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European Export Performance *

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Abstract

Competitiveness has come to the forefront of the policy debate within the European Union, focusing on price competitiveness and intra-EU imbalances. But how to measure competitiveness properly, beyond price or cost competitiveness, remains an open methodological issue; and how can we explain the resilience of producers located in the EU to the competition of emerging economies? We analyze the redistribution of world market shares at the level of the product variety, as countries no longer specialize in sectors or even products, but in varieties of the same product, sold at different prices. We decompose changes in market shares into structural effects (geographical and sectoral) and a pure performance effect. Our method is based on an econometric shift-share decomposition and we regard the EU-27 as an integrated economy, excluding intra-EU trade. Revisiting the competitiveness issue in such a perspective sheds new light on the ongoing debate. From 1995 to 2009 the EU-27 withstood the competition from emerging countries better than the US and Japan. The EU market shares in the upper price range of the market proved quite resilient, by combining good performance and favorable structure effects, unlike the US and Japan. Finally, while most developed countries lose market shares in high-technology products to developing countries, the EU is slightly gaining, benefiting of a favorable structure effect.

Keywords: International Trade, Export Performance, Competitiveness, Market Shares, Shift-Share, European Union.

JEL classification codes: F12, F15.

Résumé

La spécialisation des pays ne se fait plus au niveau des produits ou des secteurs, mais au niveau des variétés d'un même produit (vendues à des prix différents). Pour étudier la manière dont l'UE fait face à l'émergence de nouveaux grands exportateurs mondiaux, Chine en tête, nous analysons la redistribution mondiale des parts de marché dans ce contexte renouvelé. Pour distinguer ce qui relève de la performance de chaque exportateur des positions qu'il a acquises sur les différents marchés, nous décomposons les changements observés dans ses parts de marché (commerce mondial de biens hors intra-UE) en effets structurels (géographique et sectoriel) et un pur effet de performance. De 1994 à 2009, l'Union à 25 résiste mieux que les Etats-Unis et le Japon à la concurrence des émergents. Contrairement aux autres économies avancées, l'Europe gagne des parts de marché dans les produits de haute-technologie et maintient sa place de leader mondial dans le haut de gamme grâce à un bon positionnement dans les secteurs les plus demandés ainsi qu'à une assez bonne performance commerciale.

Mots-clé : Commerce international, Performance à l'exportation, Parts de marché, Analyse à parts de marché constantes, Shift-Share, Union européenne.

Codes classification JEL : F12; F15.

1 Introduction

The 2020 European Agenda focuses explicitly on issues of competitiveness. Though the EU officially defines competitiveness in the broad sense as an economy's capacity to grow with full employment in a sustainable way (with respect to environmental and social pillars/aspects), the ongoing European debate on competitiveness is much more narrowly focused. Internal current account imbalances within the EU, arguably explained by a divergence in price or cost competitiveness between Member States, are the central concern. Notwithstanding legitimate concerns regarding macroeconomic imbalances having fueled the debt crisis, such an approach is however questionable for two reasons.

First, assessing competitiveness accurately is a challenging issue as most of the action is taking place on the front of non-price competitiveness and is potentially affected by the products or destination markets exporters specialize in. For instance, Italy has exhibited poor price competitiveness over the recent years, but with resilient market shares. In contrast, the improvement in Japanese price competitiveness did not prevent the deterioration of its world market shares. More fundamentally, the effective demand introduced into macroeconomic equations is by construction missing the sectoral or product dimension. Quality positioning, sectoral specialization and geographical orientation of exports all contribute to the observed changes in market shares.

Second, what ultimately matters for the EU as a whole, and more generally for high-income countries, is the capacity to withstand competition from emerging economies and low wage countries.[1] This broader perspective is justified by the fact that emerging countries have been winning large market shares over the last two decades. Among these, China stands out with the most remarkable performance: it has almost trebled its world market share since 1995, reaching 17.1% in 2009. This competitive pressure is striking for the most technological products, where many of the new competitors have combined an increase in market share with a higher unit value of the exported products.

Our aim in this article is to break down observed changes in market shares into prod-

[1]Interestingly, this view is not absent from the EU Commission philosophy, as the Directorate General trade action is guided by the axiom: *To build a stronger EU economy at home, Europe has to be more competitive abroad.* The US Department of Commerce uses a similar definition and focuses on *maximizing US competitiveness by enabling economic growth for American industries, workers, and consumers.*

uct or geographical specialization of exporters, and into pure performance. We develop an econometric *shift-share decomposition of export growth* that identifies for each exporter the contribution to the intensive margin of (i) the composition of its exports by product and destination and (ii) its competitiveness. Accordingly, export growth for each country is broken down into three components: a geographical composition effect, a sectoral composition effect and an exporter effect capturing other sources of country's export performance, including competitiveness. In line with a now abundant literature, we measure export performance at the level of the (vertically differentiated) variety of the traded products (Schott 2004, Hallak 2006, Baldwin & Ito 2008, Fontagné et al. 2008, Manova & Zhang 2011, Khandelwal 2010, Hallak & Schott 2011). We also focus on high-tech products. We adopt the viewpoint of an integrated European market and reconstruct world trade excluding intra-EU trade flows. The latter are considered as "intranational" trade.[2]

The method we use yields several improvements with respect to the standard Constant Market Share (CMS) decomposition found in the literature (Tyszynski 1951, Richardson 1971*a*,*b*, Bowen & Pelzman 1984, Fagerberg 1988).[3] First, the competitiveness effect is estimated rather than computed as a residual of the analysis. Second, the econometric approach makes it possible to eliminate the non-orthogonality of product and market structure effects in standard CMS analyses, responsible for the fact that the order of the decomposition changes the results. In addition, we are able to identify confidence intervals for each product, market and exporter effect. Unlike the standard approach, our methodology enables us to obtain results (effects) that are additive over the time dimension and thus take stock of changes in countries' initial export structure.

To proceed, it is necessary to utilise very detailed and longitudinal trade data, covering all countries, including information on bilateral trade unit values. To this end, we make use of a database of international trade at the product level – BACI – developed by Gaulier & Zignago (2010). BACI provides (FOB) reconciled values, as well as unit values (values/quantities), of all international trade flows for about 5,000 product headings from the 6-digit Harmonised

[2]67% of EU 27 exports are within the Single European Market, where most European countries record larger market shares thanks to better market access.

[3]Alternative measures of country competitiveness have been used in the literature: comparative advantage, specialisation or productivity indicators, cost of leaving indices (Fagerberg 1988, Neary 2006, Delgado et al. 2012).

System classification (hereafter HS6) – since 1994. We consider all traded products, *i.e.* the primary and manufacturing sectors, with the exception of mineral products, notably oil, as well as some specific and non classified sectors. The availability of unit values enables us to classify flows by price range and thus to analyze the positioning of exporters by price segment. We employ these data to examine changes in market shares of leading world exporters over the period 1995-2009. The *world distribution of unit values for each HS6 heading* allows us to classify each product-bilateral flow into three price segments, and to examine competition within each of these segments.

In the context of a major reshaping of world trade flows since the mid-1990s, we conclude that the redistribution of market shares observed between emerging and developed countries and among developing countries themselves has affected the EU, Japan and the US differently. European market share losses arise mainly during the first half of the period (up to 2001) and mostly concern long-standing Member States. The EU's overall good performance over the 1995-2009 period – compared to the United States or Japan – is associated with an original price-quality positioning of its products. The EU has gained market shares in the upper price range of the market by combining good performance and favorable structure effects, unlike the US and Japan which have withdrawn extensively from this segment. Finally, all developed countries lose market shares in high-technology products to developing countries, with the EU losing less than other countries.

The rest of the paper is organized as follows. We review the redistribution of world market shares in Section 2, with a focus on high-tech and top range products. Our econometric shift share analysis of export growth is implemented in Section 3. Section 4 concludes.

2 The redistribution of world market shares between 1995 and 2009

The objective of this section is to take stock of the recent shifts in world market shares, taking into account the price segment and technological content of exported products at the most detailed available level of classification of traded products. We firstly characterize the

extensive and intensive margins of world trade, then we examine what have been the big changes in market shares, and we conclude with a focus on top range and high-tech products.

2.1 Changes in trade margins

Trade can increase either by exchanging a larger value of already traded products between the same partners (the intensive margin of trade), or by increasing the number of countries involved and/or exchanged products (the extensive margin of trade). The former refers to the change in the value of existing trade flows, while the latter refers to the change in the composition of trade flows. The entry of new competitors is reflected in the margins of world exports at the most disaggregated level of the product classification.[4] Hummels & Klenow (2005) use a cross-section of detailed trade data to identify the patterns of exports of 126 countries in 1995, and find that 60% of large economies' export growth is attributable to shipments of a wider set of goods and the remaining 40% to larger quantities and higher prices of each good already shipped.

We adopt a similar approach but use the most detailed trade data compatible with an exhaustive set of exporters to compute the two margins for the whole matrix of trade flows.[5] Drawing on information by product, market, exporter, and year, we compute the *extensive margin* of trade, defined as the change in the *number* of trade flows at the most detailed level, or as the *net value* of appearing and disappearing trade flows. Symmetrically, the *intensive margin* of trade is defined as the change in the value of trade flows that are present continuously throughout a given period. While a rapid turnover of trade flows can be observed – in a world matrix mostly full of zeros – the largest contribution to the growth in the world trade value has been on the intensive margin.

Let us firstly consider the number of *potential* trade flows. A simple calculation would compare the 3.6 million trade flows observed in 1995 (see Table 1, Panel 1) with a potential

[4]The extensive margin of exports so defined should not be confused with the heterogeneous firms settings where trade introduces a selection between firms, as well as, in case of multi-product firms, a selection within the portfolio of products of each exporter.

[5]Hummels & Klenow (2005) draw on HS6 data on exports in 1995 by 110 countries to 59 importers. Alternatively, they use US imports from 119 countries in over 13,000 10-digit US tariff lines for the same year. Our approach also differs from Besedes & Prusa (2011) who integrate the time dimension into the analysis of export growth and breakdown the intensive margin into a survival and a deepening component.

of some 200 countries trading on a bilateral level in some 5,000 products. Accordingly, only a tiny percentage of the whole universe of trade flows would have been observed. However, simply taking the number of products times the number of exporters times the number of importers is misleading: most products are not exported by every country. Thus, we must compute this potential number by restricting it to situations where a product is at least exported by one country to one partner. Thus, for each year and product if a country reports its trade with at least one partner, trade flows with all unreported destinations are considered as true zeros and correspond to potential flows. Under this assumption, we get some 74 million potential trade flows in 1995 and 88 million in 2007. Accordingly, only 4.9 percent of the potential trade flows were actually observed in 1995 and 6.4 percent in 2007. The change in the number of countries is not the explanation of such increase: what matters is the product diversification of their exports.

