**PORTUGAL AND POLAND: TWO DIFFERENT TALES ON EXPORT PERFORMANCE TO THE EUROPEAN UNION IN THE 2000’S**

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**ABSTRACT:** European Union’s enlargement to eastern and central Europe’s countries imposed a challenge to southern Europe’s countries. With similar labor intensive specialization patterns, but much lower production costs and better qualified human capital than eastern and central Europe’s countries, southern Europe faced serious threats to their competitiveness. This paper compares the export performance of these two groups of countries in the period 2000s through the analysis of two specific representative countries: Portugal and Poland.

The study is based on (i) a Constant Market Share analysis, which allows to decompose the export growth into several components; and (ii) a combination of revealed comparative indexes with a geographical orientation measure, which allows to identify the export potential of each product according to these two characteristics.

We conclude that while Poland registered a great and impressive export performance across the analyzed period, increasing around 100% the country’s market share to the EU15, Portugal has evolved in the opposite direction, with an average market share decrease of 7%. Although it was not the only factor, we conclude that Poland’s competitiveness effect was essential to explain Poland’s increasing industries export share. Several reasons are proposed for the different course taken by the two countries.

**KEYWORDS:** Portugal, Poland, European Union, Competitiveness, Constant Market Share, Trade Potential

**JEL CLASSIFICATION:** F10, F15, F16

**I. INTRODUCTION**

European Union’s enlargement to eastern and central Europe’s countries imposed a challenge to southern Europe’s countries. With similar labor intensive specialization patterns, but much lower production costs and better qualified human capital than eastern and central Europe’s countries, southern Europe faced serious threats to their competitiveness. This paper compares the export performance of these two groups of countries in the period 2000’s towards the first fourteen Member-States of the European Union, in which Portugal is not included (the term EU15 will be used to designate these fourteen Member States, from here on in) through the analysis of two specific representative countries: Portugal and Poland

The choice of these two specific countries, Portugal and Poland, can be easily understood. Despite the fact the Polish economy is much larger than the Portuguese, their specialization pattern in production is rather similar. Therefore, when Poland became an European Union member, in 2004, it was expected a loss of competitiveness from southern Europe’s countries. This explains, partially, the need to study the period dividing it in three subperiods: the first subperiod 2001-2003 is characterized by being prior to Poland’s entry in the EU, while Portugal was already a member; 2004-2008 is when the first possible effects of Poland in the EU can be observed; 2009-2013 is the period marked by the economic and financial crisis.

An additional reason to compare these two countries is the different path they followed in terms of their export performance. While in the period between 2001 and 2013 Portugal had an exports total growth of 45,59%, Poland registered 215,83% (see table 8 of the appendix). In what concerns the market share in the European Union, Portugal has experienced a decrease of -7,3% in the period of 2001 to 2013, (regaining 5,3% from 2012 to 2013) while Poland has had an increase of 101,1% in the same period. As Portugal’s exports to the European Union were 0,88% of the Union’s total imports in 2001, by 2013 they fell to 0,81%. Inversely, Poland’s market share in the EU15 represented 1,12% in 2001, by 2013 it reached 2,24%. Several reasons have already been scrutinized that may explain this difference in the trend of exports, shortly summarized below, based on the economic policies implemented in these two countries.

The study is based on (i) a Constant Market Share analysis, which allows to decompose the export growth into several components, including one usually related to competitiveness after controlling for the contribution of the specialization pattern and the geographical orientation of trade; and (ii) a combination of revealed comparative indexes with a geographical orientation measure, which aims to identify the products in which Portugal and Poland reveal potential to expand their exports to the EU15 market according to these two characteristics.

The database comprises 1256 industrial products, from the INTRACEN database, with an aggregation level of 4 digits, divided into 30 groups.

The analysis will be developed as follows: section 2 provides an overview of the export performance of both countries in terms of their revealed comparative advantage and the economic policies undertaken in the period under observation; section 3 presents the methodology used in this paper and section 4 the empirical evidence obtained; finally, section 5 concludes.

**II. SIMILARITIES AND DISSIMILARITIES THAT FRAME THE EXPORT PERFORMANCE OF PORTUGAL AND POLAND**

 In order to evaluate and compare both countries specialization pattern in trade with EU15, the following adapted Balassa’s Revealed Comparative Advantage index was used:

$$RCA\_{i-j,a}=\frac{\frac{X\_{i-j, a}}{X\_{i-j}}}{\frac{M\_{j,a}}{M\_{j}}}$$

Where, *a* is the group of products (defined in appendix I); *i* is the exporting country (either Portugal or Poland); *j* is the importing area (UE15); *X* are the exports; and *M* are the imports.

If the revealed comparative advantage is greater than one, it means that the exporting country has comparative advantage in exporting that group of products to the EU15 as the relative exports of that group of products in the total exports of that country to the European Union are greater than the relative world exports of that group in the total world exports to the same destiny market.

The results are shown in table 1.

**Table 1. RCA’s of Portugal and Poland to the EU15**

|  |  |  |
| --- | --- | --- |
|  | **Portugal** | **Poland** |
|  | **2001-2003** | **2004-2008** | **2009-2013** | **2001-2003** | **2004-2008** | **2009-2013** |
| **Group 1** | 0,68 | 0,87 | 1,29 | 0,93 | 1,69 | 1,75 |
| **Group 2** | 0,86 | 1,15 | 1,26 | 0,58 | 1,67 | 1,35 |
| **Group 3** | 0,49 | 0,63 | 0,74 | 0,75 | 0,78 | 0,79 |
| **Group 4** | 0,37 | 0,45 | 0,78 | 0,26 | 0,76 | 0,82 |
| **Group 5** | 0,76 | 1,02 | 1,29 | 0,82 | 1,17 | 1,29 |
| **Group 6** | 1,50 | 2,06 | 1,94 | 0,24 | 0,59 | 1,28 |
| **Group 7** | 0,81 | 1,90 | 1,42 | 0,22 | 0,11 | 0,05 |
| **Group 8** | 0,13 | 0,20 | 0,23 | 0,57 | 0,33 | 0,25 |
| **Group 9** | 0,35 | 0,57 | 0,51 | 0,47 | 0,32 | 0,26 |
| **Group 10** | 0,27 | 0,30 | 0,36 | 0,20 | 0,24 | 0,35 |
| **Group 11** | 0,44 | 0,65 | 0,63 | 0,47 | 0,78 | 1,15 |
| **Group 12** | 0,62 | 0,96 | 1,08 | 0,97 | 1,12 | 1,70 |
| **Group 13** | 0,57 | 0,38 | 0,51 | 0,13 | 0,17 | 0,48 |
| **Group 14** | 0,96 | 1,34 | 1,71 | 1,06 | 1,28 | 1,56 |
| **Group 15** | 0,50 | 0,46 | 0,57 | 1,53 | 0,93 | 0,63 |
| **Group 16** | 3,91 | 3,55 | 4,06 | 2,54 | 2,27 | 2,14 |
| **Group 17** | 1,34 | 1,06 | 2,26 | 1,21 | 1,20 | 1,60 |
| **Group 18** | 1,94 | 2,06 | 2,41 | 0,72 | 0,75 | 0,61 |
| **Group 19** | 3,42 | 2,28 | 2,48 | 0,90 | 1,07 | 1,35 |
| **Group 20** | 4,04 | 3,34 | 2,71 | 1,96 | 1,01 | 0,88 |
| **Group 21** | 6,84 | 5,61 | 5,35 | 0,61 | 0,36 | 0,36 |
| **Group 22** | 2,99 | 3,85 | 3,99 | 1,72 | 1,71 | 1,85 |
| **Group 23** | 0,20 | 0,12 | 0,85 | 0,42 | 0,46 | 0,62 |
| **Group 24** | 0,85 | 1,08 | 1,07 | 2,04 | 1,68 | 1,59 |
| **Group 25** | 0,81 | 1,17 | 0,92 | 1,17 | 1,01 | 0,96 |
| **Group 26** | 1,27 | 1,29 | 1,33 | 1,06 | 1,16 | 1,41 |
| **Group 27** | 0,74 | 0,70 | 0,66 | 0,99 | 1,20 | 1,29 |
| **Group 28** | 1,37 | 1,35 | 1,41 | 1,35 | 1,53 | 1,64 |
| **Group 29** | 0,34 | 0,27 | 0,38 | 0,20 | 0,30 | 0,35 |
| **Group 30** | 0,37 | 0,81 | 0,71 | 1,23 | 1,04 | 1,03 |

Source: Own calculations from INTRACEN Database

In all the 30 groups, both countries did not had similar comparative advantages in only 8 groups in the period of 2001-2003 (groups 6, 15, 18, 19, 21, 24, 25 and 30); 8 groups in the period of 2004-2008 (Groups 1, 6, 7, 12, 18, 21, 27, 30); and 7 groups in the period of 2009-2013 (Group 7, 18, 20, 21, 27, 30). Taking in account that some differences are the result of a transition to a greater specialization in those groups of products, such as group 1 and 12 in the period of 2004-2008, the results point to a similar specialization pattern in the products exported by these two countries to the European Union.

