THE ENLARGEMENT OF THE EUROPEAN UNION AND PORTUGUESE FOREIGN TRADE

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1. INTRODUCTION

In 1992, the European Agreements were signed between the European Union (EU) and Hungary, Poland, the Czech Republic and the Slovak Republic (hereafter named CEEC4(1)) on the progressive elimination of trade barriers and the commencement of the process of liberalisation and adaptation of these four economies regarding their forthcoming adhesion to the EU. Later on, also Romania and Bulgaria signed similar agreements.

The European Agreements between the EU and the CEEC4s represent a twofold commitment to these countries: a political commitment, involving a process of democratisation and of convergence towards the political and legal structures of the Western European countries; and an economic one, featuring the adoption of the functioning rules of market economies and their integration in international trade.

The potential enlargement of the EU to the Central and Eastern European countries — namely the CEEC4s — has delivered several researches — encompassing the EU countries taken individually or as a whole — aiming at assessing the possible economic outcomes of such enlargement(2). These researches usually take a double perspective: first, the characterisation of the sectoral pattern of exchanges; and second, the estimation of explanatory models for exports.

Despite the meagre share of trade with the CEEC4 countries in Portuguese foreign trade — less than 1 per cent — the increases recorded in recent years (following the political and economic openness of these countries) indicates the existence of an important potential market; on the other hand, competition conditions are bound to become harder, specially as regards competition with the EU leading partners.

In fact, between 1988 and 1994(3) as an outcome of the progressive economic openness of the CEEC4s, trade between Portugal and these countries rose by more than 30 per cent in imports and by more than 35 per cent as regards exports(4); simultaneously, trade between the CEEC4s and the EU multiplied more than twofold, amounting to figures exceeding trade between Portugal and the EU by more than 60 per cent (as against 15 per cent in 1988). In 1993, EU exports destined to the CEEC4s exceeded the value of those destined to Portugal by about 30 per cent — thus inverting the situation recorded in 1988, when the Portuguese market accounted for 15 per cent more than the CEEC4 market. The CEEC4 exports to the EU in

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* The opinions of this paper represent those of the author and are not necessarily those of the Banco de Portugal.

(1) The European Agreement was initially signed between the European Union and the Czechoslovak Federal Republic. With the separation into two independent countries – the Czech Republic and the Slovak Republic – new association agreements were signed between the EU and the new countries.

(2) The following researches are worth being highlighted: Baldwin (1994), Fontenay et al. (1995), involving most Member States; Martín (1995) and Martín & Gual (1994), for Spain; and Dimelis & Gatsios (1994) for Greece.

(3) The choice of the period running from 1988 up to 1993/4 was conditioned by data availability, but was also induced by the fact that the analysis is supposed to be centred in the most recent years, which exhibit a structural discontinuity with the past.

(4) Silva et al. (1992) includes a complete compilation of the exchanges between Portugal and Eastern Europe between 1988 and 1990.
1993 scored the double of Portuguese exports (1.7 times Portuguese exports to the EU in 1988).

The tendency towards a loss of importance of the Portuguese market as a destination for the EU exports in favour of the CEEC4 economies is expected to become more noticeable, due to the greater population dimension of the latter markets (these account for 65 million consumers as a whole), the greater geographical closeness (or even contiguity with some EU countries, namely with Germany) and presumably to the process of economic growth.

This paper aims mainly at quantifying the response of Portuguese exports (directed towards the European countries) to the presence of trade barriers, the dimension of markets and the income of destination markets; it is predictable that the potential impact of the EU enlargement to comprise the CEEC4 countries on Portugal as regards foreign trade exceeds by far the actual dimension of trade.

Section 2 characterises the sectoral pattern of Portuguese foreign trade with the CEEC4, and the share of the Portuguese and CEEC4 exports in the EU market; as a result, indications on the short-run effects of the elimination of trade barriers will be assessed; section 3 draws the results of estimating behaviour equations for the Portuguese foreign trade that allow for an assessment of the medium-run effects of a possible adhesion of the CEEC4 to the European Economic Area (EEA) (5).

