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PORTUGUESE TRADE WITH EUROPEAN UNION: AN ANALYSIS OF TRADE TYPES AND QUALITY RANGES

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1. Introduction

The aim of this research is to investigate the characteristics of the Portuguese trade of manufactured goods with the European Union in the 1990s by trade types and quality ranges. The analysis is undertaken through several indexes based on unit values, which measure the average price (of exports and imports) of a bundle of items from the same general product grouping. Unit values are taken as a proxy for quality, assuming that a higher price reflects a higher quality.[1] If products are homogeneous and the techniques are available all over the world, margins are zero and unit values will reflect average costs. But if the good is heterogeneous, a higher unit value will reflect ability to set prices and it can be easily assumed that the numerator incorporates quality elements, such as premiums for higher sophistication, related services, speciality production or innovation.[2]

We start by evaluating intra-trade flows taking into account two complementary approaches: the traditional distinction between inter and intra-industry trade based on the Grubel-Lloyd (GL) index and an alternative one, proposed by researchers of CEPII[3], which allows the distinction between intra-industry trade (IIT) on horizontal versus vertical differentiation by comparing the export and import unit values of a country.

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[1] See, on this subject, Aiginger (1997).
[2] The unit value also increases with market power, which can be related to factors other than quality.
[3] See, among others, Abd-El-Rahman (1987), Freudenberg and Müller (1991) and Fontagne, Freudenberg and Unal-Kesenci (1996).

The first approach measures the degree of trade overlap and is implicitly associated with preference diversity, in the context of monopolistic competition models of horizontal differentiation. These models are appropriate for explaining intra-industry trade between countries with similar factor endowments and take as its main determinants scale economies and product differentiation based on the attributes of the traded goods. The second approach aims to disentangle intra-industry trade based on horizontal and vertical differentiation (quality differentiation). Vertical product differentiation can be explained, amongst other factors, by the neoclassical model of trade of factor proportions, that is, a qualitative division of labour. This fact eventually explains it has produced less theoretical interest than horizontally differentiated trade. However, recent studies undertaken according to CEPII methodology identify the empirical relevance of vertical differentiation as a pattern of IIT.

In the case of Portugal we conclude that intra-industry trade with the EU does not concern so much the horizontally differentiated products but more the products which are vertically differentiated. This fact underlines the particular interest of Portugal's position in relation to different market segments, a topic investigated by defining the quality range of exports versus imports in the case of vertically differentiated products' trade.

The unit value indexes can also be used to judge competitiveness of exports (for broad industries as well as in narrowly defined product markets) if compared for different countries in the same market. In the case of Portugal, this measure seems particularly adequate for traditional exports. Being based on intensive labour, these sectors will have to face severe price competition in the near future and we describe the eventual effects of this trade expansion based on the price quality structure of exports and specific assumptions.

Section 2 introduces some theoretical and methodological considerations on the first issue. Section 3 presents and discusses the results of that analysis. Section 4 presents results on the competitive position of Portugal according to the unit value of exports in the case of the traditional sectors. Section 5 concludes.

2. Product differentiation and intra-industry trade: theoretical and methodological background

Horizontal differentiation is represented in models of IIT by Krugman (1979) and Lancaster (1979) with different assumptions - the first introduces the "love for variety" approach *a la* Dixit and Stiglitz and the second the "favourite approach" a *la* Lancaster. They both show that preference diversity and decreasing costs can be associated with horizontal IIT.

Models of vertical IIT date from Falvey (1981), Falvey and Kierzkowski (1985) and Shaked and Sutton (1984). Falvey linked the product quality to capital intensity in production in the context of the HOS theory, with capital moving freely between firms of a given sector but not between sectors. High quality products are capital intensive and are produced by the country relatively more endowed in capital. Low quality products are labour intensive and are produced by the country relatively well-endowed in labour. Falvey and Kierzkowski´s model added an explicit demand side (demand for different qualities is a function of quality's relative price and consumer income) and concluded that with relatively higher incomes consumers acquire varieties of a higher quality and the share of vertical IIT in bilateral trade of a pair of countries is greater the greater the differences in capital endowment of the two countries. Shaked and Sutton (1984) present a similar model for the demand side but in an oligopolistic context. The quality of a product depends on R&D, which is reflected on the fixed costs. The model allows the sequential choice of quality by two firms in a two-stage game. Trade openness allows an improvement of average quality since the production increase in the enterprises which remain competitive and the decrease of the average cost due to scale economies results in an increase in the rentability of R&D. In the new equilibrium, for a given price, the quality of all varieties produced increases. As a result, trade simultaneously allows an increase of the quality of the varieties and a price reduction through increase of competitiveness. If average variable costs increases moderately with quality improvement, this model leads to a "natural" oligopoly.

