**The Export Performance of the 2004 EU Enlargement Economies: A Constant Market Share Analysis\***

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(Preliminary version)

Abstract

On May 1st 2004, a treaty of accession between the first fifteen Member States of the European Union (hereinafter “EU15”) and ten aspiring new Member States of eastern and central Europe came into force. This enlargement has created high expectations for economic growth of these new members. This study focuses in one of the major key-points to promote a country’s long-term sustainable economic growth: the export performance. The period analysed is a long time span, between 1990 and 2013, in order to capture different stages in the relationship of these new members with the EU before and after accession. The study is based on the Constant Market Share methodology of decomposing an *ex-post* country’s export performance into different effects. Two different Constant Market Share Analysis (CMSA) were selected in order to disentangle, for the exports of the new members to the EU15, (i) the growth rate of exports and (ii)the growth of exports’ market share relatively to the world. Both approaches are applied to manufactured products first without disaggregating results by sectors and then grouping all products into two different classification of sectors: one considering the technological intensity of manufactured exports and another evaluating the specialization factors of the products exported. Results provide information not only on the ten economies’ export performance as a group but also individually considered and on the importance of each EU15 destination market to the export performance of these countries.

Keywords: Export performance, Constant Market Share, European Union, 2004 European Union Enlargement

Jel Classification: C43, F10, F14

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*1. Introduction*

On May 1st 2004, a treaty of accession between the first fifteen Member States of the European Union (hereinafter “EU15”) and ten aspiring new Member States came into force. Geographically located in central and eastern Europe, these ten aspiring countries included three former Soviet republics (Estonia, Latvia, and Lithuania), four former Soviet satellites (Poland, the Czech Republic, Hungary and Slovakia), a former Yugoslav republic (Slovenia) and two Mediterranean islands (Cyprus and Malta).

On the part of the accession countries, the 2004 EU enlargement led to high expectations of an increasing economic growth by having access to an economic union with high purchasing power (EUR-Lex, 2007). This study will focus in one of the major key-points to promote a country’s economic growth: the export performance. The period analysed is a long time span, between 1990 and 2013, in order to capture different stages in the relationship of these new members with the EU before and after accession. The total period is decomposed in four subperiods: from 1990 to 1996, corresponding to the phase of the fall of the Soviet Union and the submission of the applications of these ten countries for the accession to the EU, being this subperiod not only a transition period but also a control period, in which accession negotiations had not yet started; from 1996 to 2004, corresponding to the enlargement process; from 2004 to 2008, corresponding to the period between the accession and the financial crisis; and the period from 2008 to 2013, marked by the economic crisis of 2008.

 In order to evaluate these ten economies’ export performance to the EU15, this study makes use of the Constant Market Share Analysis (hereinafter “CMSA”), a technique that decomposes a country´s export performance into separate components that are due to the product and market structures of its exports and a residual effect associated to competitiveness. . Two different CMSA will be used, thus enabling a broad evaluation of the effective changes of these ten economies’ export performance.

The first CMSA is based on Leamer & Stern (1970) and allows to breakdown the variation of the exports growth of a country; the second CMSA is based on Nyssens & Poullet (1990) and decomposes the variation of a country´s export market share relatively to the world.

We consider the exports of 72 manufactured products[[1]](#footnote-1), as defined by the Chelem database[[2]](#footnote-2) Exports are given in value terms, in millions of US dollars. A drawback of using nominal values is that it is not possible to distinguish between the volume and the price components of export performance[[3]](#footnote-3).

Results are presented for the whole set of the 72 products and by grouping them in two different classification of sectors based on Fernandes (2002). The first is based on the classification of the Organisation for Economic Co-operation and Development (hereinafter “OECD”) for technological intensity and is composed by three sectors: low, medium and high technological intensity. The second is based on the OECD’s classification for specialization factors and is composed by five sectors: natural resources, labour costs, scale economies, product differentiation and research & development.

 This study is organised as follows. Section 2 explains the methodology. Section 3 examines the results extensively by dividing them into four different subsections: one focusing on the different disentangled effects from both CMSA; a second one assessing the results for the different sectors of manufactured goods; a third one evaluating individually each of the ten economies’ export performance; and a fourth one analysing the importance of each EU15 destination market to the export performance of these ten countries. Section 4 concludes.

*2. Methodology: Constant Market Share Analysis*

One of the first and most influential versions of the CMSA was made by Leamer & Stern (1970). This version specifically focuses on the effects underlying the percentage change of exports of a country. Notwithstanding, several reservations have been pointed out to this approach, especially by Richardson (1971)[[4]](#footnote-4). The main critique pointed is that the product and market effects are calculated in an asymmetric way, and, depending on which one is calculated first, one of them will include the interaction between the two effects (Richardson, 1971; Cheptea et al, 2005). To solve this problem, Milana (1988) proposed to calculate this interaction effect (mixed effect) explicitly, a correction that has been largely applied ever since, for instance by the European Central Bank[[5]](#footnote-5) (2005), Amador & Cabral (2008) and Crespo & Fontoura (2011).

Currently, several CMSA have been used in order to evaluate the export performance of a country. One of these versions was proposed by Nyssens & Poullet (1990) and allows to evaluate the change of a country’s share of exports relatively to the world. In this study, we apply the versions of Leamer & Stern (1970) and Tyssens & Poullet (1999) with the interaction term proposed by Milana (1988) in both cases.