In spite of this similarity, the overall export performance of Poland to the EU15 was clearly superior to the one of Portugal in period analyzed, as mentioned in the introduction. An explanation for the different trends can be found in the economic policies adopted.

In the case of Portugal, export performance was impaired by the increased competition of emerging countries including the EU’s expansion to Eastern Europe but it is also related to the loss of competitiveness associated to the adoption of a strong currency in 1999 (the euro) and the subsequent rise in unit labor costs. Participation in the Economic Monetary Union and the end of the competitive devaluations caused a notable appreciation of the effective exchange rate (of more than 20 % between 1988 and 2006)[[1]](#footnote-1). Joining the euro also produced an expansionary monetary shock which greatly stimulated domestic demand and created an excess of expenditure on domestic production capacity (Blanchard, 2006). While the channeling of excess demand for imports worsened the external current of the country, another part of the demand was addressed to the non-tradable goods sector, raising real wages above productivity growth, reducing the competitiveness of exports and further aggravating the current account. Between 1999 and 2007, unit labor costs showed a positive difference of 24% compared to Germany and 12.5% compared to the euro area average (Bento, 2009; Mendonça, 2012).

With the structural adjustment forced by the external intervention of the European Commission, the European Central Bank and the International Monetary Fund in 2011, Portugal seems to have regained some international competitiveness, with unit labor costs experiencing a large fall in 2013 (OECD, 2014b). Though a large part of such fall was attained with decreases on labor wages[[2]](#footnote-2), which was made possible by an intense increase in unemployment, some reforms enhanced productivity (Idem). According to OECD’s Product Market Regulation Database, Portugal’s network sector barriers lowered between 2008 and 2013, overtaking Germany and positioning itself as the second country, in the OECD, with the lowest regulation. Transport sectors regulation also decreased during this period. Reforms on employment protection also affected labor wages (Idem). Exports ratio to GDP grew since 2009, attaining by the end of 2013 a value over 40% (Idem).

In Poland, in turn, the communist heritage left deep marks in the market dynamic and until the end of nineties, despite the fast economic growth, its competitiveness performance was weak (Glebocka, 1997). The main critical factors of competitiveness were keeping macroeconomic stability, removing regional disparities, creating a bigger private sector and dealing with balance of payments disequilibrium (Idem). However competitiveness is gradually rising, having as positive components the fast growth of GDP, the higher levels of education and the low pressure in labor costs, while the negative ones are low investment in R&D, low levels of innovation, complex companies’ registration process, slow business market and bad transport infrastructures. The European policies, especially the regional ones, were very important to modernize polish economy and strengthen the regional competitiveness (Bronisz *et al*, 2008). In 2005, one year after the integration, Poland had already improved its competitiveness towards the 15 EU members in 10 percentage points and in 2007 had already accomplished 53,4% of the EU average (Bronisz *et al*, 2008) and, according to World Economic Forum (2013), Polish economy is growing faster than Central and Eastern Europe. Some of the components that have contributed to this positive performance were: the labor productivity per working hour, that reached 73,4% of the EU average in 2013 (European Commission, 2014); the low pressure in labor costs; the Polish exports as percentage of GDP also registered a better performance than the rest of EU (Idem); and, unlike Portugal, the current account deficit low levels, which was 1,3% GDP in 2013 (5% and 3,7% in 2011-2012) (Idem), giving a significant slack to the economy. Another positive point is the gross fixed capital formation, clearly above the EU average - despite the recent slowdown tendency (Idem). Poland is also in a good position related with access to finance, being in second place of the World Bank Doing Business 2014 Report rank (European Commission, 2014). Since competitiveness is achieved with public authorities creating framework conditions to their enterprises (Glebocka, 1997), Poland seems to be in the right track. Despite the complex process for companies’ registration, Poland is in the fourth place in what concerns to the high-growth companies in EU ranking, with 4% (European Commission, 2014). As for skill levels, Poland has a tertiary education higher than EU, improved by the 2010-2011 Higher Education Reform. With the implementation of Enterprise Development Programme, which is focused on R&D improvements, competitiveness will also increase. Another measure has been taken by the State Development Bank of Poland, which intends to standardize the procedure and products of guarantees and loan funds at a regional and local level. This procedure has a very facilitated and increased financial effectiveness (OECD, 2014a).

However, some problems that harm competitiveness have been noticed, like the lower rate of labor utilization due to the existence of structural unemployment, the lack of transport infrastructures, specially railway (OECD, 2014c), the inefficiency of public employment services and the weak investment in R&D, which affects the levels of innovation (European Comission, 2011). Polish R&D intensity is one of the lowest in EU (Idem), having the registered expenditure of 0,9% while the EU average is 2,06% (European Commission, 2014). Product-market regulations have also contributed to the tough achievement of a better competitiveness. There are barriers to entrepreneurship, slow and costly business registration processes, and State continues to have a high intervention, even in potential competitive sectors.

**III. METHODOLOGICAL APPROACH**

**CONSTANT MARKET SHARE**

This study is interested in analyzing Portugal and Poland’s export performance from 2001 to 2013. In order to do such, Constant Market Share methodology is used. A Constant Market Share methodology, based on Jepma (1981) justifies changes in a countries’ exports performance through an increase of demand, competitiveness and interaction effects. In the present study, the export performance is evaluated as a sum of four effects: scale effect, product effect, market effect and competitiveness effect. Taken together, export performance can be written in the following identity:

$$∆q=S\_{0}\*∆Q+\left(Σ\_{i}(S\_{i0}\*∆Q\_{i})-S\_{0}\*∆Q\right)+\left(Σ\_{i}Σ\_{j}(S\_{ij0}\*∆Q\_{ij})-Σ\_{i}(S\_{i0}\*∆Q\_{i})\right)+Σ\_{i}Σ\_{j}∆S\_{ij}\*Q\_{ij1}$$

As the total effect (a country’s export performance) is given by $∆q=∆[Σ\_{i}Σ\_{j}q\_{ij}]$, which refers to the total difference of the product in the exports of a country (in this case Portugal and Poland) for the destination market *j* (EU15, except Portugal) in the studied period.

$S\_{0}\*∆Q$ represents the scale effect. It expresses the variation of a country’s exports if it has varied with the world’s exports or the geographical area under study. The scale effect is explained by $S\_{0}$ = $\frac{q\_{0}}{Q\_{0}}$, which expresses the share, by *i* group of products, of Portugal/Poland exports for UE15 over the world imports of EU15 in the analyzed period, and by $∆Q$ $=∆[Σ\_{i}Σ\_{j}Q\_{ij}]$ which, in turn, represents the difference of the total world imports from EU15 during the same period, by products group *i*. The scale effect, therefore, allows to understand, by difference with the total effect, if the exporting country has gain or lost market share to the trade partner. If the scale effect is greater than the total effect, there has been a loss of market share; if the scale effect is smaller than the total effect (as the variation of exports has been greater than the variation of exports assumed with initial global market share and the world variation) then there has been as gain of market share.

The product effect is represented by $Σ\_{i}(S\_{i0}\*∆Q\_{i})-S\_{0}\*∆Q$. It is indicates if specializing in a particular product has a positive effect on export growth. If the value is positive, it means that the specialization in one or more products is beneficial to the exports growth. Product effect includes $S\_{i0}=\frac{q\_{i0}}{Q\_{i0}}$, which represents the share, by product *i*, of Portugal/Poland exports to EU15 over the total world imports of UE15, in the beginning of the analyzed period as well as $∆Q\_{i }$, which is the difference of the total world imports to the EU15 during the referred period, by product *i*.