The main conclusions are drawn in section 4. These highlight the nuclear importance of the elimination of trade barriers to the Portuguese foreign trade; furthermore, elements of trade creation are expected to be highly relevant as regards the perspectives of forthcoming developments of Portuguese foreign trade with the Eastern and Central European countries.

### 2. SECTORAL PATTERN OF THE PORTUGUESE FOREIGN TRADE WITH THE CEEC4

The sectoral pattern of trade relations between Portugal, the CEEC4 countries and the EU can be assessed by using three traditional groups of foreign trade measures (6): i) the revealed comparative advantages, ii) infra-industrial trade and iii) specialisation indices.

The first of these measures evidences basically the existence of different relative factor and technology endowments as a reason for the inter-sectoral specialisation of foreign trade. The second group evidences the presence of economies of scale or monopolistic competition features as explaining trade among countries, independently of the pattern of comparative advantages. Finally, the specialisation indices measure the level of competition between two countries (in this case, between Portugal and the CEEC4) as regards a third market (i.e., the EU).

i) The evaluation of the comparative advantage pattern prevailing in the exchanges between Portugal and the CEEC4 (7) is based on the assessment of the share of net exports of a given sector in total exchanges of that sector between two countries (8). This calculation is based on a breakdown of exports according to the SITC (Rev. 3) — Standard International Trade Classification, Revised 3, included in publication Foreign Trade by Commodities (OECD), available for period

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(5) The EEA comprises the European Union and the EFTA countries.


(7) The Czech Republic and the Slovak Republic were treated aggregately, as to use comparable series throughout the period under analysis. This solution is not a limiting one since we basically want to study the impact of the EU enlargement on the CEEC4 as a whole, and not the individualised effect on each of these countries.

(8) The revealed comparative advantages are obtained through the following expression:

\[ VCR_{j} = \left( X_{j}^{P} - M_{j}^{P} \right) / \left( X_{j}^{P} + M_{j}^{P} \right) \times 100 \]

where \( X_{j}^{P} \) (imports) and \( M_{j}^{P} \) (exports) stand for the Portuguese exports (imports) of branch \( j \) to (from) the CEEC4 countries in moment \( t \).

Therefore:

- \( VCR_{j} > 0 \) indicates a revealed comparative advantage of Portugal in branch \( j \), in period \( t \);
- \( VCR_{j} < 0 \) indicates a revealed comparative advantage of the CEEC4 countries in branch \( j \), in period \( t \).
1988-1993\(^{9}\); the following findings were drawn (chart 1)\(^{10}\):

- generally speaking, the comparative advantages pattern in the Portugal — CEEC4 trade exhibits long-run stability;
- Portugal holds comparative advantages in sectors “Beverages and Tobacco” (1) and “Non-edible Raw Materials (except petrol)” (2);
- The CEEC4 countries exhibit significant comparative advantages in sectors “Food and livestock” (0), “Chemicals” (5) and “Transport Machines and material” (7);
- conclusions are clearly less clear-cut as regards sectors “Manufactured articles” (6) and “Other Manufactured articles” (8).

These sectors exhibit strong fluctuations over time, possibly due to the fact that these items comprise a wide range of commodities, and also due to the meagre share of these items in overall trade. Nevertheless, in both cases Portugal attained a virtual reduction in its comparative disadvantage. The Portuguese comparative advantage pattern vis-à-vis the CEEC4 countries (similar to that calculated for each CEEC4 country taken individually) is quite close to the present behaviour vis-à-vis the EU as a whole, except in what concerns sector “ Other manufactured commodities”;

ii) A rigorous calculation of the infra-industrial trade indices\(^{11}\) would require data broken-down at the industry level (i.e., at 5 digits). However, a first calculation at the 2 digit level indicates that the share of infra-industrial trade between Portugal and the CEEC4 countries is estimated to surpass the 40 per cent threshold, which is particularly high and is possibly biased due to the usage of insufficiently disaggregated sectoral data\(^{12}\). Nevertheless, an important caveat with practical consequences can be drawn: the costs of adjustment induced by the elimination of trade barriers decrease with the level of infra-industrial specialisation of trade (Balassa (1986), unlike the inter-sectoral exchanges, which are chiefly grounded on distinct factor endowments.

iii) Lastly, the specialisation indices\(^{13}\) (table 1) allow for the following findings:

\(^{9}\) This classification was chosen because it is the only classification for which the third measure can be calculated (as its calculation requires data on the exchanges between the EU and the CEEC4 countries), and because we wish to use a coherent data source for all three measures.