*2.1. Decomposing the export growth*

The Leamer & Stern (1970) CMSA version decomposes the export performance of a country (group of countries) taking into consideration the growth rate of exports. The CMSA identity is expressed as:

|  |
| --- |
| $\frac{Σ\_{i}Σ\_{j}X\_{ij, t}- Σ\_{i}Σ\_{j}X\_{ij, t-1}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}=\frac{Σ\_{i}Σ\_{j}S\_{ij, t-1}∆X\_{ij}^{\*}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}+\frac{Σ\_{i}Σ\_{j} ∆S\_{ij}X\_{ij, t}^{\*}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}$ |
| Total Effect | Structure Effect | Competitiveness Effect |

where $X$ corresponds to the nominal value of a country’s exports; $X^{\*}$ means the equivalent notion for world exports; $i$ is the category of manufactured goods (hereinafter “product"); $j$ corresponds to the EU15 destination market; $t-1$ and $t$ are the initial and final years, respectively; $S$ is the share of the analysed country’s exports in the world exports; $∆X^{\*}$ is the variation in world exports in period t and $∆S $in the variation in S in period t .

The total effect corresponds to the total growth rate of exports of manufactured goods of the new EU member(s) to the EU15. It can be decomposed into two main effects: the structure effect and the competitiveness effect.

The structure effect, which Leamer & Stern (1970) referred as the demand side of the phenomenon under study, expresses the part of the growth rate of exports due to the variation of the world exports (to the same destination market), given the export structure of the analysed country in terms of products and destination markets of the initial period.

The last term of the identity is the so-called competitiveness effect, which is commonly related to the exporter´s price and non-price competitiveness.

The structure effect, in turn, can be decomposed into the following three effects:

|  |
| --- |
| $\frac{Σ\_{i}Σ\_{j}S\_{ij, t-1}∆X\_{ij}^{\*}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}=\frac{Σ\_{i}S\_{i, t-1}∆X\_{i}^{\*}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}+\frac{Σ\_{j}S\_{j, t-1}∆X\_{j}^{\*}}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}+\frac{Σ\_{i}Σ\_{j} S\_{ij, t-1}\left(∆X\_{ij}^{\*}-\frac{X\_{ij,t-1}^{\*}}{X\_{i,t-1}^{\*}}∆X\_{i}^{\*}-\frac{X\_{ij,t-1}^{\*}}{X\_{j,t-1}^{\*}}∆X\_{j}^{\*}\right)}{Σ\_{i}Σ\_{j}X\_{ij, t-1}}$  |
| Structure Effect | Product Effect | Market Effect | Mixed Structure Effect |

The product and market effects express, respectively, the importance of the specialization and the geographical structures of a country in the demand side (structure) effect. To complete the structure effect, there is a residual term - the mixed structure effect - resultant from the solution proposed by Milana (1988), which does not have a straightforward interpretation (ECB, 2005).

*2.2. Decomposing the relative export growth*

The second CMSA used in this study is adapted from Nyssens & Poullet (1990) and also adopts Milana’s solution. In this case, the total effect is the difference between the exports’ market share [[6]](#footnote-6) of a country (group of countries) and the exports’ market share of the rest of the world in the same destination market. It can be decomposed as follows:

:

|  |
| --- |
| $$Σ\_{i}Σ\_{j}θ\_{ij}g\_{ij}- Σ\_{i}Σ\_{j}θ\_{ij}^{\*}g\_{ij}^{\*}=Σ\_{i}Σ\_{j}g\_{ij}^{\*}\left(θ\_{ij}-θ\_{ij}^{\*}\right)+Σ\_{i}Σ\_{j }θ\_{ij}\left(g\_{ij}- g\_{ij}^{\*}\right)$$ |
| Total Effect | Structure Effect | Competitiveness Effect |

where $g\_{ij}= \frac{X\_{ij, t}- X\_{ij, t-1}}{X\_{ij, t-1}} $is the export growth rate of a country of product $i$ to the destination market $j$, in period t; $θ\_{ij=} \frac{X\_{ij, t-1}}{X\_{t-1}}$ is the share of product *i* to destination market *j* in total exports of the analysed country, in period $t-1 and g\_{ij}^{\*}$ and $θ\_{ij}^{\*}$ are the equivalent notions for world exports (excluding the reporting country). A positive (negative) total effect means a total market share gain (loss) in the destination market

 The total effect is decomposed into the structure and the competitiveness effects.

The structure effect captures the difference between the export structure (by product and destination market) of the analysed country and the world weighted by the growth rate of world exports. It will be positive if the country’s export structure is more concentrated on high-growth products/markets than the world structure. Note that the term in brackets provides equivalent information to the traditional Balassa’s exports performance index of Revealed Comparative Advantage (Amador & Cabral, 2008).

 The competitiveness effect is a “pure” market share effect as it measures the aggregated impact of changes in market shares of each product/ destination market. It compares the growth rates of the exports of the analysed country and the world that are not due to differences in the export structure.

