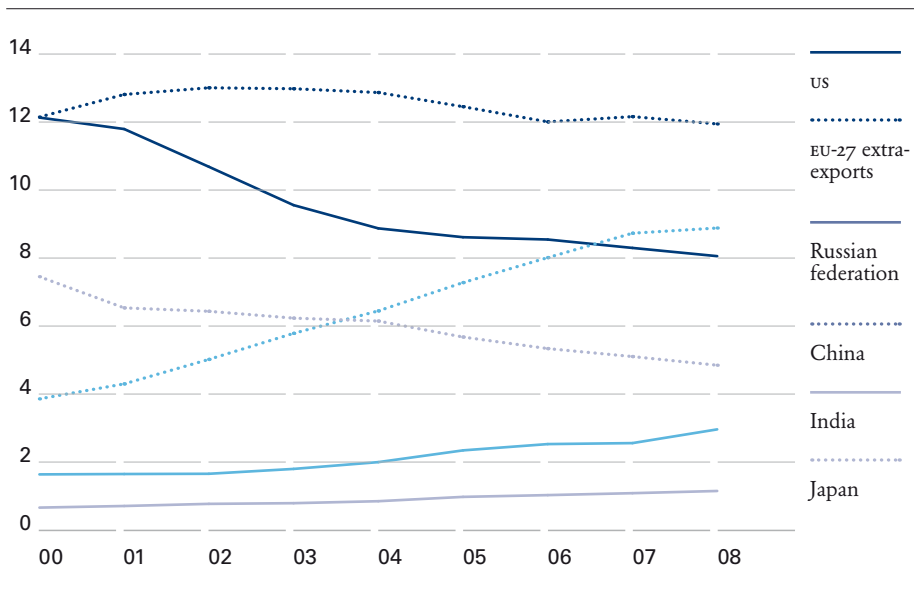
foreign trade. The first topic regards the performance of EU exports in relation to global exports. As an open economy, the EU may benefit from the growing volume of global economic activity. Whether this is realised depends, as a matter of fact, on its competitive position and the extent to which the composition of the exports package matches the composition of global demand. Second, the competitive position of the EU on its own 'domestic' market is examined, implying an analysis of EU imports.

As a methodology, the so-called 'Constant-Market Share analysis' (CMS analysis) is chosen. Given the objectives mentioned above and the data available, this methodology is applied to the external exports and imports of goods of the EU-15 as a whole, over the period 1999-2006. The year 1999 was chosen as a starting year, because in this year the euro was introduced, which may have been a stimulus for the exports of the countries which have joined the Economic and Monetary Union (EMU). As many data for 2007 are lacking, the sample runs to 2006, thereby excluding the financial crisis. In 1999, the European Union included 15 countries. For that reason, the analysis was carried out for the EU-15.

The results of the CMS analysis can be summarized as follows. Generally speaking, the European Union has been able to maintain its market position fairly well. Exports of EU-15 have greatly reaped the fruits of the growth of world trade and have capitalised fully on globalisation. The composition of the export package of

Chart 1 Goods exports, 200-2008

Shares of world exports



the EU-15 is oriented towards chemicals, machinery and transport equipment: the 'old economy'. With this product composition, exports are relatively well geared towards the demand of the new EU member states and to the non-EU European countries. Because of this, the EU-15 even has been able to slightly raise its share in global exports. By contrast, the product composition of EU-15 exports is less tailored to demand from East Asia, especially regarding electronics. Here EU-15 exports are underperforming. As to competitiveness, the EU-15 has lost some export market share in various sectors, such as electronics, transport and textiles, in non-EU Europe and East Asia. The results of the CMS analysis regarding imports indicate that on its own EU-15 market, competition from China, non-EU Europe and the new EU member states has intensified. China has achieved rising market shares in all sectors. This shows the strong position of China as a supplier of cheap products to European markets.

The remainder of this study is set out as follows. Section 2 offers some quantitative information on the product composition of exports and imports of the EU-15. Section 3 outlines the methodology of the CMS analysis of exports. Section 4 presents the findings on exports, followed by a discussion on the strengths and weaknesses of the composition of EU-15 exports. Section 5 discusses the methodology of the CMS analysis on imports. Section 6 shows the results of this analysis on imports. Finally, section 7 presents the conclusions.

2 Development of EU-15 foreign trade

This section provides data on the development and the composition of exports and import of the EU-15. As is outlined above, the CMS analysis is applied to the external exports and imports of goods of the EU-15 over the period 1999-2006. In the EU-15 area, exports of the manufacturing industry make up almost 95% of total exports of goods. Manufacturing exports of the EU-15 rose from USD 760 billion in 1999 to about USD 1,570 billion in 2006. In this period, on average, 24% of manufacturing exports consisted of chemical products, 22% of electrical and optical equipment and 19% of transport equipment (Chart 2).

Concerning selling areas, 25% of exports had the United States and Canada as a destination, 15% the new EU member states and 15% the Far East (Chart 3).

Imports of the manufacturing industry of the EU-15 make up about 75% of EU-15 imports of goods. EU-15 manufacturing imports rose from USD 700 billion in 1999 to almost USD 1,300 billion in 2006. In this period, on average, 16% of imports of manufactured products consisted of chemical products, 29% of electronic and optical equipment, 12% of transport equipment and 11% of textiles and leather (Chart 4).

Concerning countries of origin, 22% of manufacturing imports were from the United States and Canada, a third from the Far East and 14% from the new EU member states (Chart 5).

In all, in this period, the EU-15 had a surplus of exports over imports in chemicals, other machinery and transport equipment, and an export deficit in textiles, leather and footwear and in electronics (Chart 6).

As to trading areas, the EU-15 had an export surplus with non EU Western Europe, the new EU member states, the United States/Canada and the Rest of the World (Chart 7), while it had an export deficit with the Far East, including China.

Chart 2 EU-15 exports of manufactured goods

Average percentage of annual share by industrial category, 1999-2006

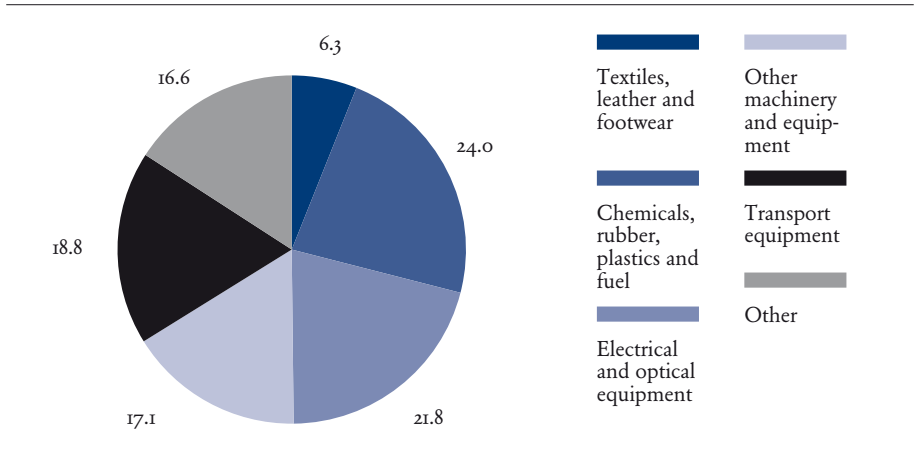
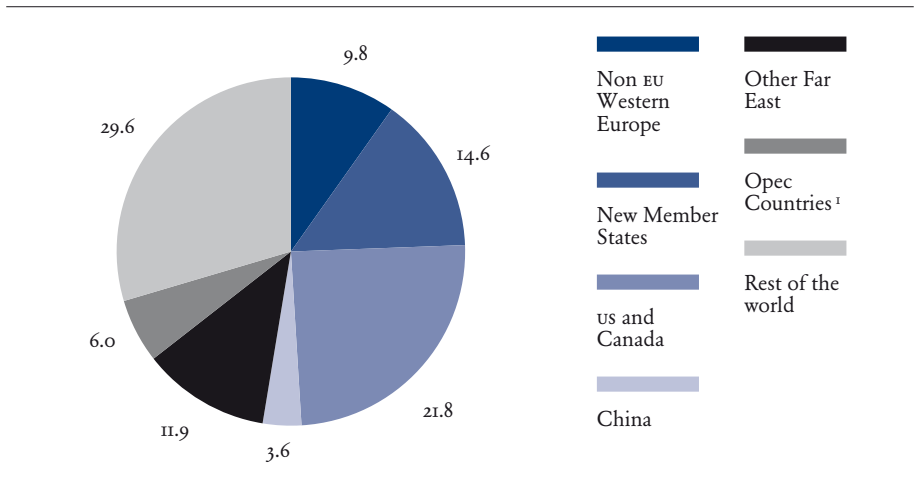


Chart 3 EU-15 exports of manufactured goods

Average percentage of annual share by destination, 1999-2006



¹ Excl. Indonesia.