Market effect indicates whether or not the destination market positively affects the export growth. In this regard, it is required to multiply the total exports of each good from the country to be studied to the destination market (or the world total exports of the same good to that market) by the difference of world exports, in a given period, of each good to the destination market. It is captured by $Σ\_{i}Σ\_{j}(S\_{ij0}\*∆Q\_{ij})-Σ\_{i}(S\_{i0}\*∆Q\_{i})$, where $S\_{ij0}=\frac{q\_{ij0}}{Q\_{ij0}}$ represents the share, by product *i*,of Portugal/Poland exports for each country included in EU15 over the total world imports made by those countries, in the beginning of the analyzed period and $∆Q\_{ij}$, which expresses the difference of the total world imports of each country EU15 during the analyzed period , by product *i*.

 Finally, the residual effect, that is the competitiveness effect, is represented by $Σ\_{i}Σ\_{j}∆S\_{ij}\*Q\_{ij1}$, where $∆S\_{ij }$ is the difference, by product *i*, of Portugal/Poland exports to each country of the EU15 over the world imports of those countries at the end of the period with the Portugal/Poland exports to each country of the EU15 over the world imports of each country of the EU15 in the beginning of each period, by product *i*, and, that represents the value of the world imports of each EU15 country in the end of the analyzed period, by product *i*. As the competitiveness effect is the difference between market share in the beginning period and the final period, by product *i* and EU15 country *j*, multiplied by the world’s exports by product *i* and country j in the final period, it mean this effect will be negative if the total effect is smaller than the sum of the other effects and positive if the total effect is greater than the sum of the other effects - as the variation in the country’s exports are not accompanied by the variation of markets that compose the destiny market and products discriminated in each group (the sum of the scale, product and market effects). In other words $Σ\_{i}Σ\_{j}(∆S\_{ij}\*Q\_{ij1})= ∆q-Σ\_{i}Σ\_{j}(S\_{ij0}\*∆Q\_{ij})$.Therefore, it is assumed, in the residual term, that if the phenomenon cannot be explained by the previous effects, it is explained by the competitiveness level. This represents a part of the exports growth, which results from the productive efficiency of the country (Coutinho & Fontoura, 2012).

 Despite the high level of application, there are still some limitations that must be referred. The residual factor, related to competitiveness, expresses the influence of prices and “volume competition” in exports variation, nevertheless it is not possible to distinguish the influence of each of them. The identity is also sensitive to the levels of disaggregation, to the period and to the geographical group. At last, the terms of the formula are randomly chosen: part of the product effect is subtracted to the market’s effect, but if it was used a similar term, the sum of the other two would not change, although the individual results were different (Coutinho & Fontoura, 2012).

**COMPLEMENTARITY AND GEOGRAPHICAL BIAS**

In addition to the CMS analysis, we have also adopted a methodology proposed by Castilho (2003) which combines an analysis based on the revealed comparative advantage indexes with a “geographic orientation” dimension. It also provides information on the product groups with trade potential in the EU15 market. The methodology is based in two indexes, the *Trade Complementarity Index* (TCI) and the *Geographical Orientation Index* (GOI).

 The Trade Complementary Index allows to understand if bilateral trade flows are complementary, i.e., if the comparative advantage in products exported by Portugal and Poland is complemented by a comparative disadvantage in the same products by the EU15 countries. It analyses the correspondence between the supply from the exporter country with the demand from the trade partner.

 The Trade Complementary Index is defined as follows:

TCI = $C\_{ij}^{S}=\frac{\frac{X\_{iW}^{S}}{}\*\frac{M\_{jW}^{S}}{}}{\left(\frac{M\_{WW}^{S}}{}\right)^{2}}$

Where, S is the group; i is the exporting country (either Portugal or Poland); j is the importing area (EU15); W is the World; X are the export; and M are the imports.

. If TCI is greater than 1 it means that there is trade complementarity, as the exporter country shows a superior competitiveness and satisfies the demand of the trade partner.

The Geographical Orientation Index is defined as the ratio, for a specific product, between the country’s share of exports to the trade partner and the partner’s share of the world imports (excluding from the world imports those that are from the exporter country). It aims to verify the existence of geographical bias, i.e. if the export capacity for the trade partner is undervalued, meaning that the exporter country has room to increase exports to the trade partner .The index can be written as follows:

GOI = $I\_{ij}^{S}=\frac{\frac{X\_{ij}^{S}}{X\_{i}^{S}}}{\frac{M\_{j}^{S}}{M\_{W-i}^{S}}}$

Where, once again, S is the group; i is the exporting country (either Portugal or Poland); j is the importing area (UE15); W is the World; X are the export; and M are the imports.

If GOI is higher than one it means a "positive" geographical bias, since for a specific product the exports made by the country *i* in the total exported are superior to the imports made by the partner from the world. If it is negative, it means that there is room to expand exports to the specific market.

The indexes results can be combined, thus creating the following four possible scenarios (Castilho, 2003, adapted by Coutinho and Fontoura, 2012):

**Table 2. Four possible scenarios of TCI and GOI combined**

|  |  |
| --- | --- |
| **TCI > 1 and GOI > 1**The positive geographical bias reflects the complementarity between both countries. | **TCI < 1 and GOI > 1** The geographical bias is positive, but it is not justified by the complementarity. There are other factors that reflect the trade. |
| **TCI > 1 and GOI < 1**There is complementarity, but there is still room for additional trade.It is the trade potential situation. | **TCI < 1 and GOI < 1**The geographical bias is negative as expected considering the lack of complementarity of both economies. |

**Source:** Castilho, 2003, adapted by Coutinho and Fontoura, 2012

These indexes reveal the potential for trade between the studied areas, which is equally important to define national policies. In order to verify potential trade, it is required that GOI is below 1 and TCI above 1 (Castilho, 2003). Thereby, we have complementarity due to trade flows overlap, but the destiny market is still not being fully exploited (Coutinho & Fontoura, 2012).

 It should be noted the existence of a trade potential increase doesn’t necessarily mean that trade will increase. For this, it is necessary a significant change in the productive and transport structures that, for instance, the country may not be able to make.

 In a globalized economy, imports and exports have played an important role in increasing the wealth of the country, revealing that trade allows to maximize the product growth (Crespo & Fontoura, 2011). For such reason is export performance so important for national economic policies.

**IV. EMPIRICAL RESULTS**

The present study’s database comprises 1256 industrial products, with an aggregation level of 4 digits, grouped into 30 groups, from the International Trade Centre Trade Map Database for the period of 2001 to 2013. The selection of groups was based on Coutinho & Fontoura (2012) adaptation of Harmonized System (HS) Rev. 3 from International Trade Centre. The values for exports and imports are expressed in thousands of Euros. The list of groups as well as the range of products comprising each group is available in appendix 1.

**a. CMS analysis**

**i. Portugal**

In the whole period, Portugal’s exports grew 45,6%. Between the subperiods there are important differences in the exports variation: while in 2001-2003 the exports growth was 4,1%, in 2004-2008 it rose slightly to 7,74%, and in 2009-2013 it increased notably 42,6%.

The groups that had a greater positive export difference, in the whole period of 2001 to 2013, were Mineral Fuels (group 8) and Rubber and Plastic (group 14). In this groups, the endogenous effect, the competitiveness effect, played a key role. Although the sum of exogenous effects was positive - with a special role to the scale effect - the competitiveness effect determined a difference greater than the double of sum of the other effects (scale, product and market effect) (see table 3).

Regarding the subperiods, both groups had a positive performance in all three subperiods. However, the smallest positive variation was registered in the period of 2001 to 2003, whereas the greatest variation was registered in the period of 2009 to 2013.

It is also worth highlighting the significant positive performance of the machinery and automobile industries in the final period of 2009 to 2013. Although both industries had a poor performance in the period of 2004 to 2008, which led, in part to the small positive variation in the overall period of 2001 to 2013, in the final period both industries were able not only to take advantage of the growing global demand in the EU15 market (the scale effect) but also registered greater gains, mostly due to the endogenous improvements, the competitiveness effect.

Portuguese traditional sectors (groups 18 to 21) were the most negatively affected in the period of 2001 to 2013. Exception made to Fabric and Fibers (group 18), competitiveness played key role in the negative export performance in the total groups in the other groups. Portugal loss market share in the textile, clothing and footwear industry (groups 19 to 21) as the scale effect was greater than the total effect. Such loss is even more significant in the Clothing and Footwear industries (group 20 and 21) as they were industries in which was verified a significantly positive scale effect.