The structure effect can be decomposed into three effects expressed as follows:

|  |
| --- |
| $Σ\_{i}Σ\_{j}g\_{ij}^{\*}\left(θ\_{ij}-θ\_{ij}^{\*}\right)=Σ\_{i} g\_{i}^{\*}\left(θ\_{i}-θ\_{i}^{\*}\right)+ Σ\_{j}g\_{j}^{\*}\left(θ\_{j}-θ\_{j}^{\*}\right)+ Σ\_{i}Σ\_{j}g\_{ij}^{\*}\left[\left(θ\_{ij}-θ\_{ij}^{\*}\right)-\frac{θ\_{ij}^{\*}}{θ\_{i}^{\*}}\left(θ\_{i}-θ\_{i}^{\*}\right)-\frac{θ\_{ij}^{\*}}{θ\_{j}^{\*}}\left(θ\_{j}-θ\_{j}^{\*}\right)\right]$ |
| Structure Effect | Product Effect | Market Effect | Mixed Structure Effect |

where gi\* is the percentage change of world exports of product i in period t , gj\* the percentage change of the world exports to country j in period t, Ɵj is the share of country j in total exports of the analysed country in period t-1, Ɵj\* is the equivalent notion for world exports, Ɵi is the share of product i in total exports of the analysed country in period t-1 and Ɵi\* is the equivalent notion for world exports.

The product (market) effect evaluates which part of the structure effect is due to the product (market) specialization of the country analysed. It will be positive if the country’s export structure is more concentrated on high-growth products (markets) than the world structure. The mixed structure effect is a residual term comprising the interaction between the product and market effects as proposed by Milana (1988).

*3. Main results*

*3.1. Overall assessment*

As expected, the ten countries of the 2004 EU enlargement had a major improvement in their export performance to the EU15 from 1990 to 2013. In these past twenty three years, the exports of manufactured goods to the EU15 increased more than 285 billion USD, corresponding to a growth rate of 1118.3%, and a market share increase in the EU15 of 4.56%, reaching 6.25% of the EU15’s market share in 2013. Table 1 presents these results.

Table 1

Results of the CMSA for the manufacturing industry

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 1990-2013 | 1990-1996 | 1996-2004 | 2004-2008 | 2008-2013 |
| Market Share Variation\* | 4.56 | 0.96 | 1.82 | 0.99 | 0.79 |
| Export Growth  | Total Effect | 1118.30 | 102.18 | 186.65 | 95.04 | 7.78 |
| Structure Ef. | 241.29 | 22.83 | 58.27 | 56.70 | -9.83 |
| *Product Effect* | 222.17 | 23.72 | 62.72 | 52.33 | -12.02 |
| *Market Effect* | 228.45 | 28.42 | 64.52 | 63.29 | -4.76 |
| *Mixed Str. Ef.* | -209.32 | -29.31 | -68.97 | -58.92 | 6.95 |
| Comp. Ef. | 877.00 | 79.35 | 128.38 | 38.34 | 17.61 |
| Relative Export Growth  | Total Effect | 894.38 | 74.48 | 118.62 | 36.61 | 14.15 |
| Structure Ef. | 13.32 | -7.79 | -11.59 | -3.22 | -4.88 |
| *Product Effect* | -3.35 | -5.72 | -7.13 | -8.46 | -7.19 |
| *Market Effect* | -6.47 | -4.68 | -11.67 | 2.95 | -0.55 |
| *Mixed Str. Ef.* | 23.14 | 2.60 | 7.21 | 2.29 | 2.86 |
| Comp. Ef. | 881.06 | 82.27 | 130.22 | 39.83 | 19.03 |

 *\** Percentage variation in the ten countries’ market share $(∆S)$ in period $t$.

Source: Own calculations from CHELEM database.

The influence of the competitiveness effect played a dominant and major role in export growth over the whole period, accounting for more than 224 billion US dollars. Both the market and product effects also had a positive impact on this increase in all subperiods but the last one, marked by the economic crisis of 2008 It is interesting to observe that the structure effect surpassed in size the competitiveness effect in the 2004-08 period , showing the importance of full access to the EU15 dynamic market

Considering now the relative export growth, we confirm the major role of the competitiveness effect in the new members’ exports to the EU15. An interesting result is the negative sign of the product and market effects in all subperiods, showing that although the product and market structures of these countries contributed positively to the growth of their exports in the first three sub-periods analysed, the world is relatively more specialized in products and markets with dynamic demand.

The subperiod which registered the highest relative market share gains in the EU15 was the pre-accession one, from 1996 to 2004, with an average increase of 0.25% per year in the EU15’s imports share from the new members. The lowest difference in export market shares occurred in the aftermath of the economic crisis of 2008:

*3.2. Contribution of the different sectors*

Taking into account the ten countries’ export performance of manufactured goods to the EU15 by sectors according to the technological level classification (table 2), a positive progress in all sectors, in the overall period, is acknowledgeable. The weakest export performance was registered in the exports of low technology manufactured goods, increasing a little less than 84 billion USD, with a growth rate of 527.77%, between 1990 and 2013.

The exports of medium technology goods registered the highest export performance, with an export growth rate of 1768.12%, more than 106 billion USD and a market share increase of 6.89%. High technology exports registered the second highest export performance. Table 2 shows these results.