Measuring vertical and horizontal IIT

The GL index of the relative importance of IIT is in fact a measure of the degree of overlap between exports and imports, which does not allow a distinction between horizontal and vertical differentiation.

Besides, as researchers from CEPII pointed out[4], this measure may set an analytical problem related to the fact that there are two different explanations for the same majority flow: one being intra-industry trade, thus explained by imperfect competition, and the other being inter-industry trade, thus explained by perfect competition and the theories of comparative advantage. The dividing line between intra and inter-industry nature being within the majority flow, part of this flow can be explained by differences in factor abundance or technology (comparative advantage theories)- and part by economies of scale, product differentiation and imperfect competition.

The CEPII approach rejects this dividing line between intra and inter-industry trade. It assumes that if a minimum threshold of overlap is attained (10%), both exports and imports are part of two-way trade. Otherwise, both flows would be considered as being part of one-way trade. Thus trade will be either inter-industry or intra-industry. The dividing line is between trade types, imports and exports being part of the same trade type.

In addition, CEPII methodology allows the distinction between intra-industry trade in horizontal versus vertical differentiation. For this purpose it evaluates the quality analysis with the use of unit values indexes –which measure the average price of a bundle of items from the same general product grouping as the nominal value per unit of production- as quality index. In spite of criticism of the unit value proxy-in the short run consumers may buy a more expensive product for reasons other than quality- this approach became widely used. Most studies on the quality of international trade assume, at least at a sufficiently disaggregated level, that relative prices reflect relative

[4] See, for instance, Fontagne, Freudenberg and Unal-Kesenci (1996)

qualities.[5]

Computation of relative prices has an additional problem related to the physic volume units used[6]. It is common to use values per tonne (or another unit such as kilogram, square meters, volume, etc.) on account of the available statistical data. Alternatively one can considere the use of unit values per item, but they are available only for a limited range of products. All measures have the shortcoming that quality is not necessarily associated with size or any other quantity measure. For instance, if we use unit values per tonne we are assuming that a higher quality is obtained with a lighter material (which allows a higher relative price for this variety).

The methodology developed by CEPII assumes, based on unit value indexes, that horizontal IIT occurs when the range of relative export/import valued is equal or inferior to 1.15 and greater than 0.85 (*two-way trade in similar products*). We are working under the assumption that transport and freight costs alone are unlikely to account for a difference in these values of more than +-15%.[7] When relative unit values are outside that range, any IIT is considered to be vertical (*two way trade in vertically differentiated products*). When relative values are inside that range, data displays a *one-way trade* type.

It is possible to consider both measures, GL and CEPII, as complementary rather than substitutes, looking at each of them as aiming to answer a specific question: GL measures the intensity of overlap in trade; CEPII measures the importance of three trade types (one-way trade, two way trade in similar products and two-way trade in vertically differentiated products) in all trade.

Regarding the GL approach, the distinction between intra-industry trade on horizontal versus vertical differentiation may also be overcome on account of the theoretical reasons pointed out above: increase of the GL index being often implicitly associated with gains from variety, the new measure may display, if most two way trade is vertically differentiated, that intra-industry trade may be mainly determined by

[5] Unit values of two bundles may differ also if the mix of products differs, so that one bundle contains a higher proportion of a high unit value items than the other. Increased dissagregation is the usual response to this drawback.

[6] See Hine, Greenaway and Milner (1999).

factor abundance and a qualitative division of labour.[8]

3. Trade Types in Intra-EU Trade of Portugal

According to the GL index, intra-industry trade of Portugal with the EU slowly increased from 37 % in 1990-92 up to 44 % in 1996 (table 1).

Table 1

Portugal-EU Intra-Industry Trade

(non-adjusted GL index,manufacturing industry)

Year	IIT
1990	0.37
1991	0.37
1992	0.37
1994	0.36
1995	0.38
1996	0.44

Source: Eurostat-Comext

(4 digit)

Considering that in 1990 IIT value for Portugal was around half the average value in EU, this increase has been interpreted as meaning[9]:

1. New determinants of trade, relative factor endowment determinants being progressively replaced by factors traditionally associated with intra-industry trade (economies of scale, product differentiation, strategic reactions of firms).

2. Convergence of the Portuguese specialisation pattern of trade with most

[7] Exchange rate volatility and inflation can bias the results if proper adjustment is not made. In this study we assume that, in the case of EU Member States, the rule is stability, small changes being captured by the ranges used.