Chart 4 EU-15 imports of manufactured goods

Average percentage of annual share by industrial category, 1999-2006

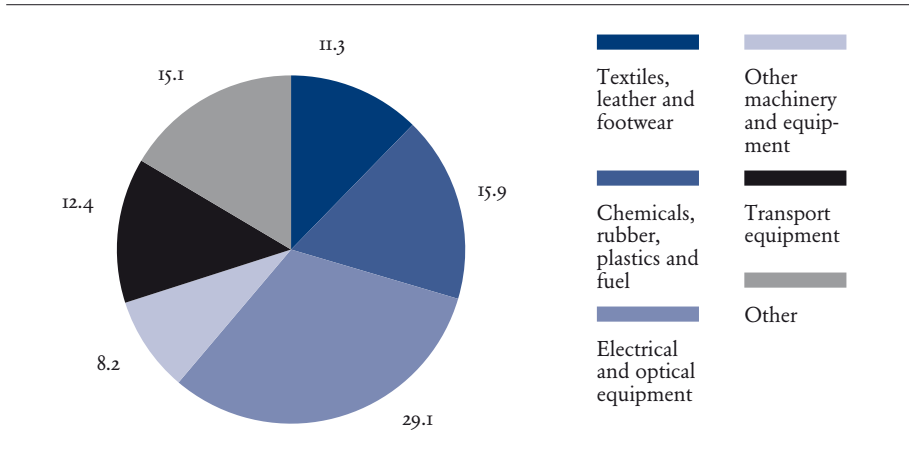


Chart 5 EU-15 imports of manufactured goods

Average percentage of annual share by origin, 1999-2006

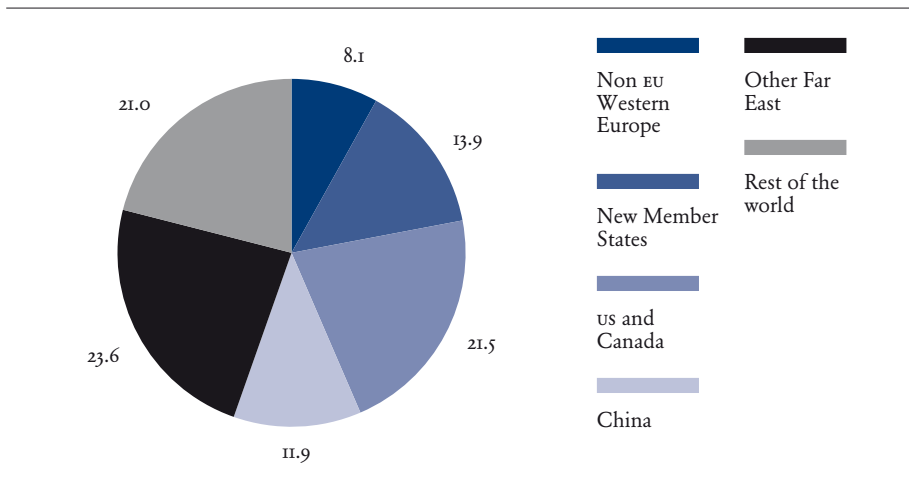


Chart 6 EU-15 net exports of manufactured goods, by industrial sector

Cumulative, 1999-2006; billions of us dollars

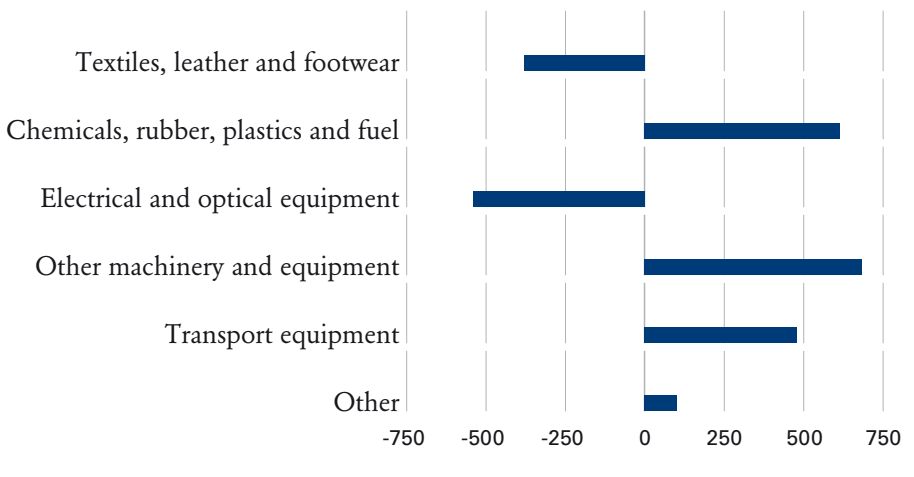
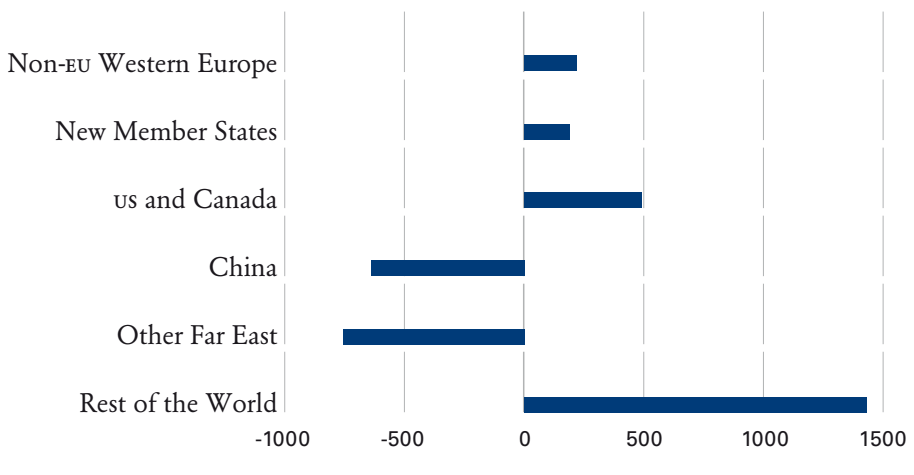


Chart 7 EU-15 net exports of manufactured goods, by partner country

Cumulative, 1999-2006; billions of us dollars



3 CMS analysis of exports: methodology

The CMS analysis is a decomposition technique in which, over a particular period, the growth of exports of a country (or a group of countries), is accounted to products, trading areas and competitiveness, compared to other suppliers. Usually, the CMS analysis is used to study exports, but the analysis can also be applied to imports. In this study, this analysis is applied to both exports and imports. The theoretical foundation is taken from Swank (1983), who used the technique to analyse Dutch exports and imports. The CMS analysis is based on the split-up of an identity and an accounting procedure. It does not refer to a causal relationship, in which exports or imports are explained by determinants such as demand and prices.

The starting point of the CMS analysis of exports of a country is the composition of the exports package to products and selling areas. On the basis of this, the change in exports is accounted to a world trade effect, a structure effect and a competitiveness effect. In Appendix 2, the split-up of exports is formally derived. The *world trade effect* is the (hypothetical) change of exports of a country in a particular period when this country exactly maintains its share in world exports in all products and to all selling areas. Dynamically viewed, the world trade effect denotes the growth of exports of a country when these exports proportionally grow with world exports and the composition of products and selling areas is similar. Usually, the composition of exports of a country as to products and selling areas deviates from the composition of world exports. The *structure effect* refers to the growth of exports which results from the extent in which the structure of exports package in products and selling areas, differs from the structure of world export growth. The structure effect is positive (negative) when the export package of the country, compared to the world export package, centres on exports of those products and selling areas, of which world exports increase more (less) than average.

Together, the world trade effect and the structure effect specify the change in exports at an unchanged competitive position. However, due to a change in the competitiveness of a country, the export market share of a country in a specific product or selling area may change. This is the *competitiveness effect*. It denotes the effect of a change in competitiveness of the country on its exports.

Although used frequently, the cms methodology has also been criticized, in particular with respect to the empirical application. According to some authors, the results vary with the choices that are made regarding the disaggregation of the sectors, the period of the analysis and the size and structure of the reference group (world exports) to which the export performance of a country is assessed¹. Therefore, the results of the cms analysis of exports, which are presented in the following, should be considered with caution.