Table 2

CMSA by technological level

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Market Share Variation\* | Export Growth  | Relative Export Growth  |
|  |  | Total Ef. | Str. Ef. | Comp. Ef. | Total Ef. | Str. Ef. | Comp. Ef. |
| 90-'13 | Low | 2.03 | 527.77 | 242.35 | 285.42 | 222.45 | 47.13 | 175.32 |
| Medium | 6.89 | 1768.12 | 221.94 | 1546.18 | 360.54 | -7.90 | 368.44 |
| High | 6.67 | 3172.95 | 244.25 | 2928.71 | 254.97 | -25.57 | 280.54 |
| 90-'96 | Low | 1.03 | 72.88 | 18.72 | 54.16 | 37.17 | 0.86 | 36.31 |
| Medium | 1.05 | 130.68 | 23.78 | 106.89 | 22.18 | -3.27 | 25.45 |
| High | 1.14 | 249.48 | 43.55 | 205.94 | 15.30 | -4.52 | 19.83 |
| 96-'04 | Low | 0.59 | 79.19 | 45.05 | 34.14 | 20.71 | 2.56 | 18.16 |
| Medium | 2.56 | 250.07 | 65.22 | 184.85 | 47.67 | -3.97 | 51.64 |
| High | 2.88 | 357.33 | 66.61 | 290.71 | 40.78 | -8.21 | 48.99 |
| 04-'08 | Low | -0.02 | 79.35 | 66.17 | 13.19 | -3.97 | -8.08 | 4.10 |
| Medium | 1.61 | 101.12 | 54.34 | 46.78 | 18.62 | 2.57 | 16.05 |
| High | 2.11 | 98.16 | 39.31 | 58.86 | 17.24 | 1.15 | 16.09 |
| 08-'13 | Low | 0.42 | 12.99 | -3.66 | 16.65 | 3.25 | -2.22 | 5.47 |
| Medium | 1.67 | 15.02 | -7.68 | 22.70 | 7.81 | -0.79 | 8.59 |
| High | 0.55 | 3.34 | -7.75 | 11.09 | 1.88 | -1.23 | 3.11 |

 *\** Percentage variation in the ten countries’ market share $(∆S)$ in period $t$.

 Source: Own calculations from CHELEM database.

 Evaluating the different effects in table 2 in the overall period, it is noteworthy the important positive contribution of the competitiveness effect in both CMSA; while the structure effect has a positive, though less determinant, in the exports growth CMSA and a negative contribution in the medium and high technology sectors in the relative export growth CMSA in all subperiods but the one from 2004 to 2008.

Looking closer into the different subperiods and considering the gains in the share of imports of the EU15, it is clear that the export performance in medium and high technology sectors took off from 1996 onwards (and specially in the post-accession sub-period, from 2004 to 2008, with a positive market share average annual variation of 0,4% in medium technology exports and 0,53% in high technology exports). Such indicates that the preparation for the adherence and the accession to the EU had a positive impact on the technological development of exports to the EU15 of these countries. As Murphy (2006) points out, the reforms and rules adopted in the accession process’ period have helped modernize these economies, bringing greater macroeconomic stability and opening new opportunities for businesses.

Turning now to the analysis by specialization factors, table 3 shows the results. We conclude that the ten countries improved their export performance in every specialization factor to the EU15 in all subperiods in terms of the export growth. They also gained market share except in the sectors based in natural resources in the immediate post-accession period.

Focusing the overall period, the highest market share increase was registered in the product differentiation sector, with an increase of 9.58% from 1990 to 2013. The scale economies sector registered both the highest export growth increase, over 84 billion USD, and the best relative export growth. Research and Development intensive products registered the highest export growth rate, of 2402.79%, pointing out the strong improvement of this sector from being the smallest of these sectors, in 1990, for these ten countries, to become higher, in 2013, than the labour costs sector and close to the natural resources sector - both sectors associated with low technological manufactured goods.

 If we look at the different effects, we conclude that the competitiveness effect has, once more, played an important role in the performance of all sectors and a determinant role in the best performing sectors (the scale economies, product differentiation and R&D sectors), in both CMSA. As mentioned, considering that these three last sectors are more associated with medium and high technology sectors, these results are coincident with the results presented in table 2.