Using the set of *observed* flows in Table 1 we compute the intensive and extensive change in the value of world trade between 1995 and 2009. In panel (1) of this Table we start by excluding mineral products, specific and non-classified products.[6]. The observed USD 4,204 bn 1995-2009 increase in world trade (column C) can be decomposed into three components. Firstly, the 2.3 million elementary bilateral trade flows recorded in 1995 and still in place in 2009 (second line of Table 1) have increased their value by USD 3,428 bn. Accordingly, the intensive margin accounted for 81.6% of the change in the value of world trade (ratio of column D to column C). Secondly, one third of 1995 trade flows (1.34 million flows) have disappeared by 2009. This is the result of firms and countries ceasing trade with certain markets or certain products. In 1995 these trade flows amounted to USD 289 bn. Lastly, 3.07 million new country-partner-product trade flows appeared during the period, corresponding to the positive extensive margin of trade. This is a very large number, exceeding the number of initial trade flows. Overall, only 42.7% of the number of trade flows recorded in 2009 were already present in 1995. The remaining 57.3% are new flows (column E) either in terms of destination, exported products, or both. Meanwhile, the contribution of new entries to the 1995-2009 growth of trade in value terms amounted to only 14.4%. Exits (column F) account

[6]We exclude HS chapters 25, 26, 27, 97, 98, and 99 all throughout this paper, as detailed in Section 5.1 in the Appendix.

for 25.1% of the number of 1995 flows but only for 3.9% of their value. Thus, although the exports of new products and/or exports to previously unexploited markets account for a large share of the total number of flows both in 1995 and 2009, they represent much less (10.5%) of the value increase in global trade.

Table 1: Extensive and intensive margins in world trade, 1995-2009

	Unit	1995	2009	Δ	Intensive	Extensive		
		A	B	C= B-A (D+G)	D	E Entries	F Exits	G =E-F Net
Data at the HS 6-digit level:								
All flows,	USD bn	3,197	7,400	4,204	3,428	1,065	289	776
intra-EU excl.	nb flows, 1000	3,629	5,354		2,286	3,068	1,343	1,725
Data aggregated at the HS 2-digit level:								
(1) All flows,	USD bn	3,197	7,400	4,204	3,935	298	29	269
intra-EU excl.	nb flows, 1000	369	526		289	236	80	156
(2) Our (reduced)	USD bn	3,179	7,339	4,159	4,095	353	289	64
sample	nb flows, 1000	270	384		3,904	933	818	115

Source: Authors' calculations using BACI values (current USD) of traded goods. Horizontal panel (1) combines all trade flows, excluding intra-EU trade and mineral, specific, and non-classified products. Horizontal panel (2) is obtained from panel (1) by excluding non-independent territories, micro-states and small flows (<10,000 USD). For each panel, we give figures in billion dollars and in thousands of HS6 or HS2 bilateral flows.

These results can be qualified by performing some sensitivity tests. Let us first aggregate trade flows at the HS 2-digit level. This indeed yields a considerably lower number of flows in each column of Table 1 and a larger relative importance of the intensive margin. The USD 4,204 bn increase in world trade decomposes as follows: 93.6% for the increase in the value of trade flows that survived throughout the period, 7.1% for new flows (entries), and 0.7% for trade flows that disappeared by 2009 (exits). Next, we can exclude non-independent territories and micro-states[7] as well as small flows (below USD 10,000), which account for a large share of the total number of individual bilateral trade flows but a very limited share of their value. These small flows are also excluded in section 3. When one combines these two

[7]Non-independent territories and certain small countries do not collect and report data on their foreign trade separately. We keep however Taiwan and Macao due to the large value of their trade.

corrections, we end up with a contribution of the extensive margin of 6.4% (267/4,159, figures not reported in Table 1), pointing to the robustness of our findings. Finally, in line with the methodology developed in Section 3, we may also choose to compute the intensive margin as the sum of annual changes in trade flows present in any two consecutive years rather than the change in the value of flows present in 1995 and 2009. The resulting extensive margin (panel (2) of Table 1) accounts only for a small fraction (1.5%=64/4,159) of the overall change in trade, which allows us to use a decomposition of changes in market shares based on the intensive margin only.

The contribution of the different margins of trade can be computed for individual large exporters. Table 8 in the appendix compares the EU to other large exporters from the developed and the developing world. Computations are performed at the country level. For ease of presentation, as well as in the rest of the paper, results for countries that account for less than 1% of world exports from 1995 to 2009 are aggregated within three groups – the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW). Results for all other countries are available in our online appendix.[8] We observe that the contribution of the positive extensive margin (entries) to the growth of the value of exports is very similar for the developed economies (less than 4%). This points to the pronounced inertia in the exports of the advanced economies, particularly the US, Germany, UK, and Japanese exports. Their trade growth is mainly accounted for by expansion in existing markets (98.9%, 99.7%, 99.6% and 99.7% respectively). The contribution of the positive extensive margin is larger for emerging economies. It peaks for instance at 65.7% for Ukraine, 54% for Russia, and 25% for Greece. On average, the contribution of new flows in export growth for countries not reported in Table 8 is 32%, clearly in excess of the individual exporters reported in the Table (for the Middle East and North Africa this contribution is 30% and for Sub-Saharan Africa 16%). The lowest shares among developing countries are observed for China and Mexico, which show a structure of export growth similar to the developed exporters. Mexico reaped the benefits of its preferential access to the huge US market, but did not manage to diversify its portfolio of products or markets over the considered period. In contrast, results for China also confirm the magnitude of the increased

[8]Zipped file at Soledad Zignago's Banque de France webpage and Lionel Fontagné's personal webpage.

intensive margin, but the diversification of their exports was already accomplished in 1995 (China ships roughly as many different products as Germany).[9]

How did the different EU Member States behave in terms of the two margins of trade? Did the new Member States perform better in the extensive margins of trade than long-standing Member States? Country level results show that the latter increased their exports mainly within their already established trade relationships. The relative importance of the intensive margin goes from 39.5% for Bulgaria to 99.9% for Finland (results available on our online appendix). For Denmark and Cyprus the negative extensive margin (exits) exceeded the positive one (entries), yielding a contribution of the intensive margin that was greater than 100%. By contrast, new members' export growth is achieved much more by developing new trade relationships. The contribution of the positive extensive margin to the growth of exports exceeds 18% for Baltic countries (reaching 40.2% for Latvia) and Malta. Among the 15 long-standing Member States only Greece exhibits comparable figures. Since export baskets and destinations of the new EU members were profoundly reshaped during the 1995-2009 period, the negative extensive margin is also larger for these countries. Nonetheless, the net extensive margin always accounts for less than half of the growth in countries' exports.

In Section 3 we decompose the intensive margin of exports using an econometric shift-share methodology. Our objective is to use this decomposition to identify the changes in the determinants of the good resilience of EU market shares in the upper segment of the market.

2.2 EU market shares compared with main world exporters

In Table 2, we summarise the recent shifts in world market shares as follows. The first three columns give the market share in 1995, 2007 (before the trade collapse), and 2009. In the three subsequent columns, we report the percentage point changes in market shares for the whole period and for the two sub-periods (1995-2007 and 2008-2009).

The most remarkable development in Table 2 is that China has more than doubled its world market share (its market share in 2009 was 2.7 larger than in 1995), becoming larger

[9]Wang & Wei (2010) use export at product level for different Chinese cities and point to the role of human capital and government intervention in shaping a specialisation that increasingly overlaps with that in high-income countries.

Table 2: Changes in world market share for the world's largest exporters, 1995-2009

	Market shares, %			Δ, p.p.	
Exporter	1995	2007	2009	1995-2009	2007-2009
EU 27	20.7	19.5	19.4	*-1.30*	*-0.09*
France	2.8	2.3	2.5	*-0.38*	*0.16*
Germany	5.6	5.5	5.5	*-0.16*	*-0.07*
Italy	2.7	2.3	2.3	*-0.43*	*-0.02*
UK	2.8	2.0	1.9	*-0.89*	*-0.09*
Euro Area 12	15.7	14.9	14.9	*-0.79*	*0.03*
USA	18.3	13.0	12.5	*-5.76*	*-0.51*
Japan	14.2	8.9	8.0	*-6.17*	*-0.86*
Canada	5.3	3.8	3.1	*-2.17*	*-0.75*
Switzerland	2.8	2.3	2.4	*-0.37*	*0.18*
China	6.3	15.5	17.1	*10.80*	*1.58*
Brazil	1.4	1.7	1.7	*0.29*	*0.02*
India	1.1	1.7	2.1	*1.02*	*0.40*
Indonesia	1.2	1.2	1.3	*0.11*	*0.05*
Korea	3.8	4.4	4.7	*0.89*	*0.32*
Malaysia	2.4	2.1	2.1	*-0.29*	*-0.01*
Mexico	2.2	2.8	2.7	*0.46*	*-0.13*
Taiwan	3.7	3.6	3.3	*-0.44*	*-0.31*
Singapore	2.8	2.0	2.0	*-0.73*	*0.02*
Thailand	1.8	1.9	2.1	*0.32*	*0.18*
MENA	2.5	4.0	3.9	*1.44*	*-0.10*
Sub-Saharan Africa	1.5	1.6	1.6	*0.06*	*-0.04*
RoW	8.1	9.9	10.0	*1.84*	*0.03*

Source: Authors' calculations using BACI values (current USD) of traded goods. We exclude oil and intra-EU trade. The change in market shares is given in percentage points (p.p.). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

than the US as a super trader. In 1995, EU 27 had a 20.7% market share of the world trade in goods (excluding intra-EU flows). This market share has been only slightly affected by competitive pressures from emerging economies, falling to 19.4% in 2009. Thus, the EU market share has been fairly unaffected by the eleven-point rise in China's share over the same period. In contrast, Japan and the US lose around 6 percentage points of market share each.

The EU's export performance varies significantly between markets. The EU shows a decrease in market shares on some of the most dynamic importing markets during the last decade.[10] The largest gain is in the US market, where the EU accounted for over one fifth of the import market in 2007. This performance coincided with shrinking shares of Japanese and, to a lesser extent, of Canadian and ASEAN exports in the same market. Conversely, the EU loses market shares on the Japanese and BRICs markets. The small market share loss of EU products on the rapidly expanding Chinese market could, however, have a large impact in the long run.

Like the other emerging countries, the new European Member States are doing better than the EU15. This may be linked to a shift of production lines from EU industrialised countries to new Member States with lower costs. The exception is Ireland, which has been the most successful exporter among the EU-15 group over the period, doubling its world market share. Poland, Hungary, Slovakia, and the Czech Republic also recorded large gains in market shares. By contrast, the UK, Sweden, Italy, and Finland and France experienced the greatest losses in their world market shares, as well as Cyprus and Bulgaria on the new Members States side.