 The clothing and footwear industries (group 20 and 21) show an interesting pattern along the period. Both industries suffered an intense decrease in the period of 2001 to 2003, mostly due to the endogenous factors, the competitiveness effect (although the scale and market effect had also a small but negative contribution, in this period, to the footwear industry). In the period of 2004 to 2007 competitiveness played, again, a determinant role in both industries negative performance. Still, the demand growth of the EU15, represented in the scale effect, meant that the export performance was more harshly felt on the loss of market share rather than on the negative variation of exports, especially in the footwear industry in which the negative variation was closer to null. In the final period, from 2009 to 2013, both industries had a positive performance, mostly due to the scale effect and the competitiveness effect. From 2009 to 2013 the footwear industry regained the volume of exports of 2001 (see table 3, total effect, 2001-2013 of group 21) mostly due to gains of scale and competitiveness. The gains in competitiveness are justified by a greater added value in the industry’s production (APICCAPS, 2012)The footwear industry’s export growth in the last period may be accompanied by the other traditional sectors in the future, if Portugal’s comparative advantages determine its export performance to the European Union in the long run.

**Table 3. CMS for Portugal to EU15**

|  |  |  |
| --- | --- | --- |
|  | **2001 – 2013** | **2001 – 2003** |
|  | **Total** | **Scale** | **Product** | **Market** | **Comp.** | **Total** | **Scale** | **Product** | **Market** | **Comp.** |
| **G1** | 423306 | 130101 | -27026 | -88499 | 408731 | 5041 | -1588 | -13474 | 5512 | 14591 |
| **G2** | 140172 | 96106 | -9439 | -37155 | 90660 | 15817 | 5134 | 529 | -13962 | 24116 |
| **G3** | 382417 | 196436 | -16344 | -23184 | 225509 | 39444 | 6432 | -569 | 186 | 33395 |
| **G4** | 195400 | 70095 | 38575 | 31995 | 54736 | -4294 | 7365 | 5334 | 4800 | -21792 |
| **G5** | 600760 | 244543 | -468 | 60020 | 296665 | 78039 | 33193 | -1053 | 8240 | 37658 |
| **G6** | 442175 | 302485 | -101617 | -20373 | 261679 | 59757 | 2467 | 12389 | 2102 | 42800 |
| **G7** | 253396 | 116851 | 90211 | -2180 | 48514 | 14165 | -11212 | 795 | 1033 | 23548 |
| **G8** | 1723203 | 404190 | 120449 | 379 | 1198185 | 80251 | -407 | 16679 | 3820 | 60158 |
| **G9** | 610811 | 179686 | 125462 | -58952 | 364615 | 83197 | -6088 | 32500 | 2824 | 53962 |
| **G10** | 342193 | 334491 | -98916 | 7057 | 99561 | 4405 | 90684 | -8434 | -41886 | -35960 |
| **G11** | 140836 | 68262 | -13106 | -7396 | 93075 | 73060 | 7654 | -1426 | 7566 | 59265 |
| **G12** | 59284 | 13254 | 10669 | 3197 | 32164 | 15175 | -48 | 3424 | 968 | 10831 |
| **G13** | 75401 | 83666 | -22986 | -85150 | 99871 | 20735 | -1402 | 711 | 16998 | 4428 |
| **G14** | 1688483 | 525304 | 38757 | -64836 | 1189258 | 244737 | 11159 | 7038 | 20711 | 205829 |
| **G15** | 59921 | 27526 | -36190 | 982 | 67603 | -11268 | -10401 | -13954 | 2642 | 10445 |
| **G16** | 122554 | 137352 | -134874 | 35769 | 84307 | -245 | -47899 | -29124 | 39244 | 37533 |
| **G17** | 570430 | -14384 | 41422 | 11335 | 532057 | 135350 | -13339 | 72369 | 5119 | 71200 |
| **G18** | -121733 | -168065 | 16657 | 5893 | 23781 | -58993 | 250497 | -347347 | 16388 | 21468 |
| **G19** | -140926 | -36712 | 8791 | -12366 | -100639 | -179773 | -21903 | -12257 | 502 | -146114 |
| **G20** | -649101 | 1343934 | 188674 | 429449 | -2611158 | -169507 | 23390 | 2582 | 111082 | -306562 |
| **G21** | 4992 | 795739 | -200392 | -56740 | -533616 | -220935 | -17568 | 21897 | -27592 | -197672 |
| **G22** | 348033 | 153445 | 993 | 39377 | 154219 | 72354 | -15399 | 15403 | 50826 | 21523 |
| **G23** | 385412 | 75711 | -26847 | 55712 | 280836 | 15422 | -4185 | 8716 | -14229 | 25121 |
| **G24** | 892171 | 504435 | -27567 | -99240 | 514543 | 207515 | 12415 | 29165 | 50716 | 115219 |
| **G25** | 66884 | 160759 | -8763 | 70381 | -155493 | -40557 | -18745 | -5624 | 34250 | -50438 |
| **G26** | 128435 | 65528 | 2682 | -17808 | 78032 | 54949 | -10444 | 8967 | 4779 | 51647 |
| **G27** | 205157 | 722810 | -280270 | 311072 | -548456 | 27671 | -396829 | 37198 | 83723 | 303580 |
| **G28** | 71808 | 1123703 | -396505 | 92965 | -748355 | -74444 | -436233 | 316141 | 116704 | -71055 |
| **G29** | 196440 | 91188 | -21849 | -7862 | 134963 | 67847 | -10244 | -4085 | -2337 | 84512 |
| **G30** | 563393 | 121662 | 81261 | 63029 | 297440 | 230618 | -15243 | 40469 | 41144 | 164247 |
| **ALL** | 9781705 | 12226434 | -5014888 | 636871 | 1933288 | 871862 | -324869 | 309745 | 467363 | 419623 |
|  |  |  |  |  |  |  |  |  |  |  |
|  | **2004 – 2008** | **2009 – 2013** |
|  | **Total** | **Scale** | **Product** | **Market** | **Comp.** | **Total** | **Scale** | **Product** | **Market** | **Comp.** |
| **G1** | 113060 | 68387 | -655 | -29525 | 74853 | 308972 | 76250 | 9069 | -26888 | 250541 |
| **G2** | 62181 | 46940 | -7544 | 50324 | -27539 | 65712 | 83112 | 9610 | -64612 | 37602 |
| **G3** | 91358 | 137327 | -12285 | 51675 | -85359 | 213839 | 139799 | -20584 | -27534 | 122158 |
| **G4** | 41522 | 38283 | 12814 | 12711 | -22286 | 142871 | 39337 | 14073 | 9889 | 79572 |
| **G5** | 207774 | 127349 | 45 | 23654 | 56726 | 230601 | 153668 | 15651 | 51080 | 10202 |
| **G6** | 304935 | 142802 | -53113 | 36880 | 178367 | 167118 | 185956 | -81979 | -40011 | 103152 |
| **G7** | 230331 | 184226 | 12495 | 4610 | 29000 | 72929 | 194781 | 16668 | -66408 | -72112 |
| **G8** | 561801 | 394258 | -35396 | 81954 | 120985 | 1435148 | 371833 | 105895 | 21454 | 935966 |
| **G9** | 93066 | 129449 | 49393 | -7486 | -78289 | 605670 | 96258 | 101033 | -13247 | 421627 |
| **G10** | 108248 | 96004 | 16749 | -4841 | 336 | 217334 | 51308 | -12617 | 45890 | 132753 |
| **G11** | -943 | 45871 | -439 | -5528 | -40846 | 40273 | 61900 | -12678 | -6387 | -2562 |
| **G12** | 1437 | 10149 | 3167 | 1114 | -12994 | 32025 | 17277 | -3817 | -1866 | 20431 |
| **G13** | -84720 | 57274 | 29560 | 92568 | -264121 | 153617 | 20057 | 4052 | 413 | 129095 |
| **G14** | 375003 | 375173 | -5165 | -25090 | 30085 | 978002 | 629024 | -19696 | -37716 | 406390 |
| **G15** | 2568 | 13291 | -6725 | 230 | -4229 | 98048 | 22746 | 6856 | -614 | 69060 |
| **G16** | -225098 | 186542 | -134297 | 34044 | -311387 | 369615 | 252733 | 18888 | 39862 | 58133 |
| **G17** | -223051 | 72504 | -24340 | 12238 | -283453 | 400257 | 16011 | -14169 | -8408 | 406822 |
| **G18** | -96100 | -55098 | 33390 | 4566 | -78959 | 98721 | 94233 | -25175 | 21101 | 8562 |
| **G19** | 13881 | -307 | 5988 | 1626 | 6574 | 49478 | 12315 | 5110 | 36 | 32017 |
| **G20** | -603867 | 613355 | 10128 | 255997 | -1483347 | 642640 | 358861 | 41222 | 18955 | 223602 |
| **G21** | -74735 | 256706 | -15736 | 6424 | -322129 | 487840 | 308899 | -67862 | 9594 | 237209 |
| **G22** | 203446 | 205456 | -3341 | 51651 | -50320 | 157430 | 137064 | -34017 | -58836 | 113218 |
| **G23** | -36806 | 31494 | -23759 | -7804 | -36737 | 331223 | 112894 | 75808 | -71062 | 213583 |
| **G24** | 436271 | 817189 | -116415 | -239407 | -25096 | 526803 | 376387 | -27833 | -153029 | 331278 |
| **G25** | 223937 | 154651 | -7620 | 38684 | 38222 | 33399 | 178636 | -17026 | -17685 | -110526 |
| **G26** | -107 | 76786 | -14628 | -17523 | -44742 | 130797 | 52263 | -8144 | -18012 | 104690 |
| **G27** | -430718 | 749705 | -294761 | 9895 | -895556 | 1285671 | 684568 | 62267 | 8826 | 530010 |
| **G28** | -112081 | 502907 | -52660 | -60098 | -502230 | 900834 | 762049 | 96489 | -114956 | 157252 |
| **G29** | -51159 | 41149 | 2320 | 3757 | -98385 | 184078 | 66686 | 1583 | 6463 | 109346 |
| **G30** | 675868 | 339110 | -151062 | 87877 | 399942 | -1027378 | 66937 | 44575 | 33538125 | -34677015 |
| **ALL** | 1807302 | 8188736 | -3113696 | 465175 | -3732914 | 9333566 | 7197510 | -1290415 | 33044415 | -29617944 |