Table 3

CMSA by specialization factors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Market Share Variation\* | Export Growth  | Relative export growth |
|  |  | Total Ef. | Str. Ef. | Comp. Ef. | Total Ef. | Str. Ef. | Comp. Ef. |
| 90-'13 | Nat. Res. | 1.08 | 490.97 | 321.49 | 169.48 | 80.90 | 32.85 | 48.05 |
| L. Costs | 3.91 | 543.66 | 167.74 | 375.92 | 124.81 | 17.35 | 107.47 |
| Scale Econ. | 7.62 | 1859.67 | 187.36 | 1672.31 | 293.25 | -10.12 | 303.37 |
| Prod. Dif. | 9.58 | 2308.10 | 230.95 | 2077.15 | 195.59 | -1.72 | 197.31 |
| R&D | 4.44 | 2402.79 | 252.15 | 2150.64 | 143.41 | -24.69 | 168.10 |
| 90-'96 | Nat. Res. | 0.08 | 21.88 | 12.18 | 9.70 | 2.54 | -1.33 | 3.88 |
| L. Costs | 2.33 | 124.15 | 25.45 | 98.70 | 31.07 | 2.25 | 28.82 |
| Scale Econ. | 1.12 | 141.25 | 24.91 | 116.33 | 18.45 | -2.74 | 21.19 |
| Prod. Dif. | 2.26 | 258.82 | 35.99 | 222.84 | 20.84 | -0.39 | 21.23 |
| R&D | 0.40 | 117.02 | 33.14 | 83.89 | 1.75 | -4.72 | 6.47 |
| 96-'04 | Nat. Res. | 0.40 | 82.34 | 59.78 | 22.56 | 3.24 | -0.09 | 3.33 |
| L. Costs | 0.80 | 68.44 | 33.23 | 35.21 | 14.24 | 2.55 | 11.69 |
| Scale Econ. | 2.38 | 238.76 | 65.19 | 173.57 | 35.11 | -3.17 | 38.28 |
| Prod. Dif. | 4.50 | 255.30 | 60.35 | 194.95 | 36.15 | 2.07 | 34.08 |
| R&D | 2.16 | 448.73 | 78.75 | 369.98 | 20.41 | -10.99 | 31.40 |
| 04-'08 | Nat. Res. | 0.00 | 96.50 | 79.47 | 17.03 | -9.46 | -11.12 | 1.66 |
| L. Costs | 0.15 | 61.70 | 56.00 | 5.70 | 3.57 | 2.45 | 1.12 |
| Scale Econ. | 2.00 | 111.59 | 53.86 | 57.73 | 17.29 | 1.88 | 15.41 |
| Prod. Dif. | 1.47 | 80.92 | 53.26 | 27.66 | 11.04 | 4.98 | 6.06 |
| R&D | 1.67 | 108.20 | 35.00 | 73.20 | 9.44 | -2.54 | 11.99 |
| 08-'13 | Nat. Res. | 0.59 | 35.33 | 4.01 | 31.32 | 1.87 | -2.25 | 4.12 |
| L. Costs | 0.63 | 5.43 | -3.66 | 9.09 | 1.46 | -0.15 | 1.61 |
| Scale Econ. | 2.12 | 13.33 | -10.30 | 23.63 | 6.96 | -0.31 | 7.27 |
| Prod. Dif. | 1.34 | 4.40 | -1.45 | 5.86 | 1.86 | 0.71 | 1.15 |
| R&D | 0.21 | 0.94 | -15.52 | 16.47 | 0.79 | -2.23 | 3.03 |

*\** Percentage variation in the ten countries’ market share $\left(∆S\right)$ in period $t$

Source: Own calculations from CHELEM database.

It should also be noted that the structure effect registers a negative contribution in terms of relative market share growth in all subperiods but for labour intensive sectors in the first three subperiods, in line with previous results for this effect.

*3.3. Results by countries*

Focusing the analysis by different countries, it is possible to witness a great amplitude of results in the export performance of these ten economies, considering the relative market share growth and the exports growth in the whole period.

 The best performing countries in terms of the relative market share growth were, by decreasing order, Slovakia, the Czech Republic, Estonia, Poland, Hungary and Lithuania . Latvia has a small growth rate in its market share, while the worst performing countries, with negative export growth rates, were Malta, Slovenia and Cyprus. The results’ order are maintained unaltered when considering the exports growth rate: Still, there is a difference when comparing the export growth rate’s results to the ones of the relative market share growth rate: none of the ten countries registered a negative export growth rate. Table 4 presents these results.

Table 4

CMSA for each country (1990-2013)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Market Share Growth Rate[[7]](#footnote-7) | Export Growth  | Relative export growth |
|  | Total Ef. | Str. Ef. | Comp. Ef. | Total Ef. | Str. Ef. | Comp. Ef. |
| CY | -16.51 | 175.70 | 183.78 | -8.08 | -104.96 | -43.87 | -61.08 |
| CZ | 658.91 | 2406.12 | 206.94 | 2199.18 | 2126.66 | -23.74 | 2150.40 |
| EE | 452.22 | 1723.58 | 231.98 | 1491.60 | 783.35 | 2.16 | 781.19 |
| HU | 224.94 | 973.05 | 237.71 | 735.33 | 736.65 | 13.05 | 723.60 |
| LV | 6.70 | 252.34 | 629.37 | -377.03 | -18.77 | 445.08 | -463.85 |
| LT | 154.86 | 741.61 | 662.81 | 78.79 | 393.42 | 458.04 | -64.62 |
| MT | -30.34 | 130.02 | 113.65 | 16.38 | -153.71 | -113.07 | -40.63 |
| PL | 344.23 | 1366.96 | 197.77 | 1169.19 | 1106.88 | -24.32 | 1131.19 |
| SK | 1095.05 | 3846.38 | 205.89 | 3640.49 | 3364.54 | -28.67 | 3393.21 |
| SI | -20.06 | 163.98 | 191.09 | -27.12 | -69.11 | -36.91 | -32.20 |

Source: Own calculations from CHELEM database.

In terms of the different effects, the competitiveness effect is the determinant effect in the exports growth rate of the best countries’ best performing sectors. A positive influence of the structure effect for export growth in all countries but negative in most countries in the case of the relative export growth is once more worth underlining.