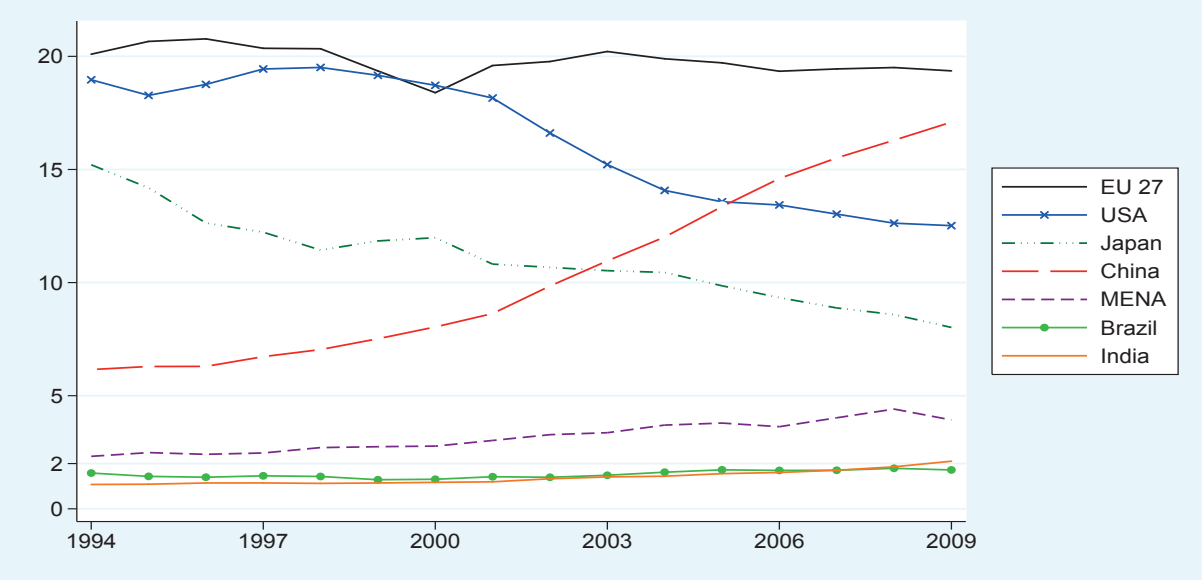
Changes in market shares also vary across sectors as illustrated in Table 9 of the Appendix, which provides the sectoral composition of world and EU exported values and their evolution between 1995 and 2009, in current and constant terms.[11] Among the best performing sectors in terms of world values, the manufacture of basic metals, chemicals and machinery stand out. However, in the case of chemicals and basic metals, their increased weight in the world market is largely explained by price effects (comparison between columns

[10] Results not shown in the paper but available upon request.

[11] Values are converted into volumes using chained Tornqvist indices of unit values. See the data appendix for more details on the sources and methodologies used.

(5) and (6) of Table 9), which can be linked to the impact of oil price developments for these two industries. Conversely, changes in machinery, radio, TV and other communication equipment, as well as in medical, precision and optical instruments are strong in terms of volumes than in values. The sectoral redistribution of European exports during the period favoured chemicals but also the automotive industry, for which the increase in volume terms is larger than in values. Food, beverages, textiles, apparel, basic metals and computers are among sectors recording the largest losses in their share of European exports.

Figure 1: Changes in world market shares, 1994-2009



Source: Authors' calculations using BACI values (current USD) of traded goods. Oil and intra-EU trade is excluded.

This redistribution of market shares must be gauged against the backdrop of the U-shaped curve of the euro-US dollar exchange rate over the period. In Figure 1 we plot the evolution of world market shares for selected exporters, also summarised in columns 1 to 3 of Table 2. The EU's market shares decreased more during the late 90s than in the early 2000s. Despite the appreciation of the euro, the early 2000s were a period of partial recovery for the EU's exports, with most of its previous losses recuperated. Among other industrialised countries, Japan continued to lose market shares in the second sub-period. All of the US losses are also concentrated in that period. The competitive pressure from China has increased since 2000,

and not all emerging markets have managed to cope with this.[12]

Overall, the economic crisis has not changed the redistribution of world market shares among global exporters. The last column of Table 2 gives the percentage point change in the two-year-period covering the great trade collapse[13], 2008-2009. The crisis seems to confirm the long-run trends above mentioned: China's performance (+1.6 p.p. gain in world market share between 2007 and 2009), the vulnerability of Japanese and North-American exporters and the resilience of Europe. The online appendix shows that the main changes observed between the period 1995-2007 and the period 2008-2009, stem from the sectoral composition of demand. Whereas transformed products gain market shares in the 1995-2007 period, the crisis collapsed demand for them. Conversely, consumption goods more than compensate their previous losses in the last two years. In terms of technological content, resource-based and mid-tech manufactures have recorded the big losses during the crisis, to the benefit of primary products and to high-tech manufactures. The next sub-section details the technological dimension of larger exporters specialization and addresses another dimension of international competition: performances differ within categories of products according to the market positioning of varieties. This is what is fundamentally important for European exporters.

2.3 Performances in high-tech and top range products

High-tech and top range quality products play an important role in international competition, since they are basically the output of innovation and the real source of rents. Leamer (1987) pioneered the idea that what you export matters. Hausmann et al. (2007) went one step further by characterizing the proximity of specialization between advanced and emerging countries at the HS6 product level. They show that the "income level of a country's exports" is a determinant of subsequent growth.

We first focus here on high-tech products and use the classification proposed by Lall (2000). Sectors are classified into primary products, resource-based manufactures, low,

[12]For instance, results available in our online appendix show disappointing performances for Mexico and ASEAN countries since 2000.

[13]Record negative export growth rates were attained between the last quarter 2008 and the first half 2009 for most countries in the world.

medium and high-technology manufactures, and other transactions. The high-tech category comprises electronics and electrical products, as well as pharmaceutical products, aerospace, optical and measuring instruments, cameras, etc. (see Table 7 in the Appendix for the sectors classified in the other categories).

Results concerning high-tech products are reported in the first two columns of Table 3. The first one gives the world market shares for high-tech products in 2009, the second one their change in percentage points over the period 1995-2009. The EU has gained market share in high-tech products: a 1.55 p.p. gain compared to a loss of 1.30 p.p. for all products taken together (column 4 of Table 2). The United States and Japan, on the other hand, recorded losses twice as large as for all products (respectively 10 p.p. and 12 p.p., as shown in the second column of Table 3). In the meantime, Chinese gains are very large on the high-tech market (17 p.p.), due to a massive relocation of the assembly of these products to mainland China.

Besides trade similarity in terms of product categories, trade flows with persistently dissimilar prices can be observed within the most narrowly defined products. Though high-income and emerging economies export quite similar bundles of goods, they actually compete within industries, on different price-quality ranges (Schott 2004, 2008, Fontagné et al. 2008). Hence, specialization occurs within these categories, on vertically differentiated varieties of products. However, quality is not directly observable. Hallak (2006) refers to product quality as a demand shifter that captures all the attributes of a product valued by consumers. Conditional on price, a higher quality increases income share spent on a given variety. Using this definition, he finds that cross-country variation in unit values can be attributed to differences in quality. Competitiveness ultimately depends upon the quality-adjusted price (Baldwin & Harrigan 2011). Baldwin & Ito (2008) classify products according to the related market structures (price competition versus quality competition) for nine big exporters in the period 1997-2006. Estimating the price-distance relationship separately for each product, they observe more "quality-competition goods" in EU exports than in US and Japanese exports, and a very low share of "quality-competition goods" in Chinese exports. Unit values can reflect not only quality but also costs (Khandelwal 2010). Idiosyncratic preferences

Table 3: Change in world market shares for high-tech products and by market segment, 1995-2009

	High-tech products		Top-range		Mid-range		Bottom-range	
Exporter	2009 %	*95-09* p.p. Δ	2009 %	*95-09* p.p. Δ	2009 %	*95-09* p.p. Δ	2009 %	*95-09* p.p. Δ
EU27	18.1	*1.55*	28.8	*-0.89*	17.1	*-2.64*	15.2	*-3.20*
France	3.3	*0.10*	3.4	*-0.63*	2.3	*-0.73*	1.9	*-0.51*
Germany	4.7	*0.66*	8.8	*-0.97*	5.1	*-0.61*	3.4	*-0.54*
Italy	1.2	*-0.03*	3.1	*-0.03*	1.9	*-0.44*	2.1	*-0.97*
United Kingdom	2.0	*-0.99*	2.9	*-0.86*	1.7	*-0.93*	1.5	*-1.07*
Euro Area 12	13.5	*1.74*	22.7	*-0.53*	13.2	*-1.92*	11.2	*-2.33*
USA	13.4	*-9.97*	13.0	*-5.04*	13.9	*-2.96*	10.5	*-6.86*
Japan	7.3	*-12.29*	11.0	*-8.20*	8.8	*-9.10*	4.2	*-5.31*
Canada	1.9	*-0.70*	1.8	*-0.99*	4.7	*-0.98*	2.4	*-3.17*
Switzerland	2.9	*0.56*	4.8	*-0.35*	1.6	*-0.85*	1.6	*0.43*
China	21.4	*16.62*	11.6	*8.88*	16.4	*10.76*	22.9	*13.18*
Brazil	0.6	*0.33*	1.1	*0.21*	2.3	*0.64*	1.8	*-0.25*
India	0.9	*0.73*	1.2	*0.78*	1.6	*0.75*	2.7	*1.29*
Indonesia	0.6	*0.25*	0.9	*0.03*	1.5	*-0.07*	1.5	*0.08*
Korea	6.5	*1.22*	2.8	*-0.18*	4.6	*0.35*	6.8	*1.75*
Malaysia	4.1	*-0.59*	2.3	*0.93*	1.9	*-0.20*	2.1	*-0.37*
Mexico	3.2	*1.07*	1.4	*0.49*	4.0	*2.16*	2.5	*-1.47*
Taiwan	7.0	*1.56*	2.2	*0.35*	2.5	*-0.01*	4.1	*-0.85*
Singapore	3.5	*-3.41*	2.1	*-0.77*	1.6	*-0.48*	2.0	*0.05*
Thailand	2.3	*0.13*	1.9	*0.33*	2.5	*1.00*	1.9	*-0.29*
MENA	1.6	*0.74*	3.3	*1.17*	3.7	*1.23*	4.3	*1.92*
SSA	0.2	*0.08*	1.3	*0.55*	1.8	*0.07*	1.6	*0.43*
RoW	4.5	*2.13*	8.6	*2.70*	9.6	*0.33*	12.0	*2.64*

Source: Authors' calculations using BACI values (current USD) of traded goods. We exclude oil and intra-EU trade. The change in market shares is given in percentage points (p.p.). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

for products' horizontal attributes may also lead to exports of goods of the same quality at different prices. Finally, export prices may vary for reasons other than quality or costs (Hallak & Schott 2011). Our approach is accordingly examining changes in market shares by price range. If a country's exports are in the high price range but exhibit quality that does not deserve such pricing, market shares will shrink.