Source: Own calculations from INTRACEN Database

**ii. Poland**

Polish spectacular exports’ growth of 215,82%, is worth highlighting. With a positive growth of 17,13% from 2001 to 2003, the entry to the European Union just accelerated exports’ growth, increasing 77,67 in 2008, relatively to 2004. Exports’ growth decelerated in the next period of 2009-2013 but still had a very positive growth of 40,04% in those 4 years. Attending to the market share, the country doubled its European Union’s market share from 2001 to 2013 (see table 8 of the appendix).

Unlike Portugal which witnessed a decrease in the exports of its traditional sector in the overall period, Poland only saw a slight decrease of exports in the fur and leather industry (Group 15) in the period between 2001 and 2013 (table 4). All the other industries saw their exports growth over this period.

The negative performance of Poland’s only decreasing group (group 15), in the overall period, is explained by a negative contribution of all effects except the scale effect, which means the global demand in the EU15 market grew for the products of the group in general but several products of the group were less imported (the product effect), as well as specific market destinations imported less of the products in the group (the market effect). The endogenous effect – the competitiveness effect - also registered a negative performance. The poor performance is consistent in all subperiods.

The groups that registered the highest positive performance were machinery and automobile industries (groups 27 and 28), with the automobile industry registering a positive variation over 7 billion euros and the machinery industry registering a positive variation over 14 billion euros. The positive performance in both groups can be accounted for all effects, being the endogenous (competitiveness) effect that accounted the most for the machinery industry and the market effect the one which accounted the most for the automobile industry. The automobile industry registers a decrease of its positive variation along the periods, having, in the final period, a negative performance determined by its negative competitive effect.

Rubber and Plastic industry must also be highlighted for its positive variation, mostly due to the competitiveness effect, in the period of 2001 to 2013.

**Table 4. CMS for Poland to EU15**

|  |  |  |
| --- | --- | --- |
|  | **2001 – 2013** | **2001 – 2003** |
|  | **Total** | **Scale** | **Product** | **Market** | **Comp.** | **Total** | **Scale** | **Product** | **Market** | **Comp.** |
| **G1** | 2268615 | 224535 | -48422 | -29458 | 2121960 | 122728 | -2741 | -8093 | -37303 | 170865 |
| **G2** | 908782 | 79904 | -12011 | -4436 | 845325 | 56997 | 4268 | -7457 | 4790 | 55396 |
| **G3** | 1722552 | 413007 | 13189 | 21718 | 1274639 | 105002 | 13524 | 50826 | 4149 | 36504 |
| **G4** | 532037 | 42583 | -8804 | -13392 | 511650 | 29432 | 4474 | -6757 | -294 | 32009 |
| **G5** | 2317256 | 365275 | 42726 | 172689 | 1736567 | 101554 | 49581 | -29534 | 48039 | 33467 |
| **G6** | 1851448 | 60847 | -24137 | -17002 | 1831740 | 7971 | 496 | -10195 | -6835 | 24505 |
| **G7** | 2394 | 39854 | -14696 | -9119 | -13645 | 2800 | -3824 | 377 | -6561 | 12808 |
| **G8** | 2289099 | 3487807 | -1338808 | 157398 | -17298 | -397122 | -3510 | -79652 | 1452076 | -1766036 |
| **G9** | 580917 | 330185 | 63001 | 47158 | 140572 | 128013 | -11188 | 32715 | -43340 | 149826 |
| **G10** | 1287414 | 308804 | -101456 | 5665 | 1074401 | 58058 | 83720 | -67404 | -6682 | 48425 |
| **G11** | 1473208 | 91017 | 1288 | 21540 | 1359362 | 123904 | 10205 | 4639 | 7563 | 101498 |
| **G12** | 314466 | 28839 | 16721 | 5656 | 263250 | 25507 | -104 | 3260 | -817 | 23167 |
| **G13** | 581482 | 22852 | 3662 | 479095 | 75873 | 12847 | -383 | 79 | 311308 | -298157 |
| **G14** | 5502031 | 764751 | 15971 | 112577 | 4608732 | 419052 | 16245 | 13829 | -7060 | 396038 |
| **G15** | -16179 | 107963 | -70252 | -10820 | -43070 | 25591 | -40794 | 1962 | 15750 | 48673 |
| **G16** | 1068824 | 111371 | 116160 | 111271 | 730022 | 186340 | -38838 | 60035 | -21218 | 186361 |
| **G17** | 1572902 | -16540 | -27110 | 24606 | 1591945 | 221285 | -15338 | -5085 | -4840 | 246548 |
| **G18** | 46772 | -81099 | 6096 | -8795 | 130571 | 2493 | 120876 | -157233 | -419 | 39269 |
| **G19** | 179463 | -10004 | 19748 | -6039 | 175758 | 24487 | -5969 | 10581 | -4006 | 23880 |
| **G20** | 121246 | 913521 | -53851 | -93776 | -644647 | -294147 | 15899 | 23244 | -125089 | -208202 |
| **G21** | 129592 | 94763 | 7478 | 151728 | -124377 | -22007 | -2092 | 1901 | -8673 | -13143 |
| **G22** | 1019731 | 114519 | 11623 | 18394 | 875195 | 106302 | -11492 | 23099 | -9736 | 104431 |
| **G23** | 691748 | 243049 | 281036 | 155919 | 11745 | -39296 | -13434 | -39587 | 12585 | 1140 |
| **G24** | 3907430 | 1819394 | 134460 | 162741 | 1790835 | 193820 | 44779 | -25083 | -95288 | 269412 |
| **G25** | 938813 | 266688 | -26678 | 55207 | 643596 | 88059 | -31097 | 8824 | 4848 | 105484 |
| **G26** | 798168 | 73938 | -10021 | 3727 | 730523 | 85856 | -11785 | 5370 | -66 | 92337 |
| **G27** | 14503460 | 1133581 | 1987478 | 824076 | 10558325 | 1822857 | -622346 | 634270 | 132254 | 1678678 |
| **G28** | 7825311 | 1332743 | 431902 | 3137263 | 2923403 | 1987861 | -522314 | 1065195 | 650515 | 794465 |
| **G29** | 764548 | 69633 | 37116 | 33538 | 624262 | 80561 | -7822 | 12068 | -5943 | 82257 |
| **G30** | 3553256 | 594359 | 375503 | 62240 | 2521155 | 470726 | -74466 | 201838 | -85116 | 428470 |
| **ALL** | 58736787 | 13028138 | 1828912 | 5571369 | 38308368 | 5737532 | -1055468 | 1718033 | 2174591 | 2900376 |