A brief note on the results obtained by using the two sectoral classifications[[8]](#footnote-8). First, it should be noted that medium and high technology manufactured goods were the ones with the highest export performance. In fact, excluding Malta, every other country had the lowest market share and export growth rate in the low technology sector and the highest market share and export growth rate in the high technology sector. Second, the same line of thought holds when considering the export performance of these ten economies by specialization factors, giving consistency between the results presented in table 2, 3 and 4. In this regard, it is observable that the product differentiation sector was the one with the best performance among the best performing economies. With the exception of Estonia, Lithuania and the Czech Republic, all the other best performing States (Slovakia, Poland and Hungary) had their highest relative market share and export growth rate in product differentiation exports. The R&D and scale economies intensive sectors also present significantly positive export performances for these countries, in the overall period.

 As previously mentioned, the excellent export performance of these countries on these sectors - scale economies, product differentiation and R&D - denotes an improvement of their export performance in more capital intensive sectors, meaning these States were able to grow from an export profile based on labour costs and exported quantity to one more based in added value. It is also denotable a strong link between the improved sectors, the more capital intensive export profile and the importance of a stronger specialization in the mechanical engineering industry, especially in the automotive sector. In fact, the two highest categories of manufactured goods exported to the EU15, in 2013, by the Czech Republic and Slovakia (the two best performing countries), were private automobiles and elements of automobile vehicles[[9]](#footnote-9). Both categories of manufacture goods are intensive in scale economies, rather than on product differentiation. Yet, product differentiation, as well as R&D intensive exports (with medium to high technology level) are an important part of both countries’ exports performance if the automotive sector and the mechanical engineering industry are considered: electrical products, a product differentiation intensive category of manufactured goods, is Czech Republic’s third highest export (and Slovakia’s fifth) to the EU15 in 2013; computer hardware and engines is Czech Republic’s fourth and fifth highest export, respectivelly; while Slovakia’s fourth highest export to the EU15 in 2013 is consumer electronics, a R&D intensive category of manufactured goods.

The change in the export performance profile of the two best performing countries (the Czech Republic and Slovakia) is even more evident if it is taken into consideration the fact that in 1990 the highest exported category of goods of both countries to the EU15 was iron and steel, a scale economies intensive low technology level category of manufactured goods.

*3.4. Contribution of the different destination markets*

This study now focuses on the influence of the EU15 destination markets to the competitiveness effect of the 2004 EU enlargement countries. In order to do so, the export growth rate CMSA’s competitiveness effect is decomposed by the influence of each EU15 destination market, in all considered periods, for the ten States of the 2004 EU enlargement, in the following way:

$$\frac{Σ\_{i} ∆S\_{ij}X\_{ij, t}^{\*}}{Σ\_{i}Σ\_{j} ∆S\_{ij}X\_{ij, t}^{\*}}$$

where each destination market $j$ is evaluated in their contribution to the whole export growth rate CMSA’s competitiveness effect. Table 5 presents the results for the ten economies aggregated. For the sake of parsimony, we consider only the export growth CMSA and the “technological intensity” classification of sectors.

Table 5

EU15 markets’ contribution to the ten countries’ competitiveness effect

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1990-2013 | 1990-1996 | 1996-2004 | 2004-2008 | 2008-2013 |
| DE | 45.72 | 55.64 | 48.40 | 20.63 | 40.78 |
| AT | 5.16 | 9.22 | 4.50 | 0.11 | 4.94 |
| DK | 2.35 | 1.83 | 1.71 | 3.88 | 1.82 |
| ES | 4.19 | 1.30 | 5.42 | 6.43 | 6.13 |
| FI | 1.95 | 1.69 | 2.02 | 1.41 | 2.14 |
| FR | 9.51 | 6.73 | 8.83 | 16.32 | 3.81 |
| GR | 0.66 | -0.20 | 0.43 | 2.21 | 1.27 |
| IE | 0.37 | 0.08 | 0.47 | 1.23 | 0.39 |
| IT | 7.65 | 5.53 | 6.80 | 15.73 | 7.86 |
| NL | 3.54 | 4.22 | 3.87 | 8.58 | 9.08 |
| PT | 0.66 | 0.36 | 1.04 | -0.13 | 1.19 |
| UK | 9.34 | 6.26 | 7.34 | 14.49 | 13.17 |
| SE | 4.39 | 3.52 | 4.61 | 4.75 | 2.86 |
| BE | 4.31 | 3.67 | 4.39 | 3.58 | 4.67 |
| LU | 0.21 | 0.14 | 0.17 | 0.78 | -0.11 |

Source: Own calculations from CHELEM database.

We conclude that Germany had the biggest contribution to the competitiveness effect of the 2004 enlargement economies, in all considered periods. In fact, in the first period (from 1990 to 1996), Germany’s contribution is greater than the rest of the EU15 summed together. Given its geography, economic weight and manufacturing profile, such would hardly be a surprise. France, Italy and the United Kingdom have, after Germany, the highest contributions, being the post accession period (from 2004 to 2008) the one which led to the highest contribution of the three Member States.

Table 6 evaluates the contribution of the different EU15 destination markets to the export growth rate CMSA’s competitiveness effect of each country of the 2004 enlargement, from 1990 to 2013. Again we consider only the export growth CMSA and the “technological intensity” classification of sectors.