The procedure we use deserves more explanation since it aims to tackle the within trade

flows heterogeneity. We rely on the distribution of unit values for each HS6 product and year, based on the assumption of a continuum of vertically differentiated products. Notice first that, for a given exporting country, the HS6 data actually aggregates different flows under a single heading, reported by several firms on several dates by year. Hence each "flow" reported by the trade statistics will be difficult to classify under a single vertical specialization positioning. Accordingly, we rely on a smoother procedure, used by Fontagné et al. (2008), that splits each elementary trade flow into two adjacent ranges of prices out of the three considered (low, medium, high). More specifically, if i is the exporter, j the destination market, k the product, and t the year, the relative unit value of a bilateral flow, noted $r = r_{ijkt}$, is obtained as the ratio between the bilateral unit value and the trade weighted geometric average of all unit values in the world for the product and year concerned.[14] If $r < 1$, then the *value* allocated to the low range is $X_{ijkt}(1 - r^{\alpha})$ and the value in medium range is $r^{\alpha}X_{ijkt}$. If $r > 1$, then the value allocated to the high range is $X_{ijkt}(1-1/r^{\alpha})$ and the value allocated to the medium range is $X_{ijkt}(1/r^{\alpha})$. The lower α is, the higher the share of trade in the medium range (here we use $\alpha = 4$ to end up with similar size groups).[15] Overall, we decompose each bilateral value (X_{ijkt}) across an additional dimension s, corresponding to the market segment ($s = bottom, mid-, top$).

Implementing this procedure, we observe the market positioning of exported products, as described in Table 3. The remaining three pairs of columns in this Table give the world market shares in 2009, and their change in percentage points over the period 1995-2009 for each of the three market segments (bottom, middle, top). EU's leadership for top-range exports is ascertained, with almost 29% of the world market. The EU has a market share that is almost twice as high for top range products compared to those in the middle or lower range. The United States and Japan exhibit a quite different pattern, with similar world market shares in top- and mid-range products and smaller market shares in bottom

[14]Noting UV the unit values and V the trade values used as weights, the relative unit value is:

$$r = r_{ijkt} = \frac{UV_{ijkt}}{(\prod_{ij} UV_{ijkt}^{V_{ijkt}})^{1/\sum_{ij} V_{ijkt}}}$$

[15]Since quantities are not systematically reported, we assume that non allocated flows (in terms of unit values) are distributed by market segment in the same way as allocated flows.

range products. Both countries are losing ground in all ranges of products. By contrast, the resilience of the EU market share for top range products is remarkable, with less than one percent point of world market lost over the whole period. An in-depth look shows that this loss occurred during the crisis, in the period 2008-2009. Chinese gains are concentrated in the middle and the bottom segments of the market, although Chinese exporters (actually mostly foreign firms assembling in China) have started to gain market shares in the upper segment of the market.

The evidence provided so far is purely descriptive. We cannot identify the pure performance of exporting countries on this basis, as changes in market shares can be also driven by composition effects. The next section aims to disentangle composition effects from pure competitiveness. This will be done for different ranges of vertically differentiated varieties of traded products.

3 An econometric shift-share analysis of export growth

This section aims to identify the contributions to export growth: what are the product and market composition effects and what stems from pure competitiveness? One of the simplest ways to investigate growth rates is the *shift-share* approach, also known as the constant market share (CMS) analysis or structural decomposition. Fabricant (1942) and Maddison (1952) were among the first to formalize the shift-share decomposition, which was extensively used afterwards. Although employed mainly in regional studies on employment and productivity growth, this technique has been successfully extended to international trade issues over the last six decades (Tyszynski 1951, Richardson 1971*a*,*b*, Fagerberg 1988). The method has been extensively used in competitiveness studies. Laursen (1999), Wörz (2005), Brenton & Newfarmer (2007), and Cafiso (2009) are examples of papers that use a structural decomposition to analyse export performances at the country level. In the context of the recent economic crisis it gained interest among central bank researchers (ECB 2005, Amador & Cabral 2008, Jiménez & Martín 2010, Panagiotis et al. 2010, Finicelli et al. 2011).

Instead of following this traditional decomposition, we adopt an econometric approach, taking advantage of the data disaggregation. In addition, in order to capture variations

across time, we focus on the sum of annual growth in each trade flow rather than on the increase in its value between the first and last year of the considered period. Our method is therefore constrained by the observation of the same flow in two consecutive years (necessary for computing annual growth rates). As in panel 2 of Table 1, we exclude flows under USD 10,000 and those concerning micro-states. The 3.9 million flows that satisfy these conditions account for a trade growth of bn USD 4,095. This figure does not include trade flows created (bn USD 353) or that disappeared (bn USD 289) during the period, and is larger than the intensive margin of panel (1) in Table 1. As previously, market positioning in terms of technology or quality is computed from HS6 level data. However, in order to capture even more trade flows in the intensive margin, the decomposition of export growths is performed on data aggregated to the 2-digits level of the HS classification.

3.1 The shift-share methodology applied to changes in market shares

In the field of international trade, the CMS or shift-share analysis aims to measure the contribution of countries' geographical and sectoral specialization to the growth of their exports. Since the analysis is performed on export growth, only the intensive margin of trade is explained. The method is simply to compute the contribution of the initial geographical and sectoral composition of exports to changes in market shares. The remaining proportion of the change is attributed to pure performance (*i.e.* price and non-price competitiveness).

The traditional shift-share analysis is based on an algebraic decomposition of the total export growth of a country (or a region) during a given time period. Four contributions are identified, namely world trade growth, growth in exports of individual products (sectoral effect), growth in specific markets' imports (geographical effect), and a residual performance of the exporter.[16] When market shares are considered instead of export growth, as is the case

[16]The following equation gives this identity:

$$X^t_{i..} - X^{t-1}_{i..} = rX^{t-1}_{i..} + \sum_k (r_k - r)\, X^{t-1}_{i.k} + \sum_{jk} (r_{jk} - r_k)\, X^{t-1}_{ijk} + \sum_{jk} \left(X^t_{ijk} - X^{t-1}_{ijk}(1 + r_{jk}) \right)$$

where i denotes the exporter, j the importer, k the product or sector, t the time period, r the global growth rate of exports for all countries in the sample except i, r_k the global growth rate of product k exports, and r_{jk} the global growth rate of exports of product k to country j.

in this study, there are three components rather than four. Such structural decomposition has a major drawback: results are sensitive to the order in which the composition effects are considered. Computing sectoral effects first and geographical effects afterwards and *vice versa* yields different results.

Departing from this traditional analysis, we rely here on a shift-share methodology based on econometrics, proposed by Cheptea et al. (2005), which is a further development of the weighted variance analysis of growth rates of Jayet (1993).[17] The aim of this method is ultimately to decompose the growth of each country's world market shares into three terms: a geographical structure effect, a sectoral effect, and an exporter-effect which represents the exporter's performance. To compute country-level structural and performance effects, we first explain the growth rate of each individual trade flow (from each exporter to each importer for a given product and year) and, in a second step we aggregate results at the exporter level.

Let w^t denote the average weight of a flow in world trade in years $t-1$ and t: $w^t_{ijk} = \frac{1}{2}\left(\frac{X^{t-1}_{ijk}}{X^{t-1}} + \frac{X^t_{ijk}}{X^t}\right)$ and $w^t_i = \frac{1}{2}\left(\frac{X^{t-1}_i}{X^{t-1}} + \frac{X^t_i}{X^t}\right)$. The bilateral and sectoral export growth rates are regressed on dummies identifying exporters (i), importers (j) and HS2 groups of products (k) with weighted (by w^t_{ijk}) OLS:

$$\ln\left(\frac{X^t_{ijk}}{X^{t-1}_{ijk}}\right) = intercept^t + \alpha^t_i + \beta^t_j + \gamma^t_k + \varepsilon^t_{ijk}. \tag{1}$$

where X represents the value of exports, β^t_j and γ^t_k capture the contribution of the average geographical and product structure in year t to the annual growth rate of exports between $t-1$ and t, α^t_i is the amount of growth in t that can be attributed to the export performance of country i, and $intercept^t$ is a constant term. More than half of the fixed effects exhibit an absolute value of the t-test greater than 2 (the distributions are plotted in Figures 2 to 4 in the Appendix). The above decomposition is done for each year between 1995 and 2007. We thus estimate thirteen annual effects for each exporter, importer and product.[18]

Unlike Cheptea et al. (2005), the growth rate of country i's exports is computed here as

[17] The traditional shift-share analysis is actually a constrained and imperfect version of regression and variance analysis techniques.

[18] Data on 1994 flows serve as base year for 1994-1995 growth rates.

the logarithm of the Törnqvist index of its exports of each product k to each partner j.[19] The annual growth of country i's exports in period t is obtained as an approximation of the true logarithmic change in its exports:

$$d \ln X_i^t = \ln \left(\frac{X_i^t}{X_i^{t-1}} \right) \approx \sum_{jk} \frac{w_{ijk}^t}{w_i^t} \ln \left(\frac{X_{ijk}^t}{X_{ijk}^{t-1}} \right). \tag{2}$$

Thus, we express the growth of country i's exports as a weighted average of the logarithmic change in its exports of each product k to each partner j.[20]

Combining equations (1) and (2), we can express the overall growth of country i exports in terms of the three types of effects mentioned above:

$$d \ln X_i^t = intercept^t + \alpha_i^t + \sum_j \frac{w_{ij}^t}{w_i^t} \beta_j^t + \sum_k \frac{w_{ik}^t}{w_i^t} \gamma_k^t. \tag{3}$$

To reach equation (3) we use the fact that the weights of all flows involving exporting country i add up to the weight of its exports in world trade, $w_i^t = \sum_{jk} w_{ijk}^t$, and that the sample weighted average of the error term in (1) is equal to zero, $\sum_{jk} w_{ijk}^t \varepsilon_{ijk}^t = 0$.[21] Given the large size of our sample (over 200,000 observations per year), the identity established by (3) is almost unaltered if we replace the constant term, exporter, importer, and product effects by their OLS estimates.

Let hats indicate OLS-estimated coefficients in (1). When estimating (1), one individual for each set of fixed effects has to be removed because of collinearity. Therefore, $\hat{\alpha}_i^t$ is a measure of country i's 'pure' export growth relative to the omitted country. A measure of country i's effect independent of the choice of the omitted country is given by the *least square mean* (hereafter *LSMEAN*), obtained by adding the intercept and the weighted mean

[19] The Törnqvist index is the weighted geometric average of the relative change between the current and base period where weights are the arithmetic average of the market shares in the two periods.