|  |  |  |
| --- | --- | --- |
|  | **2004 – 2008** | **2009 – 2013** |
|  | **Total** | **Scale** | **Product** | **Market** | **Comp.** | **Total** | **Scale** | **Product** | **Market** | **Comp.** |
| **G1** | 978233 | 201106 | -3306 | 155078 | 625354 | 999846 | 367560 | -13937 | 42420 | 603803 |
| **G2** | 482405 | 90513 | -33024 | 22868 | 402048 | 408513 | 237034 | -12405 | -10793 | 194677 |
| **G3** | 533910 | 300912 | -55333 | 52202 | 236129 | 915437 | 447079 | -17085 | 26407 | 459036 |
| **G4** | 256489 | 82148 | 114546 | 109332 | -49538 | 228113 | 138970 | 40760 | 28858 | 19525 |
| **G5** | 910535 | 250742 | 5154 | 54325 | 600314 | 1223017 | 358215 | 6181 | 39809 | 818812 |
| **G6** | 535916 | 55547 | -37827 | 2528 | 515667 | 861652 | 265481 | 308829 | 64989 | 222353 |
| **G7** | -7159 | 34567 | -751 | 18706 | -59680 | 17229 | 16387 | -3769 | -836 | 5447 |
| **G8** | 750443 | 2176092 | -799942 | 413985 | -1039691 | 2444947 | 1109881 | -379744 | -13462 | 1728273 |
| **G9** | 185953 | 191323 | 77148 | 152181 | -234699 | 558791 | 183652 | 63127 | -7208 | 319220 |
| **G10** | 782848 | 100860 | 129654 | 12967 | 539368 | 697856 | 121285 | 31933 | 49824 | 494814 |
| **G11** | 628500 | 70197 | 11670 | 7063 | 539570 | 669555 | 273680 | -12384 | 13913 | 394346 |
| **G12** | 116659 | 18133 | 20649 | 20576 | 57300 | 148997 | 70591 | -15717 | -2122 | 96246 |
| **G13** | 52246 | 23402 | 3936 | -1817 | 26726 | 472249 | 37564 | -251 | 6334 | 428602 |
| **G14** | 2197788 | 590982 | -50968 | 98916 | 1558858 | 3098619 | 1489946 | -63922 | 147741 | 1524853 |
| **G15** | -36511 | 69244 | -69785 | 4213 | -40183 | 63701 | 128803 | 122655 | 1169834 | -1357591 |
| **G16** | 325341 | 202089 | 84298 | 50144 | -11191 | 626200 | 367838 | -105835 | 134000 | 230198 |
| **G17** | 566582 | 99305 | 4189 | -5417 | 468506 | 696943 | 31766 | -52087 | 50173 | 667091 |
| **G18** | 36541 | -36232 | 6933 | 15326 | 50513 | 97441 | 60611 | -1696 | -7497 | 46023 |
| **G19** | 85483 | -258 | 20166 | -8907 | 74482 | 99192 | 16271 | -4973 | 11126 | 76769 |
| **G20** | 113673 | 382871 | -11956 | -26135 | -231107 | 416639 | 344537 | -10291 | 159502 | -77109 |
| **G21** | 31997 | 31222 | -17246 | 3401 | 14619 | 123030 | 55272 | 20545 | 66122 | -18908 |
| **G22** | 498179 | 165581 | -1203 | 25889 | 307913 | 509277 | 158458 | 90009 | 17280 | 243530 |
| **G23** | 266018 | 72784 | 138231 | 85970 | -30967 | 442190 | 431702 | -24539 | -39154 | 74181 |
| **G24** | 3249894 | 2511983 | 312319 | 692908 | -267315 | 2151364 | 1515297 | -212337 | 225842 | 622562 |
| **G25** | 500810 | 302003 | -16697 | 47488 | 168016 | 582993 | 456915 | -96158 | 115822 | 106414 |
| **G26** | 361942 | 108079 | -7141 | 116465 | 144538 | 533659 | 132154 | -53212 | 15090 | 439627 |
| **G27** | 9420233 | 1778624 | 1691872 | 139243 | 5810493 | 3462821 | 4153726 | -954625 | 380402 | -116682 |
| **G28** | 5225733 | 961761 | 860824 | 1068202 | 2334947 | -197509 | 3212848 | -198635 | -192418 | -3019304 |
| **G29** | 318683 | 49296 | 24895 | 42012 | 202480 | 343178 | 174225 | -12508 | 7576 | 173885 |
| **G30** | 1296326 | 1405119 | -617460 | -75596 | 584263 | 1870572 | 131969 | 556767 | 193246 | 988590 |
| **ALL** | 30665688 | 12289994 | 1783846 | 3294115 | 13297733 | 24566510 | 16489716 | -1005307 | 2692819 | 6389282 |

Source: Own calculations from INTRACEN Database

**b. Trade Complementarity Index and Geographical Orientation Index- Trade growth potential**

**i. Portugal**

Portugal’s trade potential is consistent along the analyzed periods. Most considered groups have a geographical orientation index above 1 to the EU15, which is consistent the inexistence of trade barriers in the European Union’s territory.

Nevertheless, the fats and saturated products registers, in all periods, a geographical orientation index below 1 while complementarity is above 1. The geographical position of Portugal may be the reason for such geographical orientation index result in the group.

 Due to the inexistence of trade barriers in the European Union, the principal index to be accounted is the trade complementarity. As expected, most groups that have revealed comparative advantage to the EU15, present also an above 1 trade complementarity index. Still, there are groups during specific periods that have no revealed comparative advantage but have an above 1 complementarity index – due to EU15 comparative disadvantage in producing those group of products - such as group 2, 4, 5, 6 and 14 in the period of 2001 - 2003; group 1, 4, 12 and 30 in the period of 2004 – 2008; and 4, 25, 30 in the period of 2009 – 2013. The opposite might also be found in group 7 in the periods of 2004 – 2008 and 2009 – 2013 and in the group 24 in the period of 2004 to 2008. An interesting tendency is noted when the indexes don’t coincide: when the trade complementary index is greater than 1 but there is no revealed comparative advantage in the following periods, there is an increase of the revealed comparative advantage value in the subsequent period; whereas when the opposite happens there is a decrease of the revealed comparative advantage index in the subsequent period. Such demonstrates the importance of the comparative disadvantage of the trade partner determining the comparative advantages of the exporting country.

**Table 5.** TCI and GOI Crossover for Portugal

|  |
| --- |
| **2001 – 2013** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 2, 5, 6, 12, 14, 16, 17, 18, 19, 20, 21, 22, 25, 26, 28, 30 | Groups 3, 7, 8, 9, 10, 11, 13, 15, 23, 24, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Groups 4 |  No Groups |
|  |  |
| **2001 – 2003** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 2, 5, 6, 14, 16, 17, 18, 19, 20, 21, 22, 26, 28 | Groups 1, 3, 7, 8, 9, 10, 11, 12, 13, 15, 23, 24, 25, 27, 29, 30 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Group 4 |  No Groups |
|  |  |
| **2004 – 2008** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 2, 5, 6, 12, 14, 16, 17, 18, 19, 20, 21, 22, 25, 26, 28 | Groups 3, 7, 8, 9, 10, 11, 13, 15, 23, 24, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Groups 4, 30 |  No Groups |
|  |  |
| **2009 – 2013** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 2, 5, 6, 12, 14, 16, 17, 18, 19, 20,21, 22, 24, 25, 26, 28, 30 | Groups 3, 7, 8, 9, 10, 11, 13, 15, 23, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
| Group 4 | No Groups |

Source: Own calculations from INTRACEN Database

**ii. Poland**

Poland’s entry to the European Union in 2004 is expected to be accompanied by an increase of the geographical orientation index, especially in the groups where it is observed an higher than 1 complementarity index, leading from a situation of trade potential (with complementarity index above 1 but a geographical orientation index below 1) to a full accomplished complementarity of trade (with both indexes greater than 1). Still, due to previous trade agreements with the European Union, the rise of the group’s value in the geographical orientation index seems to be limited. Accordingly, only groups 2, 4 and 5 gain a geographical orientation greater than 1 from 2001-2003 to 2004-2008.