[8] See European Commission (1996).

[9] See, for instance, Cabral (1997).

developed countries of the EU, thus diminishing the eventuality of asymmetric shocks and easing the success of the Monetary Union.

3. Lower adjustment costs to the European Union's liberalisation impact (such as the Single Market) in sectors with higher level of intra-industry trade, as traditionally suggested.

These optimistic conclusions can be questioned if

i) IIT increases are concentrated in few and unstable sectors;

ii) IIT is predominantly vertically differentiated.

In what concerns the first topic, Table 2 displays sectoral intra-industry trade measured by the GL index.

Table 2

Intra-Industry Trade: Portugal-UE

(non-adjusted Grubel-Lloyd index)

Sectors	**1994**	**1995**	**1996**
Chemical products	0.26	0.28	0.28
Plastic products	0.50	0.54	0.53
Leather products	0.24	0.26	0.26
Wood and cork products	0.34	0.36	0.36
Paper products	0.23	0.29	0.29
Textiles	0.41	0.39	0.41
Footwear	0.23	0.25	0.26
Stone, cement and glass prod.	0.43	0.41	0.40
Precious stones	0.19	0.24	0.37
Metallic products	0.36	0.38	0.42
Electric machinery and others	0.38	0.40	0.36
Transport equipment	0.37	0.51	0.77
Professional goods	0.37	0.39	0.33
Arms and munitions	0.43	0.67	0.39
Other industries	0.62	0.64	0.57

Source: Eurostat- Comext (4 digit).

We conclude that in 1996, the highest value for IIT occurs in the transport equipment sector (dominated by the automotive sector), which also registers the highest increase in the last three years (from 37 % in 1994 up to 77 % in 1996). This sector is, thus, the main responsible for the increase of average IIT. It is characterised by a strong presence of foreign direct investment (see table A-1, in the annex) being thus strictly related to the multinational firms´ decisions on direct investment in Portugal. Meanwhile, the country is undergoing a process of foreign divestment and a decrease of direct investment in what concerns real fluxes measured by the FDI into firms´equity (see graph A-1 in annex), which already affects this sector.

CEPII measurement of intra-industry trade

Traditional conclusions on IIT increases measured by the GL index may not be sustainable if two way trade is predominantly done in goods differing in quality and determined by a qualitative division of labour. In the context of this study, matched trade was classified as either vertical or horizontal IIT in each 4-digit Comext products and the amounts of each were then added over all manufactured products. Relative prices were computed per tonne.

Table 3 displays the results of CEPII measurement of IIT according to trade types.

Table 3

Trade Types in Intra-EU Trade

	Two-way trade in similar products -horizontal differentiation				**Two-way trade in vertically differentiated products**				**One way trade** *(inter-industry trade)*			
	1990	1992	1994	1996	1990	1992	1994	1996	1990	1992	1994	1996
N. of product groups*	7	8	8	9	35	38	34	33	58	54	58	58
Trade**	14	23	24	16	48	45	45	57	38	32	31	27

Source: Eurostat-Comext (4-digit).

* % of total n. of product groups.

** % of total trade.

CEPII method shows[10] that 33% of the share of the number of products in total, in 1996, is vertically differentiated. Because the number of products does not necessarily reflect the importance of total trade, the second line of table 3 reports to the percentage of trade of each category in total trade and the percentage of two way trade in vertically differentiated products increases to 57 %. It appears we may conclude that as far as Portugal engages in intra-industry trade, two-way trade is predominant in goods differing in quality.

An interesting feature is to compare with the evolution at EU level. The European Commission (1996) also concludes, by using the CEPII approach at 5-digit level for 1985/86 and 1993/94, that in spite of the differences between countries and in contrast to what is often implicitly assumed, a common feature seems to be that for each country two-way trade in quality differentiated products is more important than two way trade in similar products. Besides, the rise in intra-industry trade in intra-EU trade concerns products which are differentiated by quality. Two-way trade in similar products remains rather stable. These facts underline the particular interest of where Portugal is positioned in relation to different market segments since high quality (as revealed by prices) can be attributed to factors such as more R&D, more highly qualified labour, the specific organisation of firms, advertising, etc. and low quality to natural resources, low technological levels or unskilled labour.

A usual procedure to analyse this assumption is by investigating the quality range of exports versus imports in the case of vertically differentiated products' trade

Quality Ranges of exports versus imports

Table 4 reports to the quality range of exports versus imports in the case of vertically differentiated products. According to CEPII we assume that if the export-import unit value ratio is greater than (or equal to) 1.15 it reveals a difference in average prices of exports and imports large enough to represent a difference in quality, the exported items being of a better quality than the imported ones. Likewise, a ratio lower than 0.85 indicates a higher quality of imported products relative to exported

[10] See Table A-2 in Annex for disaggregated data by sectors.

products.