Table 6

EU15 markets’ contribution to each ten countries’ competitiveness effect (1990-2013)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | CY | CZ | EE | HU | LV | LT | MT | PL | SK | SI |
| C.E. | **-** | **+** | **+** | **+** | **-** | **+** | **+** | **+** | **+** | **-** |
| DE | 109.39 | 48.20 | -0.10 | 51.43 | 12.57 | 175.86 | -64.24 | 43.61 | 44.32 | 140.65 |
| AT | -115.56 | 6.78 | 0.54 | 2.74 | -0.49 | 11.24 | 2.65 | 1.69 | 9.36 | -60.06 |
| DK | -37.84 | 1.45 | 4.84 | 1.71 | -7.12 | 47.13 | 30.90 | 2.54 | 1.11% | -7.91 |
| ES | 56.69 | 3.87 | 0.87 | 5.57 | -0.88 | -85.76 | 144.99 | 4.25 | 4.58 | -0.22 |
| FI | 54.87 | 0.71 | 37.13 | -0.05 | -4.43 | 48.77 | -0.78 | 1.13 | 0.73 | -2.03 |
| FR | 77.03 | 8.33 | 4.30 | 8.43 | 5.41 | 79.00 | 0.51 | 10.05 | 10.62 | 5.29 |
| GR | -839.40 | 0.23 | 0.11 | 0.71 | -0.21 | 3.27 | 79.23 | 0.47 | 0.34 | -3.81 |
| IE | 72.91 | 0.48 | 0.34 | 0.31 | 1.64 | 10.75 | 3.89 | 0.37 | 0.24 | 1.80 |
| IT | 29.03 | 6.29 | 1.32 | 8.30% | -1.48 | 56.13 | -121.21 | 8.03 | 9.59 | 33.94 |
| NL | -153.21 | 7.43 | 0.56 | 5.60 | 103.45 | -194.45 | 37.94 | 6.24 | 4.25 | -4.52 |
| PT | -5.46 | 0.50 | 0.39 | 0.69 | -0.12 | 8.54 | 12.77 | 0.65 | 0.54 | -2.85 |
| UK | 1041.86 | 8.28 | 3.47 | 9.59 | -6.00 | -120.03 | -54.27 | 11.89 | 8.03 | -5.56 |
| SE | -19.93 | 2.14 | 40.73 | 1.29 | 1.10% | 110.94 | 33.94 | 4.57 | 2.88 | 3.87 |
| BE | -165.08 | 5.17 | 5.46 | 3.43 | -3.25 | -51.91 | -7.00 | 4.23 | 3.26 | 1.46 |
| LU | -5.28 | 0.14 | 0.05 | 0.25 | -0.18 | 0.53 | 0.68 | 0.26 | 0.15 | -0.04 |

Source: Own calculations from CHELEM database.

The first line (C.E.) indicates whether the respective 2004 enlargement country registered a positive or a negative competitiveness effect in the overall period.

The results show an interesting pattern: the destination markets which had the highest influence in the competitiveness effect of the 2004 enlargement countries were the ones geographically closer to these economies. In this line of thought and considering the central and eastern countries of the 2004 enlargement, Germany was the most influential destination market for the Czech Republic, Hungary, Poland and Slovakia’s competitiveness effect; and Austria was the most influential market for Slovenia’s competitiveness effect. Considering the Baltic countries, Estonia’s most influential destination markets were Sweden and Finland; for Latvia it was both Denmark, Finland and the United Kingdom; while for Lithuania it was Germany and Sweden. Distinctively, the destination market which had the highest impact in the Mediterranean countries’ competitiveness effect was Greece.

*4. Conclusions*

 From the results of this study, we conclude that the 2004 enlargement countries, when aggregately considered, registered a major improvement in export performance to the EU15 in all the considered periods from 1990 to 2013, most notably in the post accession subperiod, with a decisive contribution of the competitiveness effect. Even because, although the export structure of these economies was favourable to increased exports, we also concluded that the competitors at the world level in the EU15 market were, in general, more specialized in products and destination markets with dynamic demand.

 Still, these ten countries present divergent export performances. While some countries registered a negative market share growth rate to the EU15, such as Cyprus, Malta and Slovenia, others presented a significant positive export performance. Such is the case of Slovakia and the Czech Republic, which presented the highest value for the relative market share growth and export growth rates from 1990 to 2013. Estonia, Poland, Hungary and Lithuania also presented very positive results.

 Another relevant result is that the best performing States of the 2004 EU enlargement share their highest relative market share and export growth rates in more capital intensive categories of manufactured goods: under the technological level classification, medium and high tech exports had the best performance; while under the specialization factors it was scale economies, product differentiation and research and development intensive exports which presented the best results. Simultaneously, a better performance of more capital intensive categories of manufactured goods is observable for the ten countries as a whole, especially in the period of the preparation for the accession and onwards.

Bearing in mind the ten economies aggregated, the results present Germany as the most influential destination market for the promotion of the competitiveness effect (both in the export growth CMSA and the relative export growth CMSA) in every considered period. Of the six best performing economies, five – the Czech Republic, Hungary, Lithuania, Poland and Slovakia - share Germany as the destination market which had the biggest impact on their competitiveness effect. Yet, if the results are evaluated considering each of the ten States of the 2004 enlargement, a geographical influence is also verifiable, relating the proximity to the destination market with its influence on each country’s competitiveness effect.