**Table 6.** TCI and GOI Crossover for Poland

|  |
| --- |
| **2001 – 2013** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 5, 6, 12, 14, 16, 17, 20, 22, 24, 25, 26, 28, 30  | Groups 3, 4, 7, 8, 9, 10, 13, 15, 18, 19, 21, 23, 27, 29  |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Groups 2, 11 |  No Groups |
|  |  |
| **2001 – 2003** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 12, 14, 16, 17, 20, 22, 24, 25, 26, 28, 30 | Groups 3, 6, 7, 8, 9, 10, 13, 15, 18, 19, 21, 23, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Groups 2, 5, 11 | Group 4 |
|  |  |
| **2004 – 2008** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 2, 5, 6, 12, 14, 16, 17, 20, 22, 24, 25, 26, 28, 30 | Groups 3, 4, 7, 8, 9, 10, 15, 18, 19, 21, 23, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
|  Group 11 | Group 13 |
|  |  |
| **2009 – 2013** |
| **TCI > 1 and GOI > 1**  | **TCI < 1 and GOI > 1**  |
| Groups 1, 2, 5, 6, 11, 12, 14, 16, 17, 19, 20, 22, 24, 25, 26, 28, 30 | Groups 3, 4, 7, 8, 9, 10, 13, 15, 18, 21, 23, 27, 29 |
| **TCI > 1 and GOI < 1** | **TCI < 1 and GOI < 1** |
| No Groups | No Groups |

Source: Own calculations from INTRACEN Database

**VI. MAIN CONCLUSIONS**

Observing the revealed comparative advantages and the trade complementarity, it can be verified that the majority of groups coincides between Portugal and Poland. In this regard, we can confirm that both countries have comparative advantages in many of the same groups. Although both countries have a similar specialization pattern there are differences to be pointed out in terms of export performance.

The first difference is the evolution in both countries export performance. Portugal registered a significant positive performance on individual groups, such as Mineral Fuels, Rubber and Plastic and Iron, Steel and Copper (Groups 8, 14 and 24). Such positive performance is coincident with Portugal’s Revealed Comparative Advantage to the EU15. On the opposite side, the groups that had the least positive performance were the Traditional Sectors (Groups 18 to 21). Such is not related to Portugal’s comparative advantages, as these groups have comparative advantages in all periods, but instead to a loss of competitiveness, which was later regained in the final period, due to greater added value. Poland’s evolution is associated with a greater specialization in machinery and the automobile industry. Such is observable in both groups comparative advantages throughout the subperiods and in both groups export variation in the total period.

A second important difference is that Poland did not have comparative advantages in Portugal’s most affected sectors – the traditional sectors. Although Poland’s entry to the European Union could have a major impact on Portugal’s export performance, as both countries have a similar specialization pattern, it is acknowledgeable that the entry of such large economy did not have the expected negative impact in Portugal, at least in Portugal’s worst performing groups. Portugal’s traditional sectors, groups 18 to 21, had a minor impact on Poland’s export growth. Such can be explained by two reasons: first, excluding particular periods (such as the period of 2001-2003 on group 20 or period 2009-2013 on group 19) Poland did not have comparative advantages on such groups. Secondly, Poland entry to the European Union did not have impact on the geographical orientation of such groups from Poland to the European Union, as before 2004 was already positive and as it maintained the same positive bias without a significant impact on the export performance.

In this sense, we can regard that as both countries had similar revealed comparative advantages in the considered groups, both countries presented two different tales in the 2000’s towards the EU15. Competitiveness was the determinant factor for such different performance, as it captured the influence of the total variation of exported in the evaluated periods and groups. Also, geographical orientation missed to capture such differences, as well as it was unable to determine Portugal’s exposition to greater competition from Central and Eastern Europe, mostly due to previous trade agreement with the European Union.

**VII. ADDITIONAL CONSIDERATIONS**

Our conclusions lead us to future research questions. As it was shown, Portugal’s export performance, Southern Europe’s representative country, was not significantly affected by Poland’s entry to the European Union, the representative country of the 2004 European Union’s enlargement. In this sense it would be interesting to verify if Portugal’s poor export performance in the 2000’s was influenced by another country or countries of 2004 enlargement, thus proving the impact of the central and eastern Europe’s entry to European Union on Southern Europe’s export performance, or it was due to other factors, such as the China’s entry to the World Trade Organization.

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**IX. APPENDIX**

**Table 7.** List of Groups

|  |  |  |
| --- | --- | --- |
| **Groups** | **Designation** | **Products code** |
| **Group 1** | Live Animals | 0101-0308 |
| **Group 2** | Animal Products and Derivates | 0401-0511 |
| **Group 3** | Vegetals, Cereals and Fruits | 0601-1404 |
| **Group 4** | Fats and Saturated products | 1501-1603 |
| **Group 5** | Prepared, preserved or extracts of products | 1604-2106 |
| **Group 6** | Bottled or Canned Products | 2201-2501 |
| **Group 7** | Ores and Metal Products | 2502-2621 |
| **Group 8** | Mineral Fuels | 2701-2715 |
| **Group 9** | Chemical and Organic compounds | 2716-2942 |
| **Group 10** | Medical and pharmaceutical products | 3001-3202 |
| **Group 11** | Paints, varnishes and other Beauty and Make-Up preparations | 3203-3403 |
| **Group 12** | Waxes, albumin and other substances | 3404-3507 |
| **Group 13** | Powders, Fireworks, Photographic plates and film, Artificial graphite and Residual products of the chemical or alled industries | 3601-3826 |
| **Group 14** | Natural and modified polymers, Rubber and rube products and Plates and Plastic products | 3901-4017 |
| **Group 15** | Raw, leather, Artificial fur and articles thereof | 4101-4304 |
| **Group 16** | Wood and its products | 4401-4706 |
| **Group 17** | Cork Products, Paper and others | 4707-4911 |
| **Group 18** | Silk, wool, cotton, fabrics, synthetic fibers | 5001-5609 |
| **Group 19** | Rugs, tulle, padded, textitle coatings | 5701-5911 |
| **Group 20** | Clothing | 6001-6310 |
| **Group 21** | Footwear and other acessories | 6401-6704 |
| **Group 22** | Slate, natural stone, brick, porcelain, glass and its products | 6801-7020 |
| **Group 23** | Precisous Metals and Stones | 7101-7118 |
| **Group 24** | Iron products, steel and copper | 7201-7419 |
| **Group 25** | Articles of nickel, aluminum, zinc, tin and others | 7501-8113 |
| **Group 26** | Tools and brass instuments | 8201-8311 |
| **Group 27** | Machinery and other equipment | 8401-8548 |
| **Group 28** | Automobiles and other transport, and their accessories | 8601-8908 |
| **Group 29** | Optical fibre, Electro-medical apparatus, laboratory equipment and other instruments | 9001-9305 |
| **Group 30** | Other products | 9306-9999 |

**Table 8.** Portugal and Poland’s Market Share in the European Union

|  |  |  |
| --- | --- | --- |
|  | **Portugal** | **Poland** |
|  | **Total Exp. to the EU** | **Market Share in the EU (%)** | **Total Exp. to the EU** | **Market Share in the EU (%)** |
| **2001** | 21441140 | 0,87934853 | 27257018 | 1,11787052 |
| **2002** | 21791302 | 0,905604917 | 29105090 | 1,209551964 |
| **2003** | 22313658 | 0,929211513 | 31925301 | 1,329470816 |
| **2004** | 23351572 | 0,889055789 | 39521568 | 1,504690085 |
| **2005** | 22520560 | 0,783255386 | 45160509 | 1,570663057 |
| **2006** | 24679723 | 0,752917352 | 54252843 | 1,655120164 |
| **2007** | 26242698 | 0,764373973 | 62382353 | 1,817017715 |
| **2008** | 25158650 | 0,709170086 | 70216656 | 1,97926171 |
| **2009** | 21889111 | 0,759700619 | 61473442 | 2,133545372 |
| **2010** | 25842231 | 0,755168332 | 74486752 | 2,176671077 |
| **2011** | 29403390 | 0,774341904 | 82680735 | 2,177407333 |
| **2012** | 30265966 | 0,773949801 | 81888365 | 2,094018168 |
| **2013** | 31215181 | 0,815295543 | 86084584 | 2,248405258 |