[20] Although at the exporter/importer/product level the difference between growth rates computed according to the two sides of the above equation may vary significantly, the weighted averages at the level of each exporter are very similar. For example for France the difference between the two weighted means represents at most 6% of the largest of the two values. For Germany the difference is even smaller.

[21] The last constraint is implicitly imposed when estimating (1) with weighted OLS.

of partner and product effects to the estimated effect:

$$LSMEAN_i^t = \hat{\alpha}_i^t + \hat{intercept}^t + \sum_j w_j^t \ \hat{\beta}_j^t + \sum_k w_k^t \ \hat{\gamma}_k^t. \tag{4}$$

Note, that the weighted average of country-specific 'pure' export growth gives the growth rate of world trade: $\sum_i w_i^t LSMEAN_i^t = \sum_{ijk} w_{ijk}^t \ \ln\left(\frac{X_{ijk}^t}{X_{ijk}^{t-1}}\right) = d\ln X^t$. We employ the fact that the sum of weights across any dimension is equal to one $\left(\sum_i w_i^t = \sum_j w_j^t = \sum_k w_k^t = 1\right)$ to establish this result.

For similar reasons, we normalise the estimated importer and product effects. The new values are obtained by subtracting the weighted average of estimated effects from the parameters estimated originally: $\tilde{\beta}_j^t = \hat{\beta}_j^t - \sum_j w_j^t \hat{\beta}_j^t$ and $\tilde{\gamma}_k^t = \hat{\gamma}_k^t - \sum_k w_k^t \hat{\gamma}_k^t$. Note that with these notations equation (1) becomes $\ln\left(\frac{X_{ijk}^t}{X_{ijk}^{t-1}}\right) = LSMEAN_i^t + \tilde{\beta}_j^t + \tilde{\gamma}_k^t + \varepsilon_{ijk}^t$. The decomposition (3) can then be re-written as:

$$d\ln X_i^t = LSMEAN_i^t + \sum_j \frac{w_{ij}^t}{w_i^t} \ \tilde{\beta}_j^t + \sum_k \frac{w_{ik}^t}{w_i^t} \ \tilde{\gamma}_k^t. \tag{5}$$

The first right-hand side element of (5) represents the *export performance* of country i. The last two terms reflect the contribution of its exports structure by partner and product to the overall growth of its exports. We refer to them as the *geographical* and *sectoral structure* effects.

We thus decompose the growth of each country's exports into three terms: an exporter (performance) effect, a geographical structure effect which depends on the destination of exports, and a sectoral effect that varies with the sectoral composition of exports. The decomposition of export growth is carried out separately for each year. Note that the sum of annual growth rates yields the change in the value of exports between the first and last year of the period. Therefore, results for the entire 1995-2007 period are obtained by adding together the different effects across years:

$$d\ln X_i^{95-07} \equiv \sum_t d\ln X_i^t = \sum_t LSMEAN_i^t + \sum_t \left(\sum_j \frac{w_{ij}^t}{w_i^t} \ \tilde{\beta}_j^t\right) + \sum_t \left(\sum_k \frac{w_{ik}^t}{w_i^t} \ \tilde{\gamma}_k^t\right). \tag{6}$$

Let us consider an illustrative example. According to our methodology, the growth of Chinese exports in 2000 (relative to 1999) is equal to the sum of the Chinese export performance in 2000, the effect of the average geographical orientation and that of the average product composition of Chinese exports in 2000. The 1995-2007 growth in exports from China is the sum of these three effects computed for each year of the period.[22]

Now, we can transpose this decomposition into a decomposition of changes in market shares. For this, we subtract from both the left and right-hand side expressions of (6) the logarithmic change in world exports over the period computed as a Torqvist index, $d\ln X^{95-07}$, and take the exponentials of the resulting expressions.[23] We obtain:

$$g_i^{95-07} \equiv \exp\left(d\ln X_i^{95-07} - d\ln X^{95-07}\right) - 1 = PERF_i \times GEO_i \times SECT_i - 1 \quad (7)$$

where $PERF_i = \exp\left(\sum_t LSMEAN_i^t - d\ln X^{95-07}\right)$, and GEO_i and $SECT_i$ are the exponentials of the last two terms of the right-hand side expression of equation (6). Note that $d\ln X_i^{95-07}$ and $d\ln X^{95-07}$ are approximations of true logarithmic changes in country and world exports obtained with the Törnqvist index.[24] Therefore, g_i^{95-07} in equation (7) is an approximation of the actual market share growth rate.[25]

Exporting countries have no influence on structural effects affecting their exports. These effects result from the growth in destination markets, given the geographical and sectoral composition of exports. In contrast, the performance effect is a true competitiveness effect. It indicates the degree to which the exporting country has been able to gain or lose market shares, after controlling for composition effects.

[22] Figures corresponding to this example are displayed in the upper part of Table **??**.

[23] Accordingly, we have $d\ln X^{95-07} \equiv \sum_t \left(d\ln X^t\right) = \sum_t \left(\sum_i w_i^t \, d\ln X_i^t\right)$.

[24] $\tilde{d}\ln X_i^{95-07} \approx \ln\left(X_i^{2007}/X_i^{1995}\right)$ and $\tilde{d}\ln X^{95-07} \approx \ln\left(X^{2007}/X^{1995}\right)$.

[25] Actual (true) market share growth rates are obtained as $\left(\frac{X_i^{2007}}{X^{2007}} - \frac{X_i^{1995}}{X^{1995}}\right) / \left(\frac{X_i^{1995}}{X^{1995}}\right)$.

3.2 Contributions to the changes in world market shares: all products

We now report the results of the shift-share analysis. We explain the annual growth of all trade flows existing in any two consecutive years and aggregate results in terms of market shares over the period 1995-2009.[26] The estimation is performed at the 2-digit level of the HS: the 6-digit level does not give very different results, while the HS2 secures higher statistical significance of parameter estimates. However we continue to define unit values ranges and technological products at the HS6 level. The statistical significance of fixed effects α_i^t, β_j^t, and γ_k^t by year is shown in Figure 2 in the Appendix.

Table 4 shows the differences between market shares considered in this section and those in section 2. The first column in Table 4 reports the changes in market shares between 1995 and 2009 as presented in Table 2 (e.g. the EU25 loses 1.3 p.p. of the world market shares). The following three columns consider the change in world market shares by focusing on the intensive margins of trade only and excluding minor flows, i.e. using the exact sample on which we perform the shift-share analysis. Column (2) gives changes in market shares computed on flows existing in any two consecutive years. Note that the difference between column (1) and column (2) is negligible for all countries. This indicates that the change in market shares for the shift-share sample is a good proxy of the change in market shares computed from all trade flows. Column (3) provides the same information as column (2), but here expressed in percentage terms (the 1.49 p.p. loss of the EU25 represents 7.2% of the value of its exports in 1995). Column (4) displays the change in world market shares as computed with the Tornqvist index, i.e. g_i^{95-07} from equation (7). It is this change that is decomposed by our shift-share analysis (last three columns).

To clarify the difference between the different columns of Table 4, let us consider the case of Chinese exports. In 1995 Chinese exports represented only 6.3% of the value of world trade; they increased by the year 2009 by 10.80 p.p. When we exclude the extensive margin (flows that appeared and dissapeared over the period) and minor flows, the market share

[26] As mentioned above, the sample used eliminates the noise associated with very small values (below USD 10,000), non-independent territories and micro-states, and drops HS sections 25, 26, 27, 97, 98, 99 (mineral, specific and non-classified products).

Table 4: Changes in world market shares for large exporters (overall growth and intensive margin) and shift-share decomposition, 1995-2009

	Overall	Intensive margin			Shift-share		
	p.p., panel (1) of Table 1	p.p.	%	%	Structural Effects		Export performance
		panel (2) of Table 1		eq.(7)	geographical	sectoral	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EU27	-1.30	-1.49	-7.2	-5.4	7.4	9.7	-19.7
France	-0.38	-0.41	-14.4	-13.2	10.0	16.8	-32.5
Germany	-0.16	-0.17	-3.1	-1.1	6.2	10.1	-15.5
Italy	-0.43	-0.45	-16.5	-15.0	11.7	-6.0	-19.0
UK	-0.89	-0.90	-32.1	-34.7	1.4	17.8	-45.4
Euro Area	-0.79	-0.88	-5.6	-3.6	7.6	9.1	-18.0
USA	-5.76	-5.79	-31.7	-31.2	4.8	9.9	-40.3
Japan	-6.17	-6.18	-43.6	-44.0	0.5	6.3	-47.6
Canada	-2.17	-2.17	-41.4	-40.6	-22.5	-0.3	-23.1
Switzerland	-0.37	-0.38	-13.5	-9.4	-0.6	25.3	-27.2
China	10.80	10.76	171.1	180.9	-15.1	-20.8	317.3
Brazil	0.29	0.23	15.9	22.4	-1.8	-11.3	40.5
India	1.02	0.99	91.2	98.3	5.9	-16.6	124.4
Indonesia	0.11	0.10	8.3	13.3	-6.7	-21.8	55.3
Korea	0.89	0.71	18.7	21.7	8.4	-0.8	13.1
Malaysia	-0.29	-0.31	-12.7	-11.4	-8.4	-1.3	-1.9
Mexico	0.46	0.45	20.4	23.0	-23.0	-0.9	61.1
Taiwan	-0.44	-0.50	-13.5	-13.7	14.6	-4.5	-21.2
Singapore	-0.73	-0.72	-26.2	-20.4	5.1	8.6	-30.2
Thailand	0.32	0.32	17.7	20.4	-5.1	-10.5	41.8
MENA	1.44	1.60	64.4	61.6	14.0	-10.4	58.2
SSA	0.06	-0.02	-1.1	-4.6	-0.9	-8.4	5.1
RoW	1.84	0.94	11.6	11.6	3.4	-13.6	24.9

Source: Authors' calculations using BACI database. Figures in column (1) are obtained using the sample of the panel (1) of Table 1. The difference between columns (1) and (2) are due to the exclusion of the extensive margin and tiny trade flows (below USD 10,000, involving non-independent territories and micro-states) in the latter. Column (3) provides the same information as column (2), but here expressed as a % change relative to the 1995 market share. Columns (4) is the approximation of the Törnqvist index. The shift-share estimation is performed at the 2-digit level of the HS (figures are expressed in terms of percentage change in market share). The last four columns correspond to $g_i \cdot 100$, $(SECT_i - 1) \cdot 100$ $(GEO_i - 1) \cdot 100$ and $(PERF_i - 1) \cdot 100$ respectively, from equation (7). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

growth is almost unchanged (10.76 p.p.), which represents 171.1%. When annual changes in exports are approximated using a Törnqvist index (column 4), we obtain a growth rate of 180.9%. In the following, we will compute the contributions of sectoral, geographical and performance effects to this 180.9% increase.