Table 4

Two-Way Trade in Vertically Differentiated Products:

a price-quality analysis of Exports vs. Imports

	Ratio of export-import unit value ≥1.15				**Ratio of export-import unit value <0.85**			
	1990	1992	1994	1996	1990	1992	1994	1996
N. of Product Groups*	25	24	24	35	60	59	56	65
Trade **	14	19	19	37	68	47	45	42

Source: Eurostat-Comext (4-digit).

* % of total N. of product groups with two-way trade.

** % of two-way trade.

We conclude that, in what concerns two-way trade, the weight of products with a better quality of imports than of exports is significant (65% of total two-way trade in 1996) and it increased 5 points relatively to 1990. However, if we consider the weight of trade instead of products, the percentage value decreased to 42 % in 1996 and, what is more important, the trend has been decreasing since 1990. Thus, we may conclude that an increase in the relative number of products occurred in products of decreasing importance. An intriguing feature is apparently the big increase in the weight of products and trade with a better quality of exports than imports from 1994 to 1996. Nevertheless, table A-3 of the Annex, which disaggregates this analysis by sector, reveals that this feature can be explained by the behaviour of a small number of sectors, namely wood and precious stones.

In general, these results point out to a lower quality pattern of exports than imports.[11] Taking into account the fact that specialisation in the EU seems to be oriented towards the quality spectrum (countries broadly produce the same type of

[11] Similar conclusion was obtained by Porto and Costa (1996) for a previous period.

goods but with different price-quality characteristics), to Member States with specialisation on a low quality type, like Portugal, this may imply an evolution towards a greater diversion relatively to high quality type specialised countries as integration becomes deeper. In any case, these results apparently constitute an empirical support for the Falvey-Kierzkowski theory, since Portugal clearly has a lower capital (and skilled labour) endowment than the EU average.

4. Competitiveness by quality ranges: the case of traditional sectors[12]

Analysis by quality range was also done by comparing the price-quality structure of Portuguese exports with selected competitor countries to the EU market. The purpose was to see if this structure was similar or if it corresponded to different market segments. This analysis can be pertinent to evaluate if national industry is able to face an increase in competition, for instance in the course of a liberalisation process.

To do so we used the Freudenberg and Müller method.[13] According to this method, we calculate the ratio of a country unit value of exports on the EU average unit value of exports (A) and consider, for each sector, the following hypothesis:

1. If $A < 1.15$ then exports are of high quality (H);
2. If $0.85 < A < 1.14$ then exports are of medium quality (M);
3. If $A < 0.85$ then exports are of low quality (L).

Data was disaggregated at sector level by considering the traditional sectors- textiles, clothing and footwear.[14] These sectors were chosen for their weight in Portuguese exports (they represented 30.9% of total exports in 1996- in terms of EU industry, Portugal has the highest industrial specialisation index[15]) and specific characteristics which make them more adequate to our purposes, such as:

1. They generally are intensive in low qualified labour, facing competition mainly through prices (labour productivity, measured by value added per worker, which is indeed very low[16]due to excessive labour intensity).

Besides, according to the methodology of section 2, the results of trade types and quality ranges calculations for these sectors (tables 2-A and 3-A) show that specialisation concerns mainly varieties of a low quality. In the case of clothing, the predominant type of trade is not one-way trade but two-way trade. Similar remarks can be made on textiles, if we consider the weight of trade instead of the number of products, and for footwear, if we consider the number of products instead of trade.

[12] This section is based on Fontoura (1999).
[13] Freudenberg and Müller (1991).
[14] See Table A-4 in Annex for results concerning all sectors of manufacturing industry.
[15] In terms of these industries'weight in the manufacturing industry's value added for each Member State.

Meanwhile, in the case of textiles and clothing, the price-quality of exports is inferior to that of imports in what concerns two-way trade. Only in the case of footwear, where the share of this type of trade is small (24% if measured with trade), the quality of exports is unequivocally superior to the quality of imports;

2. A growing penetration of products from third countries is expected in the EU market, in the context of the tariff reductions agreed upon at the end of the Uruguay Round, as well as due to the EU agreements with some of its major competitors, such as Turkey (there is a customs union between the EU and Turkey since 1996) and Central and Eastern European Countries, with which the European Agreements led to the abolishment of customs duties by the EU since 1997 and of quantitative restrictions since 1998. Competition will significantly increase if China's application to WTO is accepted.