**Source:** Own calculations from INTRACEN Database

**Table 9.** Trade Complementary Index and Geographical Orientation Index for Portugal - European Union

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2001-2013** | **2001-2003** | **2004-2008** | **2009-2013** |
|  | **TCI** | **GOI** | **TCI** | **GOI** | **TCI** | **GOI** | **TCI** | **GOI** |
| **Group 1** | 1,238 | 2,066 | 0,723 | 2,200 | 1,075 | 1,945 | 1,710 | 2,107 |
| **Group 2** | 2,332 | 1,633 | 1,841 | 1,586 | 2,180 | 1,636 | 2,778 | 1,658 |
| **Group 3** | 0,612 | 2,421 | 0,516 | 2,271 | 0,595 | 2,308 | 0,687 | 2,624 |
| **Group 4** | 1,584 | 0,799 | 1,251 | 0,682 | 1,468 | 0,671 | 1,899 | 0,998 |
| **Group 5** | 1,617 | 1,801 | 1,175 | 1,739 | 1,503 | 1,723 | 1,997 | 1,917 |
| **Group 6** | 3,267 | 1,567 | 2,601 | 1,569 | 3,272 | 1,571 | 3,662 | 1,562 |
| **Group 7** | 0,670 | 3,191 | 0,659 | 2,399 | 0,824 | 3,305 | 0,524 | 3,551 |
| **Group 8** | 0,292 | 1,273 | 0,165 | 1,381 | 0,248 | 1,374 | 0,413 | 1,108 |
| **Group 9** | 0,611 | 2,034 | 0,462 | 1,873 | 0,626 | 2,126 | 0,687 | 2,037 |
| **Group 10** | 0,633 | 1,530 | 0,612 | 1,377 | 0,548 | 1,514 | 0,730 | 1,637 |
| **Group 11** | 0,863 | 1,748 | 0,669 | 1,676 | 0,888 | 1,706 | 0,955 | 1,834 |
| **Group 12** | 1,199 | 1,960 | 0,807 | 1,963 | 1,236 | 1,858 | 1,398 | 2,061 |
| **Group 13** | 0,496 | 2,222 | 0,557 | 2,380 | 0,377 | 2,135 | 0,580 | 2,214 |
| **Group 14** | 1,349 | 2,338 | 1,018 | 2,207 | 1,261 | 2,244 | 1,635 | 2,510 |
| **Group 15** | 0,494 | 2,130 | 0,413 | 2,321 | 0,391 | 2,133 | 0,647 | 2,012 |
| **Group 16** | 4,546 | 1,989 | 4,499 | 1,959 | 3,982 | 1,924 | 5,139 | 2,073 |
| **Group 17** | 2,264 | 1,887 | 1,931 | 1,820 | 1,321 | 1,888 | 3,406 | 1,925 |
| **Group 18** | 1,093 | 2,951 | 1,206 | 2,680 | 1,060 | 2,727 | 1,059 | 3,338 |
| **Group 19** | 2,239 | 2,252 | 2,708 | 2,493 | 1,952 | 2,156 | 2,245 | 2,204 |
| **Group 20** | 3,665 | 2,224 | 3,981 | 2,302 | 3,555 | 2,154 | 3,585 | 2,247 |
| **Group 21** | 6,080 | 2,367 | 6,265 | 2,470 | 5,593 | 2,285 | 6,457 | 2,388 |
| **Group 22** | 3,761 | 2,229 | 3,401 | 2,028 | 3,702 | 2,183 | 4,036 | 2,395 |
| **Group 23** | 0,154 | 3,557 | 0,122 | 2,796 | 0,058 | 2,915 | 0,270 | 4,655 |
| **Group 24** | 0,968 | 2,310 | 0,823 | 2,317 | 0,928 | 2,407 | 1,096 | 2,209 |
| **Group 25** | 1,008 | 2,394 | 0,879 | 2,280 | 1,036 | 2,460 | 1,058 | 2,395 |
| **Group 26** | 1,462 | 2,084 | 1,422 | 2,092 | 1,380 | 2,018 | 1,568 | 2,144 |
| **Group 27** | 0,537 | 2,340 | 0,599 | 2,371 | 0,564 | 2,091 | 0,472 | 2,570 |
| **Group 28** | 1,540 | 2,244 | 1,575 | 2,190 | 1,501 | 2,104 | 1,558 | 2,417 |
| **Group 29** | 0,292 | 2,217 | 0,316 | 2,274 | 0,217 | 2,171 | 0,353 | 2,229 |
| **Group 30** | 1,767 | 1,387 | 0,588 | 1,808 | 2,968 | 0,823 | 1,273 | 1,698 |

**Source:** Own calculations from INTRACEN Database

**Table 10.** Trade Complementary Index and Geographical Orientation Index for Poland - European Union

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2001-2013** | **2001-2003** | **2004-2008** | **2009-2013** |
|  | **TCI** | **GOI** | **TCI** | **GOI** | **TCI** | **GOI** | **TCI** | **GOI** |
| **Group 1** | 1,238 | 2,066 | 0,723 | 2,200 | 1,075 | 1,945 | 1,710 | 2,107 |
| **Group 2** | 2,332 | 1,633 | 1,841 | 1,586 | 2,180 | 1,636 | 2,778 | 1,658 |
| **Group 3** | 0,612 | 2,421 | 0,516 | 2,271 | 0,595 | 2,308 | 0,687 | 2,624 |
| **Group 4** | 1,584 | 0,799 | 1,251 | 0,682 | 1,468 | 0,671 | 1,899 | 0,998 |
| **Group 5** | 1,617 | 1,801 | 1,175 | 1,739 | 1,503 | 1,723 | 1,997 | 1,917 |
| **Group 6** | 3,267 | 1,567 | 2,601 | 1,569 | 3,272 | 1,571 | 3,662 | 1,562 |
| **Group 7** | 0,670 | 3,191 | 0,659 | 2,399 | 0,824 | 3,305 | 0,524 | 3,551 |
| **Group 8** | 0,292 | 1,273 | 0,165 | 1,381 | 0,248 | 1,374 | 0,413 | 1,108 |
| **Group 9** | 0,611 | 2,034 | 0,462 | 1,873 | 0,626 | 2,126 | 0,687 | 2,037 |
| **Group 10** | 0,633 | 1,530 | 0,612 | 1,377 | 0,548 | 1,514 | 0,730 | 1,637 |
| **Group 11** | 0,863 | 1,748 | 0,669 | 1,676 | 0,888 | 1,706 | 0,955 | 1,834 |
| **Group 12** | 1,199 | 1,960 | 0,807 | 1,963 | 1,236 | 1,858 | 1,398 | 2,061 |
| **Group 13** | 0,496 | 2,222 | 0,557 | 2,380 | 0,377 | 2,135 | 0,580 | 2,214 |
| **Group 14** | 1,349 | 2,338 | 1,018 | 2,207 | 1,261 | 2,244 | 1,635 | 2,510 |
| **Group 15** | 0,494 | 2,130 | 0,413 | 2,321 | 0,391 | 2,133 | 0,647 | 2,012 |
| **Group 16** | 4,546 | 1,989 | 4,499 | 1,959 | 3,982 | 1,924 | 5,139 | 2,073 |
| **Group 17** | 2,264 | 1,887 | 1,931 | 1,820 | 1,321 | 1,888 | 3,406 | 1,925 |
| **Group 18** | 1,093 | 2,951 | 1,206 | 2,680 | 1,060 | 2,727 | 1,059 | 3,338 |
| **Group 19** | 2,239 | 2,252 | 2,708 | 2,493 | 1,952 | 2,156 | 2,245 | 2,204 |
| **Group 20** | 3,665 | 2,224 | 3,981 | 2,302 | 3,555 | 2,154 | 3,585 | 2,247 |
| **Group 21** | 6,080 | 2,367 | 6,265 | 2,470 | 5,593 | 2,285 | 6,457 | 2,388 |
| **Group 22** | 3,761 | 2,229 | 3,401 | 2,028 | 3,702 | 2,183 | 4,036 | 2,395 |
| **Group 23** | 0,154 | 3,557 | 0,122 | 2,796 | 0,058 | 2,915 | 0,270 | 4,655 |
| **Group 24** | 0,968 | 2,310 | 0,823 | 2,317 | 0,928 | 2,407 | 1,096 | 2,209 |
| **Group 25** | 1,008 | 2,394 | 0,879 | 2,280 | 1,036 | 2,460 | 1,058 | 2,395 |
| **Group 26** | 1,462 | 2,084 | 1,422 | 2,092 | 1,380 | 2,018 | 1,568 | 2,144 |
| **Group 27** | 0,537 | 2,340 | 0,599 | 2,371 | 0,564 | 2,091 | 0,472 | 2,570 |
| **Group 28** | 1,540 | 2,244 | 1,575 | 2,190 | 1,501 | 2,104 | 1,558 | 2,417 |
| **Group 29** | 0,292 | 2,217 | 0,316 | 2,274 | 0,217 | 2,171 | 0,353 | 2,229 |
| **Group 30** | 1,767 | 1,387 | 0,588 | 1,808 | 2,968 | 0,823 | 1,273 | 1,698 |

**Source:** Own calculations from INTRACEN Database

1. See Amador et al. (2009). [↑](#footnote-ref-1)
2. OECD (2014) points the raise of the regular work week of central government employees from 35 hours to 40 hours with no pay rise, in September 2013. [↑](#footnote-ref-2)