\(^{10}\)Sectors 3 (Mineral Fuels, lubricants and similar products) and 4 (oils and fats of animal and vegetable origins) are not included as these did not record any transactions.

\(^{11}\)The infra-industrial trade indices are calculated from the following expression:

\[
CII_k = 100 \left[ 1 - \frac{1}{\sum_i |X_{ki} / X - M_{ki} / M|} \right] \frac{\sum_i \left( X_{ki} / X + M_{ki} / M \right)}{
\]

where \(X\) and \(M\) stand for total exports and imports, respectively, and \(X_{kj}\), \(M_{kj}\) are the exports (imports) of good \(k\) of branch \(j\).

This measure calculates the goods exchanged within a given branch, adjusting those values for the total value of trade between the two economies, i.e., the trade arising from the comparative advantages pattern.

If \(X_{k}/X = M_{k}/M\), for each and every \(k\), then the exchanges are exclusively infra-sectoral and \(CII_k = 100\ per\ cent\).

\(^{12}\)In fact, calculations made for the EU and Spain indicate indices averaging 25 per cent; for the EU and Greece those indices average 35 per cent; these results refer to period 1989-1992 (source: Dimelis & Gatsios (1994), Martín & Gual (1994)).
The indices of Portuguese specialisation in the EU market are stable over time and among the CEEC4 countries;

— The specialisation of Portuguese exports in the EU market vis-à-vis the CEEC4 countries’ exports is chiefly concentrated in sectors “Beverages”, “Manufactured Products”, and “Transport Equipment”, although specially over the course of the two last years this specialisation lost its importance — i.e., the competition faced by Portugal in these sectors has risen strikingly;

— On the other hand, the greatest specialisation of CEEC4 exports in the EU market vis-à-vis those of Portugal is evident in sectors “Foodstuffs”, “Raw Materials” and “Chemicals”.

### 3. A GRAVITATIONAL MODEL FOR PORTUGUESE EXPORTS

A greater level of integration of the Central and Eastern European economies will induce a direct effect on the level of Portuguese foreign trade; This effect will be triggered by the simple elimination of the obstacles to free trade and to the consequently easier access to a wide market, involved in a process of economic development. A second effect — more indirect — is due to the same kind of response induced in our presently leading trade partners which, like Portugal, are also involved in the more direct effects.

As to assess of the importance of this direct effect, a behaviour equation for the Portuguese exports was estimated.

This estimation is similar to that obtained through the so-called gravitation model proposed in Baldwin (1994)(14). This model evolves in turn