¹ See Richardson (1971a, 1971b), Fagerberg & Sollie (1987), Simonis (2000) and ECB (2005).

4 Results of the CMS analysis of EU-15 exports

4.1 Results

This section presents the results of the CMS analysis of the exports of the EU-15 manufacturing industry in the period 1999-2006. The analysis distinguishes 22 sectors and 64 selling countries. The 'world export', the reference group, consists of the exports of the manufacturing industry of 43 countries, which are mentioned in Appendix 4. As figures of the *volume* of exports are not available for all these countries and sectors, we had to use *value* figures in us dollars. The year 1999 was chosen as a starting year, because in this year the euro was introduced, which may have been a stimulus for the exports of the countries which have joined the Economic and Monetary Union (EMU). In 1999, the European Union included 15 countries. For that reason, the analysis was carried out for the EU-15. As a data source, the ITCs database of the OECD was used. Unfortunately, the available data for exports are incomplete. For the period 1999-2006, completeness of data for exports was 90% on average, see Appendix 4. Inevitably, lacking data were assigned a value of zero.

In the period 1999-2006, exports of EU-15 manufacturing industry rose by some \$ 800 billion.

According to the CMS analysis, the world trade effect contributed USD 771 billion to this, corresponding to 95% of this rise in exports (table 2). This means that the world

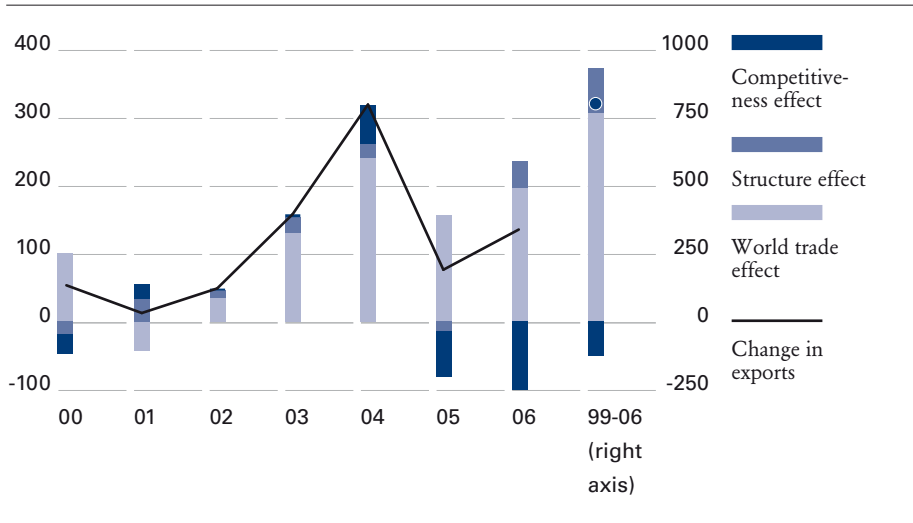
Table 2 Contribution to export change manufacturing industry EU-15

Period: 1999-2006

	Billions of USD	% share of change in exports
Change in exports	806	100.0
<i>World trade effect</i>	771	95.6
<i>Structure effect</i>	162	20.1
<i>Competitiveness effect</i>	-127	-15.7

Chart 8 Annual change in EU-15 exports

Billions of us dollars



trade effect dominated the development of exports. The EU-15 was able to maintain its share in world exports, and more so, due to a positive structure effect, which exceeded the negative competitiveness effect (20% and -15.7% respectively of export change). Chart 8 shows the growth in exports in successive years. It is clear that the world trade effect dominates annual exports development.

The positive structure effect means that the EU-15 export package – compared to the reference group – is oriented more towards those products and selling areas of which world exports have increased strongly, and less towards those products and selling countries of which world exports have grown less. In other words, during this period, the composition of the EU-15 export package was more favourable than that of the reference group. The negative result for the competitiveness effect means that the competitive position of EU-15 has deteriorated compared to the reference group.

Chart 9 shows the structure effect of table 2, broken down into industrial sectors and selling areas, and expressed as a percentage of the change in exports². Detailed numerical values are presented in Appendix 1 table A.1. Chart 9 panel A shows that the composition of EU-15 total exports (dark-blue dot) is relatively favourable

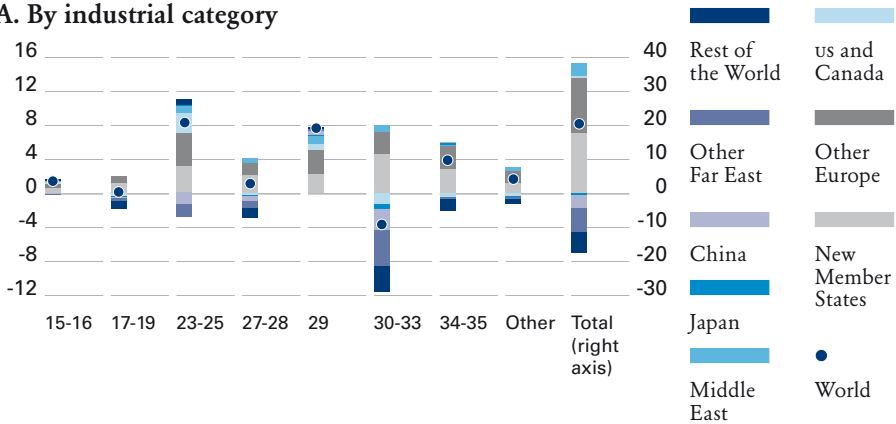
² Explanation of Chart 9 and subsequent graphs (see also Appendix 4):

- Other Europe : Switzerland, Norway, Iceland, Belarus, Russia, Ukraine, Turkey
- Middle East : Saudi-Arab, Syria, Israel, Iran, Egypt, Kuwait, Oman, Qatar, United Arab Emirates
- Other Far East: Hong Kong, Taiwan, Indonesia, South-Korea, Malaysia, Philippines, Thailand, Singapore.

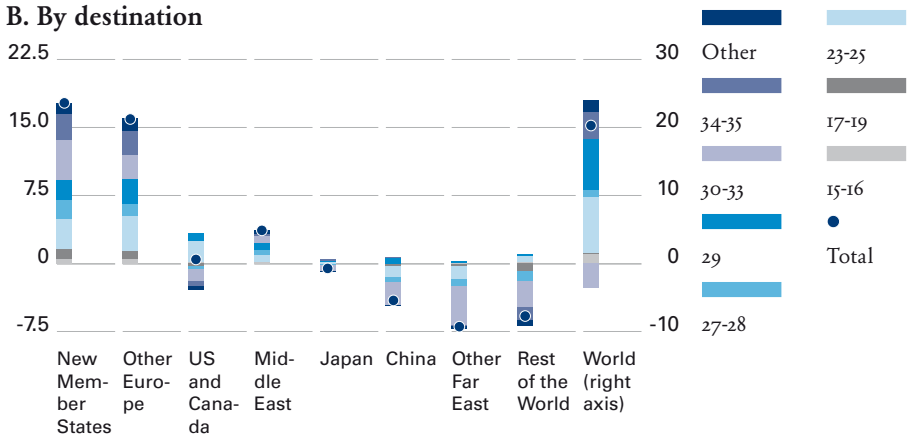
Chart 9 EU-15 exports, structure effect

Percentage of export change 1999-2006

A. By industrial category



B. By destination



Classification (ISIC 3)

Description/Manufacture of:	2-digit code
Food products, beverages & tobacco	15-16
Textiles, textile products, leather & leather products	17-19
Chemicals, chemical products, man-made fibres, coke, refined petroleum products & nuclear fuel	23-25
Machinery & equipment not elsewhere catalogued	29
Electrical & optical equipment	30-33
Transport equipment	34-35
Other*	20-22, 26-28, 36-37