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Annex

Table 10

Product classification

|  |  |  |
| --- | --- | --- |
| **Technological Level** |  | **Specialization Factors** |
| Low | BA | Cement |  | Natural Resources | BA | Cement |
| BB | Ceramics |  | EA | Manufacture of wood |
| BC | Glass |  | EC | Paper |
| CA | Iron and Steel |  | HC | Not elsewhere specified minerals |
| CB | First processing of iron |  | IA | Coal |
| DA | Yarns and Fabrics |  | IB | Crude oil |
| DB | Clothing |  | IC | Natural Gas |
| DC | Garment |  | IG | Coke |
| DD | Carpet |  | IH | Refined petroleum products |
| DE | Leather |  | JA | Cereals |
| EA | Manufacture of wood |  | JB | Other agricultural products |
| EB | Furniture |  | JC | Inedible agricultural products |
| EC | Paper |  | KA | Cereal-based products |
| ED | Prints |  | KB | Fats |
| FA | Metal structures |  | KC | Fish and Meat |
| FB | Hardware |  | KD | Animal conserves |
| HA | Iron ore |  | KE | Vegetable conserves |
| HC | Not elsewhere specified minerals |  | KF | Sugar |
| IA | Coal |  | KG | Animal feed |
| IB | Crude oil |  | KH | Beverages |
| IC | Natural Gas |  | KI | Manufactured tobaccos |
| IG | Coke |  | NA | Jewellery |
| IH | Refined petroleum products |  | NB | Non-monetary gold |
| JA | Cereals |  | Labour Costs | CC | Non-ferrous metallurgy |
| JB | Other agricultural products |  | DA | Yarns and Fabrics |
| JC | Inedible agricultural products |  | DB | Clothing |
| KA | Cereal-based products |  | DC | Garment |
| KB | Fats |  | DD | Carpet |
| KC | Fish and Meat |  | DE | Leather |
| KD | Animal conserves |  | EB | Furniture |
| KE | Vegetable conserves |  | FA | Metal structures |
| KF | Sugar |  | FB | Hardware |
| KG | Animal feed |  | HB | Non-ferrous ores |
| KH | Beverages |  | Scale Economies | BB | Ceramics |
| KI | Manufactured tobaccos |  | BC | Glass |
| NA | Jewellery |  | CA | Iron and Steel |
| NB | Non-monetary gold |  | CB | First processing of iron |
| Medium | CC | Non-ferrous metallurgy |  | ED | Prints |
| FC | Engines |  | FS | Elements of automobile vehicles |
| FD | Farms Equipment |  | FT | Private automobiles |
| FE | Machine tools |  | FU | Utility Vehicles |
| FF | Construction Machines and Equipment |  | FV | Vessels |
| FJ | Watchmaking |  | GB | Fertilizer |
| FS | Elements of automobile vehicles |  | GD | Paintings |
| FT | Private automobiles |  | GE | Toiletries |
| FU | Utility Vehicles |  | GG | Plastics |
| FV | Vessels |  | GH | Plastic articles |
| GA | Basic mineral chemistry |  | GI | Rubber articles |
| GB | Fertilizer |  | HA | Iron ore |
| GC | Basic organic chemistry |  | Product Differentiation | FC | Engines |
| GD | Paintings |  | FD | Farms Equipment |
| GE | Toiletries |  | FE | Machine tools |
| GG | Plastics |  | FF | Construction Machines and Equipment |
| GH | Plastic articles |  | FG | Specialised machinery |
| GI | Rubber articles |  | FJ | Watchmaking |
| HB | Non-ferrous ores |  | FP | Appliances |
| High | FG | Specialised machinery |  | FQ | Electric material |
| FH | Weapons |  | FR | Electrical products |
| FI | Measuring instruments |  | R&D | FH | Weapons |
| FK | Optical instruments |  | FI | Measuring instruments |
| FL | Electronic components |  | FK | Optical instruments |
| FM | Consumer electronics |  | FL | Electronic components |
| FN | Telecommunications equipment |  | FM | Consumer electronics |
| FO | Computer hardware |  | FN | Telecommunications equipment |
| FP | Appliances |  | FO | Computer hardware |
| FQ | Electric material |  | FW | Aeronautics and Space |
| FR | Electrical products |  | GA | Basic mineral chemistry |
| FW | Aeronautics and Space |  | GC | Basic organic chemistry |
| GF | Pharmaceuticals |  | GF | Pharmaceuticals |

*Source*: CHELEM database and Fernandes (2002).

1. See CHELEM (2015) for a detailed description of the categories of products. [↑](#footnote-ref-1)
2. See De Saint-Valry (2008) for a detailed description of the CEPII – CHELEM database. [↑](#footnote-ref-2)
3. Therefore, the relative export market share in the EU15 may be influenced by changes in the US dollar exchange rate. [↑](#footnote-ref-3)
4. Another drawback of this technique is that results may be influenced by the level of product and market disaggregation. [↑](#footnote-ref-4)
5. Hereinafter “ECB”. [↑](#footnote-ref-5)
6. For different export market share indicators see ECB ( 2005) [↑](#footnote-ref-6)
7. Due to the different sizes of these ten economies, the market share variation of the previous tables was substituted by the market share growth rate. The market share growth rate is given by $\frac{∆S}{S\_{t-1}}$. [↑](#footnote-ref-7)
8. Given the physical limitation requested for this study, some results, such as the CMSA by technological intensity and specialization factors for each of the ten economies are not presented. Notwithstanding, these results are available upon request. [↑](#footnote-ref-8)
9. According to the CEPII - CHELEM database. [↑](#footnote-ref-9)