In what concerns the textile and clothing sectors they will be subject to the additional impact of the extinction of the MFA. According to the Agreement on Textiles and Clothing approved in the Uruguay Round, there will be an opening of the markets over a 10-year period in four stages[17] (data refers to 1990's total volume of imports): 1st stage: 1995 – 16%; 2nd stage: 1998 – 17%; 3rd stage: 2002 – 18% and 4th stage: 2005 – 49%. Since we are talking about the opening of the EU market to products from suppliers who were subject to limits, we should expect significant repercussions on Portuguese exports.[18] For the time being, the liberalisation that has already occurred has not been very relevant for Portugal. The first stage included only products that were not subject to quotas in the EU market. As for the second stage, in the case of Portugal, the products included were either not subject to quotas or these quotas have not been fully used in recent years.[19] Therefore the main impact shall only take place in 2002 and especially in 2005, not only because it will be in the last stages

[16] Labour productivity in the textile and clothing sectors, measured by the value added per worker, was, in 1992, according to OETH data, the lowest of the European Community.
[17] To the annual growth quotas we should apply the multipliers:16%, 25% and 27%, for the first 3 stages respectively.
[18] There is a transitory Safeguard Clause, but it has a 3-year maximum period.
[19] Wool Trade Watch, vol. 4, Nov. 1996.

that the most significant part of trade will be liberalised, but also because it will involve, according to the Agreements' political logic, the most sensitive products.[20]

The MFA has had an important effect on prices, according to several studies. Between 1985 and 1995, the increase in prices in OECD countries, as a result of these restrictions, was, on average, 20% for textiles and 40-50% for clothing, with some peaks rising to double or even three times these figures.[21] Several calculations for the EU market confirm these values. For instance, Mennes and Koekkoek (1988) have found a 38% average effect in this market for clothing;[22]

3. There is a high degree of similarity in the structure of exports of Portugal and that of the countries competing with Portugal in the EU market. The Finger-Kreinin export overlapping index,[23] which indicates the degree of similarity in the structure of exports, displays, in table 5, the Portuguese case compared to some of its main competitors from other third countries in the EU market. The extreme value "1" indicates that the relative weight of the products considered in total exports is the same in both economies, while the value "0" indicates the total difference.

[20] The only restriction in the choosing of the products to be included in each stage is that they must belong to one of the 4 major textile and clothing groups. If we consider that each block is defined according to the volume of total imports and that, in average, one third of total quantities of imported textile and clothing products by an industrial country come from other developed countries (and are, therefore, not covered by the MFA), one can understand that the first stages are what Messerlin (1995) calls a "liberalisation credit" and that the essencial part of that liberalisation will take place "at the last moment" (in 2005).

[21] Messerlin (1995),121-122.

[22] Nevertheless, estimates vary very substantially according to the categories included and destination markets. See Pina Cabral (1994) for an estimate of the effect of the dismantling of the MFA in the exports of ultra-sensitive clothing items, characterised by high labour intensity.

[23] $\Sigma \min (S_i^{ac}, S_i^{bc})$

S_i^{ac}-weight of product i in country a exports to country c

S_i^{bc}-weight of product i in country b exports to country c

Table 5

Similarity exports indices

(Finger-Kreinin indicator)

Textiles and clothing

Competing Countries	1990-92	1994-96
Visegrad	0.55	0.53
Turkey	0.71	0.72
India	0.45	0.50
China	0.55	0.54
ADE*	0.65	0.64

Footwear

Competing countries	1990-92	1994-96
Visegrad	0.77	0.60
Turkey	0.68	0.66
India	0.45	0.52
China	0.21	0.26
ADE*	0.57	0.50

Source: Eurostat-Comext (4-digit).

* South Korea, Malaysia, Taiwan, Tailand, Singapore, the Phillipines, Hong Kong.

In the textile and clothing sectors we notice a growing degree of similarity in export structure: India, Visegrad countries, and China, New Industrialised Economies of Asia (NIEs)[24] and Turkey, all with values above 50%. The same analysis for

[24] South Korea, Malasya, Taiwan, Thailand, Hong-Kong, Singapore and the Philippines.

footwear allows to put in evidence India, the Asia NIEs, the Visegrad countries, and Turkey.

However, the Finger-Kreinin index does not tell us of the degree of similarity according to the differentiation by quality. The unit value approach can be useful for this purpose when relative to the price quality structure of exports (or imports) of a country separately.

The results obtained with the methodology displayed in the beginning of this section were used assuming that

(i) exports from the competitor countries will suffer a decrease in prices in the EU market;

(ii) there is a threat of conflict whenever the range (quality) of Portuguese exports is similar.