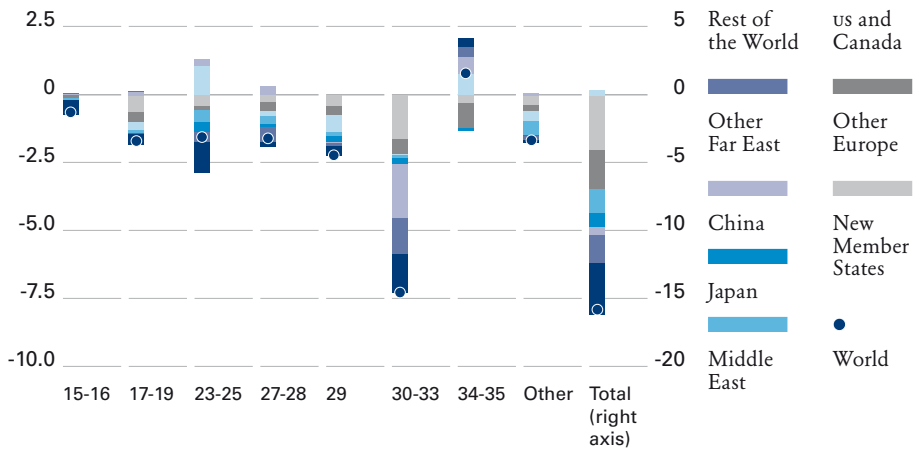
* Manufacture of wood, wood products, other non-metallic mineral products, basic metals, metal products and products not elsewhere catalogued.

in the sectors chemicals, machinery and transport. The composition of exports is unfavourable in electrical & optical equipment, due to underperformance in the Far East and the 'Rest of the world'. The selling areas 'New member states' and 'Other Europe' show a positive structure effect of more than 18% and 15% respectively of total exports change (panel B). This means that the composition of the EU-15 export package to these two regions is favourable compared to the package which the

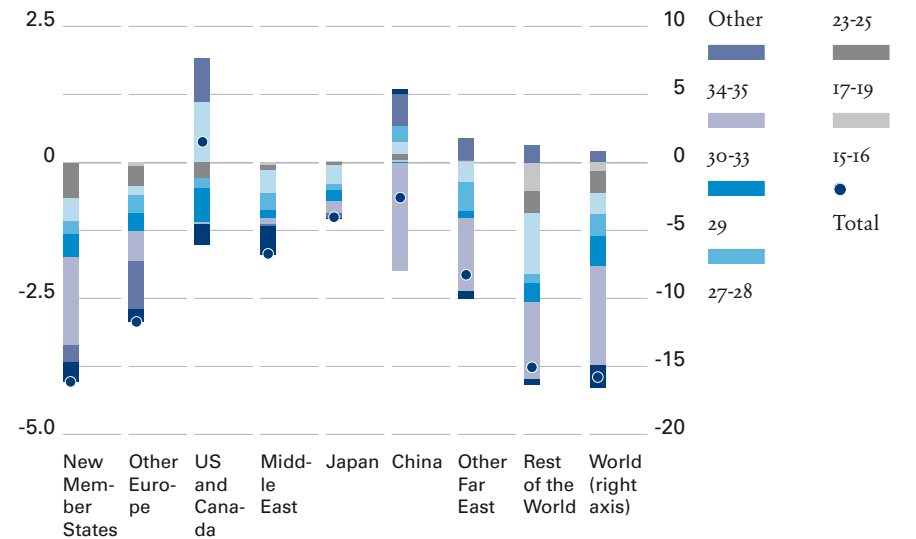
Chart 10 EU-15 exports, competitiveness effect

Percentage of export change 1999-2006

A. By industrial category



B. By destination



reference group exports to these regions. This result is pretty obvious, considering that exporters from EU-15 countries may get a better grasp of consumer and producer preferences in these neighbouring areas than the reference group, which includes non-European countries. The positive scores in these two areas show up in all sectors, particularly in chemicals & rubber, machinery and transport equipment. In the selling areas China and Other Far East the structure effect is negative in almost all sectors, particularly in electrical & optical equipment. This means that the product composition of EU-15 exports, compared to the reference group, is less well geared towards these highly expanding sectors and regions.

Chart 10 panel A shows the breakdown of the competitiveness effect which amounts to -16% of export change (see also Appendix 1 table A.2). In most sectors, the EU-15 has lost market share, in particular in electronics, due to a loss in main selling areas. There is some loss of market share in machinery and textiles & leather. In all selling areas except the US/Canada, the EU-15 market shares falls back, especially in New Member States and the Rest of the world (panel B). There is a loss of market share in the Far East and the Rest of the world, especially concerning electronics. Overall, the loss of total market share due to the competitiveness effect is not very large.

Analysing the causes of the loss in market share is beyond the scope of this analysis. Probably, higher export prices compared to competitors may play an important part. What's more, due to a lack of data on disaggregated level, the CMS analysis is carried out in values instead of volumes, complicating the analysis of competitiveness. The development of the exchange rate of the currencies or the EU-15 countries may give some indication regarding the development of competitive position.

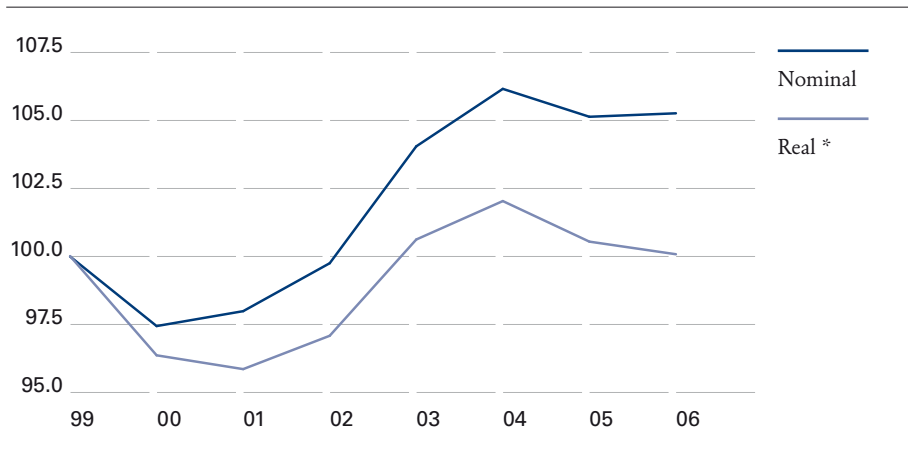
Chart 11 shows the nominal and real effective exchange rate of the EU-15. The real effective exchange rate, which is most relevant for assessing the competitive position, fluctuated during 1999-2006, but did not fall structurally. This means that the development of the exchange rates of the EU-15 was not the prime reason for its loss of market share.

4.2 Challenges and policy issues

Reviewing the results above, EU exporters have greatly benefited from the growth of world trade and therefore from globalisation. Due to the favourable composition of its export package, oriented to chemicals, machines and transport equipment – ‘old economy’ – the EU-15 has even been able to raise its total share in global exports. The composition of this export package is well geared to the new member states and the non-EU European countries. In this way, the EU-15 has taken advantage from its geographically central position in Europe. However, the composition of the EU-15 export package is less well tailored to the East Asian countries, in particular

Chart II Nominal and real effective exchange rate of the EU-15

Index 1999 = 100



* With CPI deflators.

regarding electronics. Due to more competition, the EU-15 has lost some market share in most selling areas, especially in electronics. However, the loss of total market share due to the competitiveness effect is quite small.

EU-15 exports are, compared to the exports of the Reference group ('world') more specialised in medium-tech products such as chemicals, machinery and transport equipment (table 3). The share of EU-15 in electrical & optical equipment, however, is much lower: 20% versus 30% respectively. This means that the EU-15 has an 'under'-specialisation in high-tech sectors, such as electronics.

A point of interest is whether the medium-tech specialisation of the EU might pose a risk for the future, when the world demand in products of high-tech sectors were to grow relatively stronger and tend to be more dynamic. In this respect, it is important to have an insight in the exports growth of sectors on a global level. Table 4 shows the average growth rate of exports of the EU-15 and the Reference group by sector.

Inspection of table 4 makes clear that exports growth rate of sectors of the EU-15 does not deviate much from the one of the Reference group. In the sector transport and paper etc, the EU-15 outperforms the Reference group. As to electronics, growth in the EU-15 is somewhat less. In chemicals, metals, textiles and food, growth rates of export of the EU-15 and the world are more or less equal. Therefore, from a perspective of keeping up with world demand, the composition of EU-15 exports is not problematic. Especially the underperformance in electronics does not mean that EU-15 has been missing opportunities.