### Table 1

**SPECIALISATION INDICES OF THE PORTUGUESE AND CEEC4 EXPORTS TO THE EU**

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<tr>
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<tbody>
<tr>
<td>0 Food and live animals</td>
<td>20.3</td>
<td>18.4</td>
<td>21.2</td>
<td>27.7</td>
<td>31.2</td>
<td>42.4</td>
</tr>
<tr>
<td>1 Beverages and tobacco</td>
<td>864.7</td>
<td>777.3</td>
<td>671.5</td>
<td>663.0</td>
<td>723.1</td>
<td>878.8</td>
</tr>
<tr>
<td>2 Crude materials inedible except fuels</td>
<td>84.3</td>
<td>96.0</td>
<td>89.8</td>
<td>84.3</td>
<td>75.6</td>
<td>75.4</td>
</tr>
<tr>
<td>3 Mineral fuels, lubricants and related materials</td>
<td>10.5</td>
<td>18.8</td>
<td>24.0</td>
<td>21.8</td>
<td>32.2</td>
<td>37.4</td>
</tr>
<tr>
<td>4 Animal and vegetable oils</td>
<td>48.8</td>
<td>16.2</td>
<td>45.0</td>
<td>42.6</td>
<td>40.3</td>
<td>31.1</td>
</tr>
<tr>
<td>5 Chemical and related products</td>
<td>55.8</td>
<td>56.6</td>
<td>47.9</td>
<td>45.3</td>
<td>49.2</td>
<td>61.7</td>
</tr>
<tr>
<td>6 Manufactured goods</td>
<td>105.5</td>
<td>242.4</td>
<td>205.7</td>
<td>173.1</td>
<td>148.5</td>
<td>126.3</td>
</tr>
<tr>
<td>7 Machinery and transport equipment</td>
<td>148.2</td>
<td>187.0</td>
<td>166.6</td>
<td>138.7</td>
<td>131.2</td>
<td>108.0</td>
</tr>
<tr>
<td>8 Miscellaneous manufactured articles</td>
<td>233.3</td>
<td>242.4</td>
<td>216.4</td>
<td>192.6</td>
<td>172.8</td>
<td>152.6</td>
</tr>
<tr>
<td>9 Others</td>
<td>4.5</td>
<td>4.1</td>
<td>1.3</td>
<td>0.9</td>
<td>0.1</td>
<td>0.5</td>
</tr>
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</table>

(13) The specialisation indices were calculated from the following expression:

\[
IE_{jt} = \left( \frac{X_{jt}^{UE}}{\sum X_{jt}^{UE}} \right) \left( \frac{X_{jt}^{PU E}}{\sum X_{jt}^{PU E}} \right) \times 100
\]

where \(X_{jt}^{PU E}\) stands for the Portuguese exports of branch \(j\) destined to the EU and \(X_{jt}^{UE}\) are the PECO4 exports of \(j\) destined to the EU.

The measure is based on the relative weight for each of the considered economies of the exports of branch \(j\) in total exports destined to the EU.

Therefore:

- \(IE_{jt} > 100 (\text{<} 100)\) indicates a greater (smaller) specialisation of Portugal vis-à-vis the PECO4 in the exports of branch \(j\) directed towards the EU.
- \(IE_{jt} = 100\) indicates an equal specialisation of Portugal vis-à-vis the PECO4 in the exports of branch \(j\) directed towards the EU.
- \(IE_{jt} = 0\) indicates that Portugal offers no competition vis-à-vis the PECO4 in the exports of branch \(j\) directed towards the EU.

(14) Baldwin (1994) presents this model following a project proposed by the European Commission to the Centre for Economic and Policy Research (CEPR), aiming at the investigation of the trade relations with the Central and Eastern European countries, as well as the implications of various levels and stages of a possible integration process. Other similar models preceded this research: Balassa (1986), Collins and Rodrik (1991), Wang & Winters (1991), among others. Baldwin (1994) presents a compilation of these researches and compares the findings with those resulting of the gravitation model. For a description of the theoretical framework of this approach see Krugman & Obstfeld (1987)
of the idea that aggregate trade flows between two economies are determined by the size and the differentiation of the respective markets, as regards income, the number of consumers and spatial closeness.

In general, the model uses a set of simple equations, each one specifying the amount of Portuguese exports ($X$) to different countries ($i$) as a function of five explanatory variables: output (GDP) and population (POP) of the exporting and importing countries - thus reflecting the size of respective markets and the trade possibilities linked to product differentiation and to the economies of scale - and distance (DIST) between countries, as a proxy for transport costs and other trade barriers (e.g., physical, cultural or others). A dummy variable (EUD) is added to the above described variables, as to treat the EEA countries separately of others.

Formally:

$$\ln X_{it} = \alpha + \beta_1 \ln \left( \frac{\text{PIB}_{it}}{\text{POP}_{it}} \right) + \beta_2 \ln \text{PIB}_{it} + \beta_3 \ln \left( \frac{\text{PIB}_{it}}{\text{POP}_{it}} \right) +$$

$$+ \beta_4 \ln \text{PIB}_{it} + \delta \ln \text{DIST}_{it} + \gamma \text{EUD}_{it} + \zeta_{it}$$

with $i = 1, ..., 20$ and $t = 1988, ..., 1993$; $\zeta_{it}$ stands for the random residual.