From the main competitors of Portuguese exports it was necessary to exclude the Visegrad countries for lack of data.

Table 6 displays, for each country, the high quality (H), medium quality (M) and low quality (L) exports, in percentage of total exports from the manufacturing industry to the EU. However, on account of data availability, the unit values concern not the value of exports to the EU but the value of imports in the destiny.

Table 6

Price-quality structure of exports in intra-EU trade:

Portugal and competing countries*

(%)

		Textiles		Clothing		Footwear	
		1990-92	1994-96	1990-92	1994-96	1990-92	1994-96
Portugal	H	40	44	53	74	15	17
	M	24	27	29	20	85	83
	L	36	29	18	6	0	0
Turkey	H	17	28	13	38	10	10
	M	23	41	42	49	34	11
	L	60	31	45	13	56	79
India	H	4	8	1	0	63	57
	M	20	22	3	12	1	1
	L	76	70	96	88	36	42
China	H	21	39	21	20	0	0
	M	22	30	2	32	30	31
	L	57	31	77	48	70	69
DAE **	H	5	4	7	0	31	2
	M	41	8	46	34	19	9
	L	54	88	47	66	50	89

Source: Eurostat-Comext (4-digit).

* weight in total exports.

** Dinamic Asian Economies (South Korea, Malasya, Taiwan, Tailand, Singapore, the Philippines, Hong Kong).

The use of the EU (CIF) import price implies that

(i) unit prices calculated include the trade barriers relative to the export side, specially non-tariff barriers like VER´s (specifically the MFA) but

(ii) they do not include the trade barriers like import duties and others from the import side.[25]

[25] Except for the eventual terms of trade effect.

Thus, in the case of third countries the results are undervalued relatively to Portugal. A larger interval to define quality levels can however be assumed in order to capture protectionist barriers on the imports' side (and also price differences on account of factors out of quality such as exchange rate instability and other monetary fluctuations). A range of 27 % was chosen instead of 15 % in order to guarantee inclusion of the highest trade barriers. The results, however, do not differ qualitatively in relative terms (see Table-5 in Annex).[26] It seems then that some reliable general results can be drawn.

In the textile sector the Portuguese price-quality is similar to China's; the case of Turkey is noteworthy, in particular due to the increase of price-quality of the exported range from the first to the second three-year period.

In the case of clothing, the weight of the high quality range in the Portuguese exports is not only superior to its competitor countries in all the periods we studied, but it also increases from the first to the second three-year period. Comparing Portugal's structure to that of the remaining countries, we conclude that India and the Asia NICs have specialised in a relatively lower product range, but Turkey and China have a more balanced structure, which may constitute an important threat to Portuguese exports. In addition, Turkey has increased the specialisation in the high quality range between the two three year periods.

In the case of footwear, the exports of medium quality varieties prevail in Portugal, while in the remaining countries prevails the low quality range. The competition from China is apparently higher, but the degree of overlapping of Portuguese exports with the exports from this country is low.[27]

Therefore, it is possible to conclude that there is competition from the third countries which we analysed (mainly from Turkey, followed by China) in a significant part of Portuguese traditional exports, in particular in textiles and clothing. However, in clothing and footwear, the price-quality pattern shows a stronger specialisation for Portugal in products of relatively higher quality, in comparison to all the countries we

[26] In Vaz (1997) unit values were also used for similar purposes but with a different methodology and the conclusions in relative terms obtained from a similar sensitivity test are also quite similar.

[27] India's significant specialisation in high quality range products may seem surprising, but we are talking about marginal products to this sector, which would not be included in a higher sectorial disaggregation.

studied.[28] In relative terms, this conclusion can be overvalued, as previously explained, but the additional fact that the application of WTO rules makes it easier for the Portuguese products to enter the extra-EU markets[29] may constitute a deepening of this apparent advantage.[30]

[28] Specialisation according to vertical product differentiation, i.e., in different quality ranges, is in accordance to the theory of trade among countries with a different degree of development. See, for instance, Balance, Fortsner and Sawyer (1992) for empirical evidence.

[29] In what concerns the developing countries, the Uruguay Round produced an agreement for an average reduction of 20% of tariffs, and for a stregthening of this reduction (which most of these countries did not enforce).

[30] Specific studies indicate that a more profound transformation should occur in the comercialisation sector together with strategies based on the rationalisation of costs, eventually through resort to international sub-contracting and supported by a bigger inter-firm cooperation (Freitas 1997 and Monitor Company 1994).