Table 3 Structure of exports to non EU-15 countries

Average share (%) 1999-2006

	EU-15	Reference group
Food products & beverages	5.2	4.4
Textiles & leather	5.7	7.7
Paper, paper products, printing & publishing	2.6	2.2
Chemicals & rubber	21.9	16.5
Basic metals & metal products	7.0	7.2
Machinery	15.4	10.6
Electrical & optical equipment	19.7	30.1
Transport equipment	16.7	14.9
Other	5.7	6.3
Total	100.0	100.0

Table 4 Exports to non EU-15 countries by sector

Average growth (%) 1999-2006

	EU-15	Reference group
Food products & beverages	8.4	8.3
Textiles & leather	6.5	7.0
Paper, paper products, printing & publishing	8.1	6.3
Chemicals & rubber	13.7	14.1
Basic metals & metal products	14.4	15.0
Machinery	11.0	11.3
Electrical & optical equipment	9.9	10.9
Transport equipment	11.7	9.5
Other	7.6	8.4
Total	11.0	10.9

Table 5 R&D 2007

	Gross domestic expenditure (% of GDP)	Business enterprise expenditure (% of value added in industry)
EU-15	1.90	1.97
Japan	3.44	3.66
United States	2.68	3.05
China	1.49	-

Source: OECD, Main Science and Technology Indicators, 2009.

For the EU-15, it is important to maintain this sound relative position. From an economic policy point of view, three issues are at stake. First, any protectionist tendencies should be discouraged. The results presented above clearly show that EU-15 exports have reaped the fruit of growing world trade. Protectionist pressures have been rising world wide (ECB, 2009). Especially in the current situation, a sluggish global recovery may tempt governments to adopt restrictive trade measures. Second, in a globalising world, maintaining and strengthening competitiveness is essential. This includes containing cost pressures and enhancing technological innovation by better education, knowledge and research. This requires, among others, a stimulating policy of governments without detailed interference in business. In this respect, tax facilities may stimulate research such as is the case in many countries. In the EU-15, expenditure on R&D is lower than in Japan and the United States (table 5). This may reflect the tendency to the production of medium-tech goods in the EU-15. With regard to competitiveness, points of particular interest are the level of corporate taxes and a good enterprise climate.

Third, further structural reforms in the labour and product markets of the EU-15 countries are necessary to enhance the ability and to create flexibility of firms to move towards sectors which are expanding in the future. In this regard, labour market and product market regulation should be monitored, in particular the contents of competition policy.

5 CMS analysis of imports: methodology

In the last section, the CMS analysis was used to get an insight into the export performance of the EU-15 on the global market. However, a country also meets competition on its domestic market, from suppliers from abroad. For that reason, we also carry out a CMS analysis of EU-15 imports. This implies an investigation into the competitive position of EU-15 on its 'own' market. This includes a breakdown of the change in imports into a scale effect, an import structure effect and a competitiveness effect. In Appendix 3 this is derived formally.

The *scale effect* shows the (hypothetical) change in imports, if the share of imports in domestic sales, from all importing countries and regarding all products, would have remained unchanged. This is considered as the 'normal' change in imports. It is the counterpart of the world trade effect of exports, analysed above. Usually, the composition of the import package differs from this 'normal' change in imports. For this reason, a *structure effect* is introduced, by analogy of the structure effect in the decomposition of exports. This import structure effect represents the change in imports which results from the extent to which the composition of the import package differs from the import package composition when the share of imports in domestic sales remains unchanged. The third component is the *competitiveness effect*. This shows the change in imports resulting from a change in the share of imports in domestic sales. It denotes the effect of the change in the competitive position on the domestic market. A positive figure for the competitive effect means a higher market penetration by foreign suppliers on the domestic market. This is 'unfavourable' for the country involved. The competitive effect can be broken down into countries of origin of imports, enabling to examine the market penetration by particular countries.

6 Results of the CMS analysis of EU-15 imports

This section presents the results of the CMS analysis of the change in EU-15 imports of manufacturing industry. Data sources of imports used are the OECD ITCs database, Eurostat and national sources. Unfortunately, the available data for imports are incomplete. For 1999-2006 completeness of data for imports was 89% on average. Furthermore, the data on production in the ISIC-3 classification, used for analysing imports, are only partially available in Eurostat. Inevitably, lacking data were assigned a value of zero, see Appendix 4.

Table 6 shows aggregate results, with an annual split-up in Chart 12. In the period 1999-2006, the scale effect has contributed two third to the change in imports, implying that two third of the rise in imports referred to imports at unchanged market penetration. The structure effect of almost - 5% of the import increase, is quite low. This negative result means that on average, the domestic sales of EU-15 have increased comparatively strongly in products with a relatively low import share and have decreased strongly in products with a high import share This is 'favourable' to the EU-15.

The competitiveness effect has contributed almost 40% to the growth of imports. This implies that the competitive position of the EU-15 manufacturing industry on its own market has considerably weakened. Substantial import penetration has occurred.

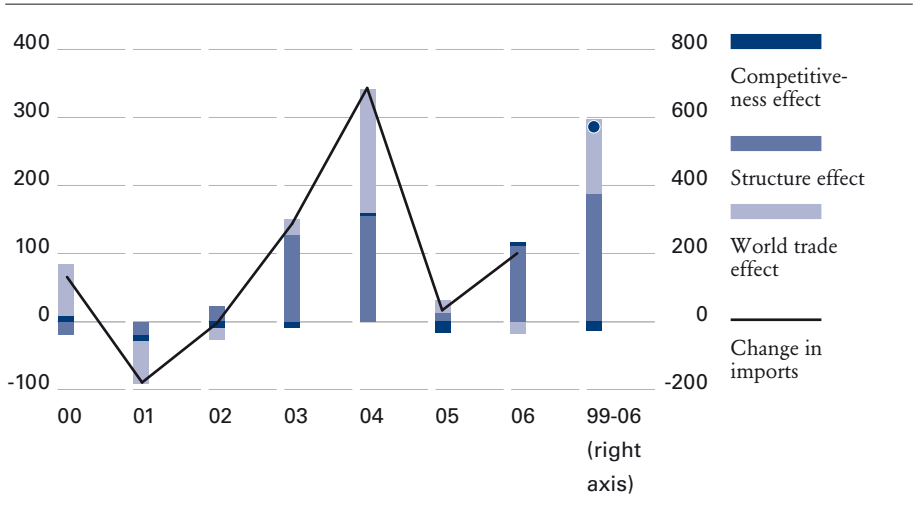
Table 6 Contribution to import change manufacturing industry EU-15

Period: 1999-2006

	Billions of us\$	% share of change in imports
Change in imports	569	100.0
<i>Scale effect</i>	378	66.3
<i>Structure effect</i>	-27	-4.7
<i>Competitiveness effect</i>	218	38.4

Chart 12 Annual change in EU-15 imports

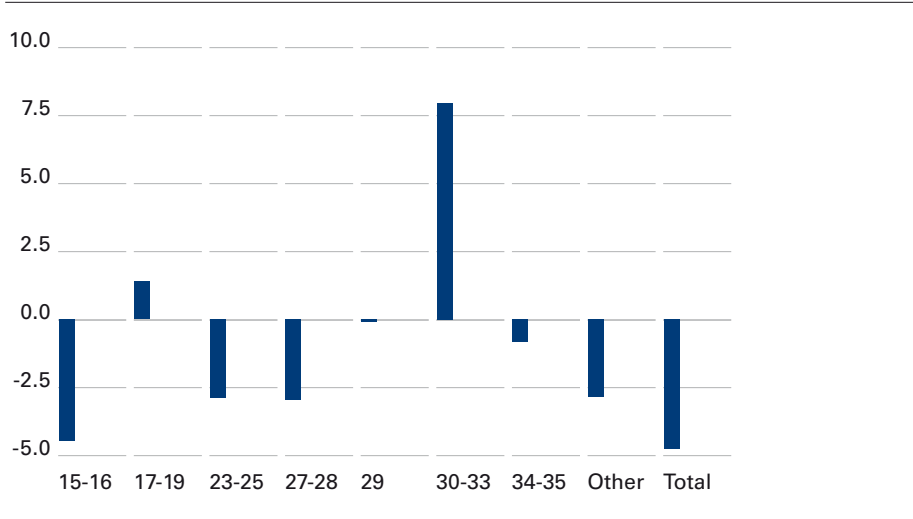
Billions of us dollars



Especially the sectors food & beverages, chemicals and metals contribute to the negative result for the structure effect (Chart 13 and table A.3). This ‘favourable’ composition of the import package in terms of the ‘old economy’ is the counterpart of the ‘favourable’ structure effect of exports (Chart 9, table A.1). On the other hand, due to their high import share, domestic sales of the sector electrical &

Chart 13 EU-15 imports, structure effect

Percentage of export change 1999-2006



optical equipment involved additional imports, partly offsetting negative structure effect of the other sectors.