Columns (5) to (7) of Table 4 show our decomposition of changes in market shares computed using the Törnqvist index for all products taken as a whole over the entire period (1995-2009). The 7% loss of world market share by the EU25 results solely from the negative performance effect, since the geographical and sectoral structures both contributed positively to the growth of European exports. Disentangling "old" and "new" EU Member States points to the positive contribution of the latter to the overall European export performance. More generally, the individual performances of Member States are very different: the Irish performance, as well as that of most new Member States, is striking and contrasts with the difficulty faced by the UK, France, Denmark, Belgium-Luxembourg, and Sweden. Of the EU15, only Greece, Portugal, Italy, and Spain suffer from a poor sectoral specialization (Table 10 in the Appendix). Lastly, the euro area performs slightly better than the EU27, which implies bad export performances for European countries not using the euro (UK shows the largest losses with almost 30% between 1995 and 2007).

However, the magnitude of the EU's losses (even EU15 ones) is much more limited than those recorded by Japan and the US. Structural effects contribute positively to the growth in American market shares but negative performance effects are stronger. Japanese losses in market shares are particularly strong (notably in the sub-period 2001-2009), with only sectoral specialization contributing positively. All in all, the EU's performance remains satisfactory given the pressure of new competitors: China, but also India, Mexico or Indonesia, show impressive export performances, although negative structural contributions in general. This resilience of EU's market shares is largely due to Germany's resilience and, to a lesser extent, to new Member States performances as is shown in Table10, which details the results for individual EU27 countries.[27] Moreover, the EU's losses are smaller in volume terms (Ta-

[27]The CMS analysis from Crespo & Fontoura (2010), which uses a panel similar to ours, also provides evidence of the growth of market share of many emerging countries in Asia and Central and Eastern Europe, despite their negative sector and /or geographical structure effects. As confirmed by Beltramello et al. (2012) using our methodology and data, the sectoral effect is negative for most emerging exporters, reflecting their specialization toward more traditional, lower technology industries.

ble 11 in the Appendix), indicating a negative price effect, in particular for Germany and France.

As noted above, since the great trade collapse was synchronised among exporters, aggregate figures do not change the trend observed since 1995: advanced exporters continued to lose their market shares to the benefit of emerging ones, during and after the crisis. However, France and Switzerland post better performances when these last two years are included in the sample, mostly due to changes in sectoral demand, positively affecting their sectoral effect. Conversely, Japan, the US and Canada increase their losses in the last two years, combining worse performance and less favorable sectoral effects. Estimated HS2 fixed-effects indeed significantly change year by year: in particular, considering the period 1995-2009 or excluding the years 2008 and 2009, as shown in Figure 3 in the Appendix, does not give the same average effects.

3.3 Focus on high-tech and top range products

We now consider the changes in world market shares for high-tech products and top range products. As in Section 2.3, these two aspects are considered separately. High-tech products are defined at the most detailed level of the product classification, regardless of their market positioning in terms of unit values. In addition, we rank individual countries exports in three price segments of the world market, considering *all* products, whatever their technological level, and taking unit values of trade flows. The decomposition is still performed at the HS2 level.

Regarding high-tech products, the results are reported in Table 5. We observe a 12.6% increase in the EU's world market share. This increase is the result of the favourable sectoral positioning of European exporters, albeit dampened by their disappointing performance on dynamic foreign markets.[28] In contrast, the US and Japan lose about half of their 1995 market shares over the decade, due to a massive relocation of their assembly lines to Asia, particularly China. The share losses of developed countries are mirrored by large gains recorded by many developing countries. China, Brazil and India stand out with the best

[28]The performance of the EU25 on high-tech products is considerably better than that of the EU15. New Member States combine positive structure effects with a strong performance effect.

Table 5: Shift-share decomposition of the percentage changes in world market shares, 1995-2009: **technological products**

	% Δ in market share using eq. (7)	Contribution of: Export Performance	Structure effects: Geographic	Structure effects: Sectoral
EU27	12.6	-20.3	2.7	37.5
France	-0.3	-41.1	10.2	53.7
Germany	27.2	-5.9	2.8	31.5
Italy	-2.5	-33.6	1.6	44.6
United Kingdom	-35.9	-52.7	-5.6	43.4
Euro Area	17.3	-18.5	3.5	39.2
USA	-43.5	-52.9	4.3	14.9
Japan	-63.3	-63.5	8.3	-7.1
Canada	-26.9	-18.8	-26.7	22.7
Switzerland	23.3	-38.8	-5.0	112.0
China	353.5	623.5	-16.0	-25.4
Brazil	212.9	188.9	-10.6	21.2
India	361.3	154.8	13.2	59.9
Indonesia	72.2	151.8	-12.5	-21.8
Korea	25.4	34.7	9.7	-15.1
Malaysia	-12.8	27.2	-9.5	-24.3
Mexico	51.9	151.6	-30.4	-13.2
Taiwan	26.0	21.9	21.1	-14.6
Singapore	-49.5	-45.0	11.4	-17.6
Thailand	7.8	55.7	-7.4	-25.2
MENA	60.8	38.1	-1.3	17.9
SSA	-18.0	-21.9	-15.6	24.5
RoW	89.5	85.7	2.0	0.1

Source: Authors' calculations using all trade flows from BACI database recorded in any two consecutive years in the considered period, except flows associated with HS sections 25, 26, 27, 97, 98, 99, very small values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS. All figures are expressed in terms of percentage change in market share. The four columns correspond to $g_i \cdot 100$, $(PERF_i - 1) \cdot 100$, $(GEO_i - 1) \cdot 100$ and respectively $(SECT_i - 1) \cdot 100$ from equation (7). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

performances, multiplying their initial market shares by four, more than three and more than two respectively.

The decomposition of changes by market segment, raises an additional data issue. In order to fully capture year-on-year changes in market share for a given exporter, one must take into account the fact that some flows may be classified in two different market segments depending on the year. If the computation of the growth rates were performed on flows classified at both dates in the same market segment, these shifters would not be present. To overcome this problem, we adopt the following strategy. For each trio (exporter, importer, HS6) and year we classify:[29] As middle range products, flows present in the top range in t_1 but not in t_0; as middle range products, flows present in the top range in t_0 but not in t_1; other shifters as bottom range products.

We now shift to Table 6, focusing on the upper segment of the world market. For the EU, the growth in market share for top-range products (+7%) contrasts with the global result (-5.4% in Table 4) and suggests a rise in the unit values of European exports. This is mostly due to the sectoral structure: the EU has benefited from a composition effect, whereby world demand has increased faster for its most exported top-range products. But the European export performance is also less negative (it is even positive for the Euro area), whereas is still very negative for Japan and the US. Here again the difference with the new Member States is striking, even if these percentage changes apply to tiny market shares. Contrasting with the EU and the US, Japan has benefited from a favourable geographical orientation of their exports of top-range products, thanks to a larger orientation toward a fast growing Asian market.

4 Conclusion

In the context of a profound reshaping of world trade flows starting in the mid-1990s, we observe that the redistribution of market shares observed between emerging and developed countries – and among developing countries themselves – has affected the EU, Japan and the US differently. EU managed to maintain its world market share at 19.4% for goods

[29] Non-shifters (e.g. top range in t_0 and t_1) are indeed kept in their initial range.

Table 6: Shift-share decomposition of the percentage changes in world market shares, 1995-2009: **top-range products**

	% Δ in market share using eq. (7)	Contribution of: Export Performance	Structure effects: Geographic	Structure effects: Sectoral
EU27	7.0	-1.3	-0.4	8.9
France	-1.4	-14.6	2.0	13.3
Germany	7.3	2.6	3.5	1.1
Italy	-5.0	13.5	4.3	-19.7
United Kingdom	-19.6	-32.8	-0.9	20.6
Euro Area	10.5	3.8	-0.9	7.3
USA	-26.4	-28.8	-6.0	10.1
Japan	-25.7	-32.2	14.6	-4.4
Canada	-50.4	-41.0	-15.0	-1.0
Switzerland	-6.4	-29.0	0.2	31.6
China	187.5	436.7	-23.4	-30.1
Brazil	27.1	44.1	-14.8	3.5
India	40.8	61.2	-0.2	-12.5
Indonesia	-10.3	37.5	-6.0	-30.6
Korea	6.1	26.9	3.6	-19.3
Malaysia	-20.3	1.7	-5.8	-16.8
Mexico	44.6	61.5	-8.6	-2.0
Taiwan	-6.2	0.6	21.5	-23.3
Singapore	-37.8	-50.7	19.8	5.4
Thailand	-12.5	25.1	-9.3	-22.8
MENA	50.8	69.9	9.2	-18.7
SSA	25.2	41.4	-7.4	-4.4
RoW	19.9	25.1	4.1	-8.0

Source: Authors' calculations using all trade flows from BACI database recorded in any two consecutive years in the considered period, except flows associated with HS sections 25, 26, 27, 97, 98, 99, very small values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS. All figures are expressed in terms of percentage change in market share. The four columns correspond to $g_i \cdot 100$, $(PERF_i - 1) \cdot 100$, $(GEO_i - 1) \cdot 100$ and $(SECT_i - 1) \cdot 100$ respectively from equation (7). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

(excluding energy and intra-EU trade) losing only 1.3 percentage points over the period (1995-2009). Market share losses are considerably larger in the case of the United States and Japan with a decline of around 6 percentage points. The US and Japan now account for 12.5% and 8.0% of world market shares respectively.

Our analysis of the intensive and extensive change in the value of world trade shows that although the exports of new products and/or exports to previously unexploited markets account for a large share of the total number of flows both in 1995 and 2009, they represent only 17% of the increase in global trade in value terms. The contribution of the intensive margin to the growth in the value of exports of all developed countries is large, pointing to a relative inertia in the orientation of European, American and Japanese exports.

Our shift-share analysis of export growth shows that European losses recorded between 1995 and 2009 are exclusively attributable to a negative contribution of the exporter effect. By contrast, the geographical and sectoral structure of EU exports contributed positively to the export growth. Focusing on the EU15 reinforces this conclusion. Sectoral effects are generally positive for OECD countries and geographical effects are negative for countries in the Americas and some in Asia.

Regarding high-tech and top-range products, the EU has increased its world market share. This better positioning of the EU25 among developed countries is due not only to a superior relative export performance, but also to a more pronounced specialization in products with rapidly growing import demand.

This paper yields two contributions. From a methodological point of view, our findings illustrate the advantage of working at the most detailed level of the classification of products when it comes to defining market segments. These results also illustrate the benefits of a shift-share analysis applied to the intensive margin of country exports. From a policy perspective, our results indicate that the EU has withstood better the competition from the major emerging traders, thanks to buoyant world demand for top range products its exporters were specialised in.