5. Conclusions

In this paper several indexes based on unit prices were used to characterise the trade types and quality ranges of Portuguese trade with the European Union. The results allow us to question some of the traditional conclusions regarding the meaning of an increase of IIT. In general we concluded that ITT (and its increase) was mainly due to vertical differentiation and Portugal is, on average, more specialised in products of a lower quality. Thus, it is possible that trade patterns are changing without a significant alteration of the traditional trade determinants, at least in some sectors.

Besides, the analysis undertaken allows insights on the consequences of an increase of competition when productive structures of different countries are compared on the basis of their quality ranges. For the sectors selected, we concluded that clothing and footwear apparently show a stronger specialisation in Portugal in products of a relatively higher quality, but the same cannot be said for textiles.

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Annex

Table A-1

Foreign Direct Investment in Portugal
FDI into Firms' Equity by sector

Unit: million PTE

	1992		1994		1996		1992-96	
Sectors	**Invest.**	**%**	**Invest.**	**%**	**Invest.**	**%**	**Invest.**	**%**
Agricul.ture and Fishing	2909	0.7	252	0.1	683	0.4	4702	0.3
Extractive Industry	924	0.2	137	0.1	0	0.0	2636	0.2
Manufacturing Industry*	69823	16.6	85798	38.8	2 9177	15.8	367209	26.3
Food products	8276	2.0	7212	3.3	5934	3.2	25288	1.8
Textiles and Clothing	8406	2.0	2207	1.0	957	0.5	14122	1.0
Wood and Printing	5556	1.3	1791	0.8	3517	1.9	27692	2.0
Petrol. Products	25646	6.1	1497	0.7	0	0.0	33070	2.4
Chemical Products	696	0.2	1061	0.5	1203	0.7	19323	1.4
Rubber and Plastic Prod.	3906	0.7	3055	1.4	830	0.5	10538	0.8
Metallic Products	1126	0.3	1200	0.5	54	0.0	6762	0.5
Mechanic Products	238	0.1	985	0.4	37	0.0	1952	0.1
Machinery and Electrical Equipment **	11060	2.6	11198	5.1	189	0.1	35576	2.5
Transport Equipment***	1754	0.4	41137	18.6	10184	5.5	94008	6.7
Services	346602	82.5	134737	61.0	154296	83.8	1021243	73.2
Total	420258		220924		184156		1395790	

* It is only possible to discriminate the sectors of the manufacturing industry mentioned.

**Machinery, computers, radio, TV, information equipment.

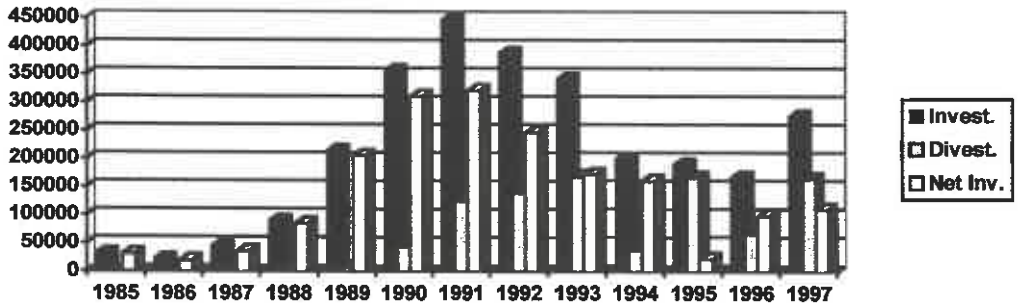
***Motor vehicles and other transport equipment [this last item being irrelevant-(0.08 % of total manufacturing industry)].