Chart 14 and table A.4 present the breakdown of the competitiveness effect. Panel A shows that market shares of foreign producers on the EU-15 market have risen in almost all sectors, in particular in electrical & optical equipment, chemicals and textiles & leather. Across the board, import penetration has occurred. Only the sector paper, printing & publishing has been able to maintain its competitive position in the domestic market (table A.4). According to panel B, especially China, the group of new EU member states and Other Europe have raised their share in the EU-15 market. The rise in the market share of electrical & optical equipment contributes a lot to the overall improvement of their competitive position.

The surge in the market share of China is most striking: the competitiveness effect is the biggest of all countries and country groups. Some 24 percentage points of the total competitiveness effect of 38% (table 3) is due to China. This country improves its market share in all sectors, most in electrical & optical instruments and textiles & leather. This shows the expanding role of China as a supplier of cheap products on the European markets. The sector electrical & optical instruments has been responsible for half of this. In all, the loss of competitiveness of the EU-15 on its own market is fairly big. The analysis of exports in section 4 above, showed a loss of competitiveness of EU-15 on the foreign markets (Chart 10). However, the loss of competitiveness on the own EU-15 market is more than twice as much.

A possible explanation of China's rising market share might be a depreciation of its exchange rate, the renminbi. Chart 15 shows the exchange rate of the EU-15 as a weighted average of euro, British pound and Swedish and Danish Krone vis-à-vis the Chinese renminbi. Trade weights are based on imports of all goods and on electrical & optical equipment, respectively. Both lines almost overlap, showing the parallel development of electrical & optical equipment to the total of imports goods from China. The weighed exchange rate of EU-15 countries fluctuated during 1999-2006, but decreased on the whole. This has made imports from China cheaper, which may have contributed to a higher market share of China in EU-15 markets. The competitive position of EU-15 on its own market would be strengthened when China would adopt a more flexible exchange rate policy, in particular allowing appreciation of the renminbi. Recently, representatives of the European Union and the United States have insisted on this in consultations with Chinese authorities.³

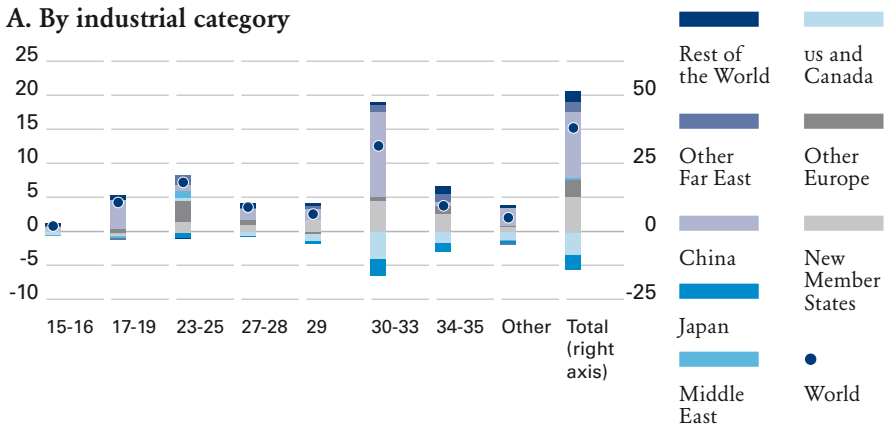
Apart from the calculations shown above, the share of China in total EU imports has been rising rapidly all over. The shares of China in traditionally labour-intensive goods such as textiles and leather have doubled in the period under considera-

³ See Goldstein & Lardy (2008) for aspects of Chinese exchange rate policy.

Chart 14 EU-15 imports, competitiveness effect

Percentage of export change 1999-2006

A. By industrial category



B. By origin

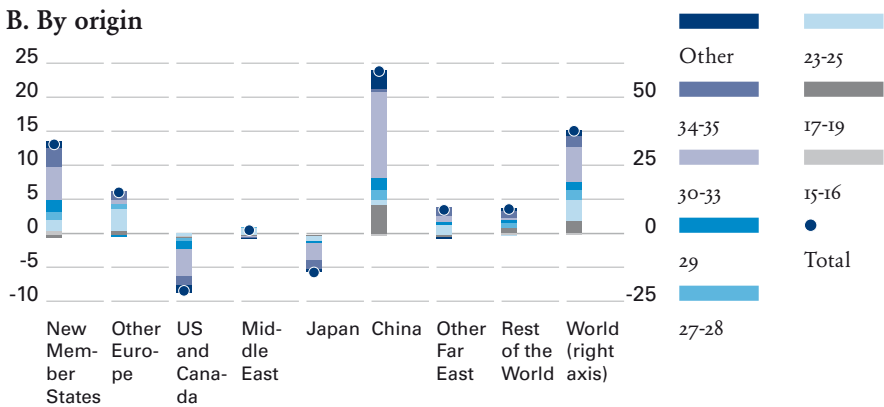
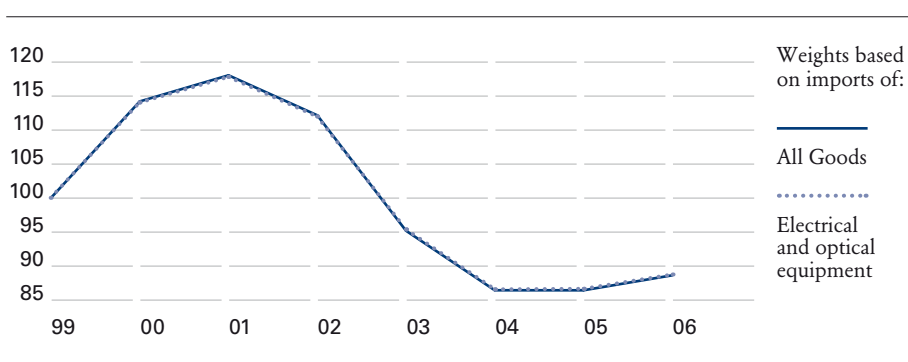


Chart 15 Trade weighted exchange rate of the EU-15 versus China

Index 1999 = 100



tion (table 7), while the share of sophisticated goods such as electronics has even tripled. This illustrates that China is climbing the technological ladder and will pose increasing competitive pressure on EU companies in domestic markets.

Table 7 EU-15 imports from China

% share of EU-15 imports

	1999	2006
Food, beverages & tobacco	3.4	5.1
Textiles, leather & footwear	17.6	32.4
Wood & cork	5.9	14.5
Pulp, paper, printing & publishing	2.9	8.1
Chemicals, rubber, plastics & fuel	4.8	5.9
Non-metallic products	11.2	27.4
Basic metals & fabricated metal products	5.4	11.6
Machinery & equipment	7.4	23.3
Electrical & optical equipment	7.9	25.7
Other machinery & equipment	5.7	15.3
Transport equipment	1.0	2.8
Manufacturing n.e.c & recycling *	24.9	38.5
Other	0.3	0.4
Total	7.7	16.7

*n.e.c.: not elsewhere catalogued.

7 Summary and conclusion

The results of the CMS analysis show that EU-15 exports have highly benefited from the growth of world trade and thereby from the process of globalisation. Furthermore, the composition of the export package, oriented towards chemicals, machinery and transport equipment ('old economy') is relatively well geared to the new EU member states and the non-EU European countries. In this way, EU-15 takes advantage of its geographically central position in Europe. Thanks to this composition of the export package regarding products and selling areas, the EU-15 has even been able to slightly raise its share in world exports. However, the product composition of exports is less tailored to the strongly expanding East Asian region, in particular in electronics. The actual exports growth rates of sectors of the EU-15 do not deviate greatly from those of the Reference group. Therefore, from a perspective of keeping up with world demand, the composition of EU-15 exports is not problematic.

Regarding competitiveness, the EU-15 has lost some market share in various sectors, such as electronics, transport and textiles, both in Europe and East Asia.

On the own EU-15 market, competition from China, Other Europe and the new member states has highly increased. Competition from China is the strongest: China has improved its market share in all sectors. This shows the growing importance of China as a supplier of cheap products on the European markets. The decrease in the exchange rate of the Chinese currency vis-à-vis the currencies of the EU-15 countries has contributed to the rise of the Chinese market share. As said, the EU-15 has lost some competitiveness on foreign markets. The loss of competitiveness on the own market is, however, twice as much.