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5 Appendix

5.1 Data description

The trade data used in this paper are from the BACI database, a database for the analysis of international trade at the product-level developed by Gaulier & Zignago (2010). BACI draws on the UN COMTRADE information, in which imports are reported CIF (cost, insurance and freight) and the exports FOB (free on board). BACI provides reconciled FOB data on trade flows: for a given product k and a given year t, exports from country i to importer j are equal to j imports from i. This reconciliation of mirror flows is performed for both values and quantities, and relies on estimated indicators of the reliability of import and export country reports. The quantity units are converted into tons, making possible the computation of homogeneous unit values.[30]

BACI covers trade between more than 200 countries, in the roughly 5,000 products of the 6-digit Harmonised System (HS6) classification. However, this study excludes intra-EU 27 trade flows. This choice must be borne in mind when it comes to market shares and changes therein. We also exclude mineral, specific and non-classified products.[31] Trade flows below USD 10,000 and involving non-independent territories and micro-states are also excluded in panel (2) of tables in section 2.1 and in section 3. For the shift-share analysis in section 3 we employ HS2 data obtained by aggregation of HS6 data. The motivation behind is to keep a larger share of trade flows in the intensive margin, the only component of the export growth discussed in that section.

Concerning the high-tech products, we use the classification in broad sectors proposed by Lall (2000), detailed in Table 7.

The availability of traded unit values at a very disaggregated level (country-partner-product-year) in the BACI database makes it possible to compute international trade price indices. Similar to Gaulier et al. (2008) we compute price indices as chained Tornqvist indices of unit values, but unlike them we compute an index for each pair of trading countries

[30]BACI is available to COMTRADE users at: http://www.cepii.fr/anglaisgraph/bdd/baci.htm

[31]More precisely, we exclude the six following chapters of the Harmonized System: the mineral products (chapters 25, 26 and 27), the works of art, collectors' pieces and antiques (chapter 97) and the two last chapters, 98 and 99, devoted to special classifications or transactions.

(exporter-importer) and HS2 heading. Data in 2000 is taken as reference. We use these indices to deflate trade values (expressed in current USD in BACI) to obtain trade volumes expressed in terms of 2000 prices. Since this exercise allows us to disentangle price effects, we refer to obtained data as volumes.

Table 7: The classification of sectors according to the technological content, Lall (2000)

Classification	**Examples**
Primary products (PP)	fresh fruit, meal, rice, cocoa, tea, coffee, wood
Manufactured products	
Resource based manufactures (RB)	
Agro/forest based products	Prepared meats/fruits, beverages, wood products, vegetable oils
Other resource based products	Ore concentrates, petroleum/rubber products, cement, cut gems, glass
Low technology manufactures (LT)	
Textile/fashion cluster	Textile fabrics, clothing, headgear, footwear, leather manufactures, travel goods
Other low technology	Pottery, simple metal parts/structures, furniture, jewellery, toys, plastic products
Medium technology manufactures (MT)	
Automotive products	Passenger vehicles and parts, commercial vehicles, motorcycles and parts
Medium technology process industries	Synthetic fibres, chemicals and paints, fertilisers, plastics, iron, pipes/tubes
Medium technology engineering industries	Engines, motors, industrial machinery, pumps, switchgear, ships, watches
High technology manufactures (HT)	
Electronics and electrical products	Office/data processing/telecommunications equip, TVs, transistors, turbines, power generating equipment
Other high technology	Pharmaceuticals, aerospace, optical/measuring instruments, cameras
Other transactions (OT)	Electricity, cinema film, printed matter, 'special' transactions, gold, art, coins, pets

Source: Lall (2000).

The world distribution of unit values for each HS6 heading allows us to classify each product-bilateral flow into three price segments, and to examine competition among the main world exporters within each of these segments. Trade flows are ordered according their unit values and classified as follows: flows with the lowest unit value form the *bottom-range*, the ones with intermediate unit values - the *mid-market*, and the ones with the highest unit value - the *mid-range*. We employ the technique developed by Fontagné et al. (2008) to construct the three market segments. There is also a small "non classified" range of trade

flows for which data on trade quantities is not available and unit values cannot be computed, but they represent less than 10% of world trade.

Tables of this paper display results for countries accounting for more than 1% of world exports from 1995 to 2009. Results for all other countries in the world are available in our online appendix.[32]

[32]Zipped file at Soledad Zignago's Banque de France webpage and Lionel Fontagné's personal webpage.

5.2 Additional results

Table 8: Extensive and intensive margins in 1995-2009 for world exports by country, as a %

	(1) All trade flows			(2) Our (reduced) sample		
	Intensive Margin	Extensive Margin + (Entries)	Extensive Margin − (Exits)	Intensive Margin	Extensive Margin + (Entries)	Extensive Margin − (Exits)
	(a)	(b)	(c)	(d)	(e)	(f)
EU27	97,2	3,6	0,8	99,0	6,5	5,6
France	97,7	3,1	0,8	99,6	3,3	2,9
Germany	99,7	0,5	0,3	99,7	1,4	1,1
Italy	96,3	4,0	0,2	99,2	3,3	2,5
United Kingdom	99,6	1,1	0,7	99,3	5,0	4,3
Euro Area 12	98,2	2,4	0,6	99,7	4,0	3,7
USA	98,9	1,2	0,1	99,8	1,1	0,9
Japan	99,7	0,7	0,4	100,0	1,8	1,8
Canada	97,2	3,1	0,3	99,2	4,6	3,7
Switzerland	99,0	1,4	0,4	99,9	2,3	2,2
China	99,3	0,8	0,0	99,9	0,3	0,3
Brazil	90,1	10,3	0,4	95,3	10,3	5,6
India	97,1	3,0	0,1	98,8	3,2	1,9
Indonesia	96,6	3,8	0,4	99,0	5,2	4,2
Korea	93,8	6,3	0,1	99,5	3,0	2,5
Malaysia	97,4	2,8	0,2	98,4	3,9	2,3
Mexico	99,4	1,0	0,4	99,5	2,9	2,4
Taiwan	92,4	8,2	0,6	96,2	10,0	6,2
Singapore	96,7	3,8	0,6	100,8	6,0	6,8
Thailand	98,4	1,9	0,3	99,6	2,1	1,6
MENA	86,3	16,0	2,3	107,5	39,2	46,6
SSA	76,3	30,0	6,3	92,8	59,8	52,5
RoW	69,7	32,2	1,9	88,9	26,3	15,2

Note: Authors' calculations using BACI values (current USD) of traded goods at the HS 2-digit level. The samples used in panels (1) and (2) are those from Table 1. Column (a) refers to the contribution of export flows (product × destination market) present both in 1995 and 2009. Column (d) refers to the contribution of export flows (product × destination market) present in any two consecutive years from 1995 to 2009. The other columns refer to the contribution of export flows appearing (positive contribution) or disappearing (negative contribution) over the period. The columns add up as follows: $(a)+(b)-(c) = 100$ and $(d)+(e)-(f) = 100$. Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

Table 9: Sectoral composition of world and EU exports in 2009 and changes 1995-2009

	Sector (ISIC Rev.3)	2009 values, %		95-09, p.p. Δ			
		World	EU	World		EU	
				values	volumes	values	volumes
1	Agriculture, hunting	3.4	1.5	-0.43	-0.63	-0.07	-0.05
2	Forestry, logging	0.2	0.1	-0.18	-0.16	-0.05	-0.05
5	Fishing & fish farming	0.2	0.1	-0.10	-0.09	0.00	-0.01
14	Other mining & quarrying	0.3	0.6	-0.21	0.06	-0.57	-0.08
15	Food products & beverages	6.0	5.5	-0.07	-0.45	-1.26	-1.71
16	Tobacco products	0.1	0.2	-0.20	-0.40	-0.11	-0.07
17	Textiles	2.9	1.5	-0.90	-0.47	-1.37	-1.21
18	Wearing apparel	2.6	1.1	-0.51	-0.77	-0.62	-0.86
19	Leather	1.3	1.0	-0.35	-0.66	-0.69	-0.96
20	Wood & wood products	0.8	0.8	-0.58	-0.58	0.04	0.13
21	Pulp, paper & paper products	1.5	1.9	-0.84	-0.39	-0.49	-0.10
22	Publishing & printing	0.6	0.8	-0.23	-0.23	-0.34	-0.39
24	Chemicals & chemical products	13.3	19.6	2.84	2.01	5.20	3.24
25	Rubber & plastic	2.8	2.4	0.30	0.41	0.17	0.22
26	Non-metallic mineral products	1.1	1.4	-0.05	0.05	-0.66	-0.64
27	Basic metals	8.5	5.7	1.34	-0.35	-0.17	-1.31
28	Metal products	2.6	3.0	0.33	-0.11	0.22	-0.35
29	Machinery	11.3	17.6	0.46	0.18	-0.32	-2.13
30	Office machinery & computers	4.1	1.5	-2.21	-1.64	-1.12	-1.34
31	Electrical machinery	4.9	5.5	0.33	0.49	1.00	0.58
32	Radio, TV & communication equip.	10.9	4.1	0.56	1.74	-0.88	-2.22
33	Medical, precision & optical instr.	4.6	5.0	0.96	1.83	1.30	1.47
34	Motor vehicles, trailers & semi-trailers	7.1	9.1	-1.73	-1.88	-0.14	1.14
35	Other transport equipment	5.0	6.8	1.09	1.81	1.64	7.25
36	Furniture manufacturing n.e.c.	3.8	2.7	0.34	0.23	-0.86	-0.64

Source: Authors' calculations using BACI values (current USD) of traded goods (intra-EU trade is excluded). The change in market shares is given in percentage points (p.p.). Since oil is excluded from the sample, the "Coke, refined petroleum products & nuclear fuel" industry is not reported here. The sum of reported market shares is exactly 98 and 97% for the world and for the EU respectively.