120 observations were used, corresponding to Portuguese exports to 20 European countries, comprising the EU, the EFTA, the CEEC4 countries and Turkey. Exports per capita and outputs per capita are expressed in 1990 constant prices in dollars, and are drawn from OECD (Foreign Trade by Commodities) and IMF (International Financial Statistics) respectively. Variable DIST consists of the distance (in kilometres) of the best route between Lisbon and each other country’s capital (source: Automóvel Clube Português). Dummy variable EUD equals 1 for countries belonging to the European Economic Area and 0 otherwise.

Hypothesis concerning the importance of the random effects and fixed effects on the variability of individual parameters can be tested by using panel data (Greene (1993)).

In this context, a fixed-effects model lies on the assumption that the differences between the estimated parameters for countries belonging to the sample are reflected solely in the constant terms. Estimation through a within groups model would then deliver consistent (though not efficient) estimators\(^{(15)}\), and would not allow for an identification of the parameters associated to the uniformly distributed variables for each country (distance and EUD as is the case), which are particularly important in these equations.

Furthermore, if including variable EUD in the regression the individual effects are assessed, and the hypothesis according to which the remaining elasticities are constant (F-test) is not rejected. This being the case, estimation by using the generalised least squares method (GLSQ) surpasses all inconveniences encompassed in the within groups estimation, although the consistency of the estimators is not guaranteed whenever the individual constant terms and the independent variables are correlated with each other.

Hence, if the regression(s) include variables DIST and EUD, the Hausman test\(^{(16)}\) allows for the non-rejection of the hypothesis of non-correlation between the autonomous terms and the explanatory variables, i.e., the non-rejection of the consistency and greater efficiency of the GLSQ estimators\(^{(17)}\).

Table 2 exhibits the main results of the GLSQ estimation, summarised as follows:

— the estimated parameters exhibit the expected signs: parameters for per capita income and population of the countries to which Portuguese exports are sent (i.e., those variables illustrating the market size effects and the economies of scale effects) are positive; parameters for distance and the dummy variable for European Integration (EUD) (i.e., the proxies for transport costs and barriers to entry) are negative.

\(^{(15)}\)Preliminary tests do not allow for the rejection of the hypothesis of the presence of individual effects; consequently, the estimation through the ordinary least squares method, based on the pooled sample, delivers biased estimators. On the estimation using panel data see Greene (1993) and Hausman & Taylor (1991).

\(^{(16)}\)The Hausman test is grounded on the analysis of the correlation between the constant terms and the independent variables (see Greene (1993)).

\(^{(17)}\)Note that this result is identical to that found by Martín (1995) regarding the Spanish case.
— the point estimate for the destination country’s per capita output elasticity of the Portuguese exports is about 0.60, while the population size elasticity averages 0.90; since the CEEC4 countries have lower per capita incomes than the EU average but have an important population size, these findings suggest that the share of the Portuguese exports to the CEEC4 in overall Portuguese exports will possibly rise;

— the EEA Integration dummy is quite significant, having a strong effect on the model’s explanatory ability; being a much more adherent variable than distance - everything else constant, the integration effect multiplies exports threefold - the existence of trade barriers is presumably determinant in accounting for the low level of Portuguese exports to the CEEC4 countries (the opposite is presumably true as well).

4. CONCLUSION

The perspectives of enlargement of the EEA to the CEEC4 countries, comprising the total elimination of trade barriers and the access to a market of over 60 million inhabitants — facing an income catching-up process vis-à-vis the EU average — is expected to produce significant direct effects of creation of trade on Portugal. Nevertheless, as seen above, trade relations with these economies are still very incipient, and will presumably bring about short-run negative effects due to the rise in competition in some production sectors.

Above the issue of the specific value of trade involved — exports to the CEEC4 countries may exceed USD 120 million — the relevant issue here is the sensitivity of the Portuguese exports to the presence of obstacles to free trade.

REFERENCES


Baldwin, R. (1994), Towards an Integrated Europe, CEPR.