The results show considerable shifts in the EU-15 position on foreign and domestic markets, although results vary across sectors. This displays the effects of globalisation and international rearranging of economic activities. Import of cheap products, especially from the Far East, raises purchasing power, showing the effect of growing globalisation. China is increasingly specialising in high tech sectors and is concentrating less on traditional labour intensive sectors such as manufacturing of textiles and shoes (ECB, 2008). In the near future, this process will probably display itself on the EU markets. Apart from that, the external position of the European Union is, on

general, not weakening: the current account of the balance of payments has been more or less in equilibrium in the last couple of years.⁴

The foregoing conclusions should be accompanied by certain caveats. First, the CMS analysis is based on a split-up of an identity and an accounting procedure. It does not refer to causal relationships, in which exports or imports are explained by determinants such as demand and prices. Second, the available data for exports and imports for the period 1999-2006 are incomplete (Appendix 4). Third, the analysis does not cover the recent years. For 2007, not to mention 2008, many data are lacking. Consequently, the period under consideration ends in 2006, excluding the most recent period, in which the financial crisis has made its influence felt. Extending the period to the recent years, would modify the results.

⁴ In 2007, the current account of the balance of payments of EU-27 was 0.2% GDP, in 2008 – 0.9% GDP and in 2009 – 0.8% GDP (EC Autumn Forecast, November 2009).

Appendix I

Detailed tables

Table A.1 Contribution of structure effect, 1999-2006

% of export change

	New EU member states	Other Eastern Europe	Other Western Europe	Middle East	United States Canada	China	Japan	Other Far East	Rest of the world	Total
Food products & beverages	0.6	0.3	0.2	0.1	0.2	-0.1	0.0	-0.1	0.2	1.4
Textiles & leather	1.1	0.6	0.3	0.0	-0.4	-0.2	-0.1	-0.2	-0.9	0.1
Paper, paper products, printing & publishing	0.4	0.3	0.2	0.1	-0.1	0.0	0.0	0.0	0.0	0.8
Chemicals & rubber	3.2	2.0	1.8	0.8	2.3	-1.3	0.1	-1.5	0.7	8.2
Basic metals & metal products	2.1	0.9	0.5	0.5	-0.3	-0.6	-0.1	-0.9	-1.0	1.1
Machinery	2.2	2.1	0.7	0.9	0.8	0.6	0.1	-0.1	0.4	7.6
Electrical & optical equipment	4.5	1.9	0.7	0.7	-1.3	-2.4	-0.6	-4.3	-2.8	-3.6
Transport equipment	2.8	2.1	0.5	0.2	-0.5	0.1	0.1	-0.2	-1.3	3.8
Other	0.8	0.5	0.5	0.3	-0.3	-0.1	0	-0.2	-0.6	0.8
Total	17.6	10.5	5.4	3.6	0.4	-4.1	-0.5	-7.6	-5.3	20.1

Explanation:

Other Eastern Europe: Belarus, Russia, Ukraine, Turkey

Other Western Europe: Switzerland, Norway, Iceland

Middle East: Saudi-Arabia, Syria, Israel, Iran, Egypt, Kuwait, Oman, Qatar, United Arab Emirates

Other Far East: Hong Kong, Taiwan, Indonesia, South-Korea, Malaysia, Philippines, Thailand, Singapore

nb: due to rounding, components do not add up

Table A.2 Contribution of competitiveness effect, 1999-2006

% of export change

	New EU member states	Other Eastern Europe	Other Western Europe	Middle East	United States Canada	China	Japan	Other Far East	Rest of the world	Total
Food products & beverages	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.5	-0.6
Textiles & leather	-0.6	-0.3	0.0	-0.1	-0.3	0.1	-0.1	0.0	-0.4	-1.7
Paper, paper products, printing & publishing	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Chemicals & rubber	-0.4	-0.3	0.1	-0.4	1.1	0.2	-0.3	-0.3	-1.2	-1.5
Basic metals & metal products	-0.3	-0.4	0.0	-0.3	-0.2	0.3	-0.1	-0.4	-0.4	-1.6
Machinery	-0.4	-0.3	0.0	-0.2	-0.6	0.0	-0.2	-0.1	-0.3	-2.2
Electrical & optical equipment	-1.6	-0.6	0.0	-0.1	0.0	-2.0	-0.2	-1.2	-1.6	-7.3
Transport equipment	-0.3	-0.8	-0.1	0.0	0.8	0.6	-0.1	0.3	0.4	0.8
Other	-0.3	-0.2	0.0	-0.5	-0.4	0.0	0.0	-0.2	-0.2	-1.8
Total	-4.0	-2.8	-0.1	-1.7	0.4	-0.7	-1.0	-1.8	-4.1	-15.8

Explanation:

Other Eastern Europe: Belarus, Russia, Ukraine, Turkey

Other Western Europe: Switzerland, Norway, Iceland

Middle East: Saudi-Arabia, Syria, Israel, Iran, Egypt, Kuwait, Oman, Qatar, United Arab Emirates

Other Far East: Hong Kong, Taiwan, Indonesia, South-Korea, Malaysia, Philippines, Thailand, Singapore

NB: due to rounding, components do not add up

Table A.3 Contribution of structure effect, 1999-2006

% of import change

Food products & beverages	-4.5
Textiles & leather	1.4
Paper, paper products, printing & publishing	-2.0
Chemicals & rubber	-2.9
Basic metals & metal products	-3.0
Machinery	-0.1
Electrical & optical equipment	7.9
Transport equipment	-0.8
Other	-0.7
<hr/>	
Total	-4.7

Table A.4 Contribution of competitiveness effect, 1999-2006

% of import change

	New EU member states	Other Eastern Europe	Other Western Europe	Middle East	United States Canada	China	Japan	Other Far East	Rest of the world	Total
Food products & beverages	0.7	0.1	-0.1	0.0	-0.3	0.2	0.0	0	0.4	1.0
Textiles & leather	-0.4	0.7	-0.1	-0.2	-0.1	4.2	-0.1	-0.8	1.2	4.4
Paper, paper products, printing & publishing	0.4	0	-0.1	0.0	-0.6	0.2	0.0	0.0	0.1	-0.1
Chemicals & rubber	1.6	3.3	-0.1	1.1	0.3	0.8	-0.8	0.9	0.4	7.4
Basic metals & metal products	1.2	1.2	-0.4	0.1	-0.5	1.5	0.0	-0.1	0.9	3.8
Machinery	1.8	0.3	-0.5	0.0	-1.1	1.7	-0.3	0.3	0.5	2.8
Electrical & optical equipment	4.7	0.5	0.1	-0.1	-3.8	12.5	-2.4	0.8	0.5	12.8
Transport equipment	2.8	1.1	0.1	-0.1	-1.5	0.5	-1.3	1.2	1.1	4.0
Other	0.6	0.2	-0.1	-0.1	-0.4	2.5	-0.4	-0.3	0.4	2.3
Total	13.3	7.4	-1.1	0.8	-8.1	24.0	-5.4	2.0	5.6	38.4

Explanation:

Other Eastern Europe: Belarus, Russia, Ukraine, Turkey

Other Western Europe: Switzerland, Norway, Iceland

Middle East: Saudi-Arabia, Syria, Israel, Iran, Egypt, Kuwait, Oman, Qatar, United Arab Emirates

Other Far East: Hong Kong, Taiwan, Indonesia, South-Korea, Malaysia, Philippines, Thailand, Singapore

NB: due to rounding, components do not add up

Appendix 2

Theoretical framework CMS analysis of exports

For the purpose of the CMS analysis of exports, a decomposition of exports is derived, based on Swank (1983). In the elementary CMS analysis, a country's exports are considered as one homogeneous flow of products. In that case, the change of exports is to split up into a world trade effect and a competitiveness effect. The world trade effect specifies the change in exports if the country would have maintained its share in world exports exactly. The competitiveness effect specifies the change in exports resulting from a change in the country's share in world exports.

Starting point of the CMS analysis of exports of a country is the following identity:

$$q = (q/Q) \cdot Q = s \cdot Q \quad (1)$$

Here, q is total exports of a country in a specific year, Q is total world exports in that year and s is the country's share in total world exports. Considering (1) for two years, 0 and 1, we can write in first differences:

$$\Delta q = q_1 - q_0 = s_1 \cdot Q_1 - s_0 \cdot Q_0 \quad (2)$$

This can be written as:

$$\Delta q = s_0 \cdot \Delta Q + Q_1 \cdot \Delta s \quad (3)$$

The first term on the right hand side ($s_0 \cdot \Delta Q$) denotes the world trade effect, as a product of the change in world exports (ΔQ) and the market share in the initial situation (s_0). It is calculated on the assumption that at the end of the period, the country concerned has the same share in world exports as at the start of the period. This is the 'normal' change in exports, i.e., the situation in which no change in the competitive position of the country would have occurred. To put in differently, the world trade effect represents a standard for an unchanged competitive position. From this, it follows that the difference between the actual and the 'normal' change of exports reflects the change in competitiveness. This is the second term ($Q_1 \cdot \Delta s$),

the competitiveness effect, as the product of the change in the market share (Δs) and world exports in the ending year of the period (Q_t).