Table 10: Shift-share decomposition of the percentage changes in world market shares, 1995-2009: **EU 27 Member States**

	% Δ	Contribution of:		
	in market share	Export	Structure effects	
	using eq. (7)	Performance	Geographic	Sectoral
EU27	**-5,4**	**-19,7**	**7,4**	**9,7**
Austria	19,4	3,3	8,1	6,9
Belgium and Luxembourg	-12,7	-36,8	15,2	19,9
Bulgaria	-35,8	-45,2	25,2	-6,4
Cyprus	-20,0	-48,1	38,1	11,7
Czech Republic	142,5	102,8	24,4	-3,9
Denmark	-11,8	-21,8	-0,9	13,7
Estonia	172,6	160,2	18,5	-11,6
Finland	-15,4	-26,8	15,6	0,0
France	-13,2	-32,5	10,0	16,8
Germany	-1,1	-15,5	6,2	10,1
Greece	22,5	12,0	35,5	-19,2
Hungary	148,1	98,3	23,9	1,0
Ireland	96,5	69,6	-20,7	46,1
Italy	-15,0	-19,0	11,7	-6,0
Latvia	10,5	-4,7	31,7	-12,0
Lithuania	25,0	-6,7	44,9	-7,6
Malta	71,5	58,7	-1,0	9,1
Netherlands	-10,4	-26,2	9,7	10,7
Poland	145,6	104,1	25,9	-4,4
Portugal	4,1	8,0	13,8	-15,3
Romania	63,2	29,5	38,9	-9,2
Slovakia	441,9	437,7	10,6	-8,9
Slovenia	21,2	-22,5	43,3	9,1
Spain	15,7	5,3	12,3	-2,1
Sweden	-23,7	-33,0	3,1	10,5
United Kingdom	-34,7	-45,4	1,4	17,8

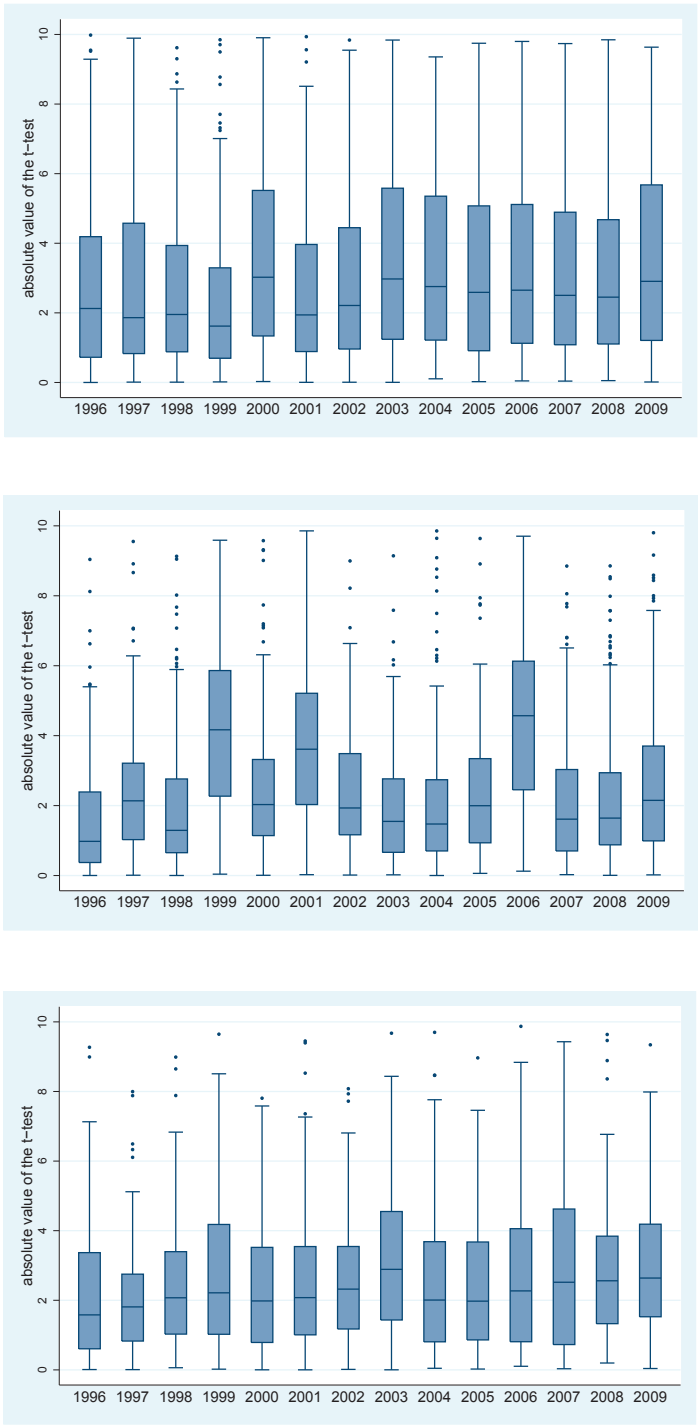
Source: Authors' calculations using all trade flows from BACI database existing in any two consecutive years in the considered period, except flows associated with HS sections 25, 26, 27, 97, 98, 99, very small values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS. All figures are expressed in terms of percentage change in market share. The four columns correspond to $g_i \cdot 100$, $(PERF_i - 1) \cdot 100$, $(GEO_i - 1) \cdot 100$ and $(SECT_i - 1) \cdot 100$ respectively from equation (7).

Table 11: Shift-share decomposition of the percentage changes in world market shares, *all products*, 1995-2009: **in volume terms**

	% Δ	Contribution of:		
	in market share	Export	Structure effects	
	using eq. (7)	Performance	Geographic	Sectoral
EU27	-2,5	-11,8	0,8	9,7
France	34,0	4,1	2,6	25,5
Germany	9,2	-2,8	1,6	10,5
Italy	-25,8	-23,0	3,6	-6,9
United Kingdom	-40,7	-44,9	-4,7	12,9
Euro Area 12	5,1	-5,6	1,5	9,8
USA	-33,3	-45,0	7,4	12,9
Japan	-40,6	-46,6	2,4	8,7
Canada	-50,6	-40,5	-21,9	6,5
Switzerland	-19,5	-36,6	2,1	24,3
China	160,4	307,8	-16,6	-23,5
Brazil	15,1	31,3	-0,8	-11,7
India	71,3	135,3	1,5	-28,3
Indonesia	14,1	54,5	-5,6	-21,8
Korea	42,6	31,1	10,1	-1,2
Malaysia	-15,7	-14,4	-2,9	1,4
Mexico	34,8	76,8	-22,5	-1,7
Taiwan	32,5	-6,2	39,2	1,5
Singapore	-16,7	-30,8	9,6	9,8
Thailand	12,9	28,3	-3,4	-9,0
MENA	39,8	53,8	8,0	-15,8
SSA	-7,4	12,0	-0,5	-16,9
RoW	1,4	20,7	1,9	-17,5

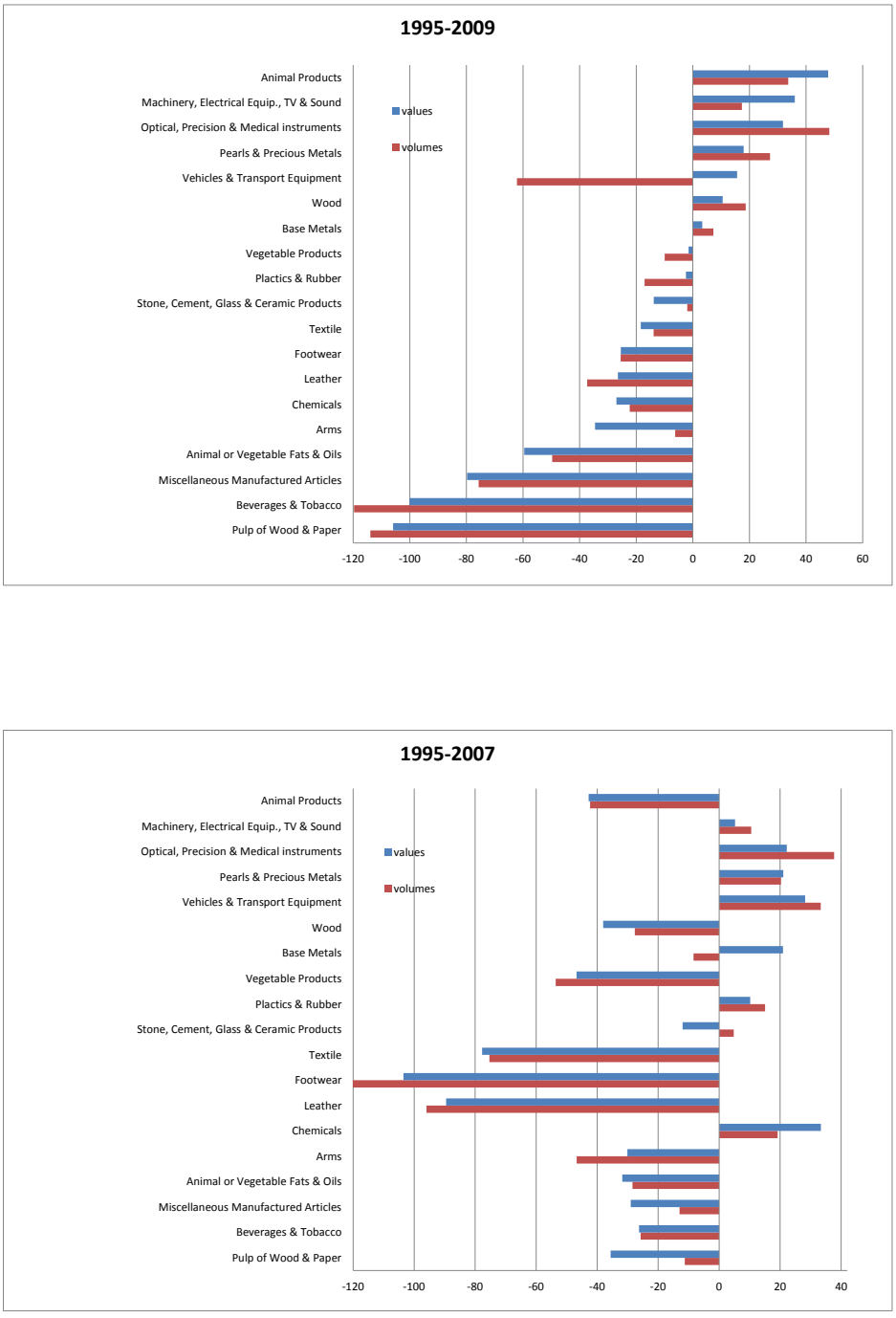
Source: Authors' calculations using all trade flows from BACI database existing in any two consecutive years in the considered period, except flows associated with HS sections 25, 26, 27, 97, 98, 99, very small values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS. All figures are expressed in terms of percentage change in market share. The four columns correspond to $g_i \cdot 100$, $(PERF_i - 1) \cdot 100$, $(GEO_i - 1) \cdot 100$ and respectively $(SECT_i - 1) \cdot 100$ from equation (7). Results for countries accounting for less than 1% of world exports from 1995 to 2009 are aggregated within three groups: the Middle East and North Africa (MENA), Sub-Saharan Africa (SSA), and Rest of the World (RoW).

Figure 2: Standard errors of exporter, importer and product fixed effects, central values



Source: Authors' calculations using all trade flows from BACI database existing in any two consecutive years in the period 1995-2009, except flows associated with HS sections 25, 26, 27, 97, 98, 99, very small values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS.

Figure 3: Estimated HS2 fixed effects, 1995-2009 and 1995-2007 periods, values and volumes, by HS sections



Source: Authors' calculations using all trade flows from BACI database existing in any two consecutive years in the period 1995-2009, except flows associated with HS sections 25, 26, 27, 97, 98, 99, tiny values (below USD 10,000), non-independent territories and micro-states. The estimation is performed at the 2-digit level of the HS.

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