Up to now, exports were viewed as one homogeneous flow of goods. In reality, however, exports consist of many goods, which are sold to many destinations. Taking this into account, by analogy of (3), the following identity can be written for product i and selling area j :

$$\Delta q_{ij} = s_{ij0} \cdot \Delta Q_{ij} + Q_{ij1} \cdot \Delta s_{ij} \quad (4)$$

Aggregation over all products and selling areas, results in the following total change of exports:

$$\Delta q = \sum_i \sum_j s_{ij0} \cdot \Delta Q_{ij} + \sum_i \sum_j Q_{ij1} \cdot \Delta s_{ij} \quad (5)$$

The first component of (5) displays the change in exports of the country at a constant market share of all individual export flows from that country, vis-à-vis the corresponding exports flows in the world. It represents the unchanged competitive position in relation to all individual export flows. This first component represents the 'normal' change in exports. The second component displays, by analogy of (3), the competitiveness effect.

It is important to assess the size of the change of exports of a country, if the composition of export flows to products and countries, would be exactly the same as the composition of world exports and would remain so. The expression $s_o \cdot \Delta Q$ reflects this change in exports. Normally, the structure of exports of a specific country deviates from the structure of world exports, both with respect to products and to selling areas. The extent to which the structure of a country's exports deviates from the structure of world exports, is the structure effect. This is represented by:

$$\sum_i \sum_j s_{ij0} \cdot \Delta Q_{ij} - s_o \cdot \Delta Q \quad (6)$$

Owing to (5) and (6) the change in exports of a country is to write as:

$$\Delta q = \underbrace{s_o \cdot \Delta Q}_{\text{I}} + \underbrace{\left\{ \sum_i \sum_j s_{ij0} \cdot \Delta Q_{ij} - s_o \cdot \Delta Q \right\}}_{\text{II}} + \underbrace{\sum_i \sum_j Q_{ij1} \cdot \Delta s_{ij}}_{\text{III}} \quad (7)$$

I: world trade effect

II: structure effect (terms between brackets)

III: competitiveness effect

Appendix 3

Theoretical framework cms analysis of imports

In the cms analysis of imports, goods imports are split up into a scale effect, an import structure effect and a competitiveness effect. Based on Swank (1983), the derivation starts with the identity:

$$P = \frac{M}{V} \quad (8)$$

Here, P represents market penetration by foreign suppliers on the domestic market, M denotes imports of goods and V is domestic sales. In first differences for year 0 and 1:

$$\Delta M = M_1 - M_0 = P_1 \cdot V_1 - P_0 \cdot V_0$$

This can be written as:

$$\Delta M = P_0 \cdot \Delta V + V_1 \cdot \Delta P \quad (9)$$

The first component ($P_0 \cdot \Delta V$) is the 'scale effect' and denotes the change in imports if the share of imports in domestic sales remains constant. It is similar to the world trade effect in the cms analysis of exports. The second component ($V_1 \cdot \Delta P$) represents the change in imports resulting from a change in the import share in domestic sales and reflects the competitiveness effect.

For a specific product i equation 9 can be written as:

$$\Delta M_i = P_{i0} \cdot \Delta V_i + V_{i1} \cdot \Delta P_i$$

Aggregating over all products yields:

$$\Delta M = \sum_i P_{i0} \cdot \Delta V_i + \sum_i V_{i1} \cdot \Delta P_i \quad (10)$$

The first component denotes the change in imports at unchanged market penetration on all product markets, so with an unchanged competitive position. The

second component is the competitiveness effect, now taking into account market penetration on all individual product markets. A positive result for the competitiveness effect means that market penetration by foreign suppliers on the domestic market has increased.

Normally, the actual composition of the import package deviates from the composition of the import package at an unchanged share of imports in domestic sales (scale effect in equation 9). Therefore, in the analysis of imports, a structure effect is introduced, by analogy of the structure effect in the CMS analysis of exports. This import structure effect is defined:

$$\sum_i P_{io} \cdot \Delta V_i - P_o \cdot \Delta V \quad (\text{II})$$

Taking in account (II), equation (IO) can be rewritten to a scale effect, an import structure effect and a competitiveness effect:

$$\Delta M = \underbrace{P_o \cdot \Delta V}_{\text{I}} + \underbrace{\left(\sum_i P_{io} \cdot \Delta V_i - P_o \cdot \Delta V \right)}_{\text{II}} + \underbrace{\sum_i V_{ii} \cdot \Delta P_i}_{\text{III}}$$

I: scale effect

II: import structure effect

III: competitiveness effect

To examine the market penetration by individual countries, the competitiveness effect (III) can be split up into countries of origin of imports. This yields:

$$\Delta M = \underbrace{P_o \cdot \Delta V}_{\text{I}} + \underbrace{\left(\sum_i P_{io} \cdot \Delta V_i - P_o \cdot \Delta V \right)}_{\text{II}} + \underbrace{\sum_i \sum_j V_{ij} \cdot \Delta P_{ij}}_{\text{III}}$$

I: scale effect

II: import structure effect

III: competitiveness effect

The index j in this formula runs over countries.

Appendix 4 Data

Data of EU-15 exports of products and to destination countries are taken from the ITC database of the OECD in cooperation with the United Nations. This database was also used for import products and importing countries, supplemented by Eurostat and national sources for data of production. Exports and imports regard manufactured goods, classified according to the ISIC-3 system. Unfortunately, the available data for exports and imports are incomplete. For the period under consideration (1999-2006), completeness of data for exports was 90% on average and for imports 89%. Furthermore, the data on production in the ISIC-3 classification, used for analysing imports, are only partially available in Eurostat. Inevitably, lacking data were assigned a value of zero.

Destinations

This regards 64 countries, among which the OECD countries:

Argentina, Australia, Austria, Bahrain, Byelorussia, Belgium, Luxemburg, Brasilia, Bulgaria, Canada, China, Taiwan, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France (incl. Monaco), Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy (excl. Vatican City), Japan, South Korea, Kuwait, Latvia, Lithuania, Malaysia, Malta, Mexico, Netherlands, New Zealand, Norway, Oman, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Saudi-Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland (excl. Liechtenstein), Syria, Thailand, Turkey, United States, Ukraine, United Arabian Emirates, United Kingdom, Rest of the world.

Countries of the Group of Reference ('world' exporters)

This regards 43 countries, among which OECD countries (except Iceland):

Australia, Austria, Belgium, Canada, China, Taiwan, Czech Republic, Denmark, Estonia, Finland, France (incl. Monaco), Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Italy (excl. Vatican City), Japan, South Korea, Latvia, Lithuania, Luxemburg, Malaysia, Malta, Mexico, Netherlands, New-Zealand, Norway, Philippines, Poland, Portugal, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland (excl. Liechtenstein), Thailand, Turkey, United States, United Kingdom.

Sectors

The following 22 sectors of manufacturing industry are distinguished:

- I3-15 Manufacture of food products and beverages
- I3-17 Manufacture of textiles
- I3-18 Manufacture of wearing apparel; dressing and dyeing of fur
- I3-19 Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
- I3-20 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- I3-21 Manufacture of paper and paper products
- I3-22 Publishing, printing and reproduction of recorded media
- I3-23 Manufacture of coke, refined petroleum products and nuclear fuel
- I3-24 Manufacture of chemicals and chemical products
- I3-25 Manufacture of rubber and plastics products
- I3-26 Manufacture of other non-metallic mineral products
- I3-27 Manufacture of basic metals
- I3-28 Manufacture of fabricated metal products, except machinery and equipment
- I3-29 Manufacture of machinery and equipment n.e.c.
- I3-30 Manufacture of office, accounting and computing machinery
- I3-31 Manufacture of electrical machinery and apparatus n.e.c.
- I3-32 Manufacture of radio, television and communication equipment and apparatus
- I3-33 Manufacture of medical, precision and optical instruments, watches and clocks
- I3-34 Manufacture of motor vehicles, trailers and semi-trailers
- I3-35 Manufacture of other transport equipment
- I3-36 Manufacture of furniture; manufacturing n.e.c.

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