Source: Bank of Portugal

Graph A-1

FDI into Firm´s Equity

Unit: million PTE



Source: Bank of Portugal

Table A-2

Trade Types in Intra-EU Trade by sector

	Two-way trade in similar products *(horizontal differentiation)*				Two-way trade in differentiated products *(vertical differentiation)*				One-way trade *(inter-industry trade)*			
	1990	**1992**	**1994**	**1996**	**1990**	**1992**	**1994**	**1996**	**1990**	**1992**	**1994**	**1996**
Chemicals												
N. Product Groups*	4	4	7	7	15	21	16	14	81	75	77	79
Trade**	12	10	24	11	15	23	22	34	71	65	52	53
Plastics												
N. Product Groups*	7	0	12	14	42	19	44	42	51	51	44	44
Trade**	7	0	19	23	71	77	62	57	21	22	19	20
Leather												
N. Product Groups*	5	10	10	5	48	38	29	52	48	52	62	43
Trade**	0	15	10	2	22	60	66	29	73	24	23	64
Wood												
N. Product Groups*	4	0	8	8	58	74	72	69	38	26	20	23
Trade**	0	0	13	1	32	59	45	57	65	39	40	41
Textiles												
N. Product Groups*	12	14	9	11	44	41	41	40	45	44	49	48
Trade**	30	36	26	26	48	40	52	56	21	22	21	17
Clothing												
N. Product Groups*	20	17	22	24	49	70	67	67	31	13	11	9
Trade**	9	23	30	37	39	53	59	52	49	23	12	10
Footwear												
N. Product Groups*	6	5	11	6	38	42	44	59	56	53	44	35
Trade**	4	1	3	1	19	22	20	24	72	73	73	72
Cement												
N. Product Groups*	n.d.	n.d.	10	10	n.d.	n.d.	29	31	n.d.	n.d.	60	59
Trade**	n.d.	n.d.	28	23	n.d.	n.d.	31	45	n.d.	n.d.	39	30
Precious Stones												
N. Product Groups*	0	0	0	0	21	38	24	20	79	62	76	80
Trade**	0	0	0	0	27	31	26	31	73	69	74	68
Metal Prod.												
N. Product Groups*	5	12	9	10	41	31	31	27	54	57	59	62
Trade**	7	19	26	16	48	35	30	39	44	44	43	44
Electric Equipment												
N. Product Groups*	5	9	5	10	42	38	34	34	53	53	61	56
Trade**	10	13	7	12	58	50	60	57	31	34	31	30

Transport Equipment												
N. Product Groups*	6	9	9	9	42	30	28	28	52	61	63	63
Trade**	21	69	65	14	68	23	24	32	10	8	10	4
Professional Goods												
N. Product Groups*	5	12	9	10	41	31	31	27	54	57	59	62
Trade**	7	19	26	16	48	35	30	39	44	44	43	44
Arms												
N. Product Groups*	0	0	14	0	43	67	14	40	57	33	71	60
Trade**	0	0	7	0	48	61	23	49	49	38	67	49
Other Industries												
N. Product Groups*	3	9	6	6	47	38	33	33	59	54	58	58
Trade**	0	14	2	2	83	66	81	79	16	19	16	19

*** % of total N. of product groups.**

**** % of total trade (the eventual difference to 100% is the residual flow,i.e., the minority flow in the one-way trade).**

Source: Eurostat-Comext (4-digit).

Table A-3

Two-Way Trade in Vertically Differentiated Products: price-quality of exports vs. imports by sector

	Ratio of export-import unit value ≥1.15				Ratio of export-import unit value <0.85			
	1990	1992	1994	1996	1990	1992	1994	1996
Chemicals								
N. Products*	21	23	15	19	58	60	55	47
Trade**	5	7	7	54	50	63	40	22
Plastics								
N. Products*	5	10	8	21	81	90	71	54
Trade**	1	5	4	3	91	95	73	69
Leather								
N. Products*	55	10	38	58	36	70	38	33
Trade**	55	11	12	41	45	69	75	51
Wood prod.								
N.Products*	33	19	15	20	60	81	54	67
Trade**	25	17	12	24	71	83	50	73
Textiles								
N. Products*	16	18	20	20	63	56	61	59
Trade**	3	13	15	13	58	40	51	55
Clothing								
N. Products*	6	5	17	19	65	75	59	55
Trade**	0.1	0.4	4	5	81	73	62	53
Footwear								
N. Products*	57	78	50	55	29	11	30	36
Trade**	75	93	85	92	8	1	2	4
Cement								
N. Products*	n.d.	n.d.	26	25	n.d.	n.d.	47	50
Trade**	n.d.	n.d.	10	24	n.d.	n.d.	42	41
Precious stones								
N. Products*	0	60	75	67	100	40	25	33
Trade**	0	24	95	29	100	76	5	71
Metal prod.								
N. Products*	23	14	24	34	65	59	53	38

Trade**	11	9	16	24	77	56	37	46
Electric equip,								
N. Products*	37	23	25	21	52	58	62	57
Trade**	33	35	48	42	53	44	41	40
Transport equip.								
N. Products*	25	46	42	50	63	31	33	25
Trade**	1	21	1	61	76	3	26	25
Professio. Goods								
N. Products*	55	38	63	60	9	38	38	20
Trade**	38	24	49	51	3	63	51	39
Arms								
N. Products*	33	25	0	50	67	75	50	50
Trade**	8	41	0	30	92	59	75	70
Other industries								
N. Products*	31	20	36	25	63	60	50	58
Trade**	23	28	48	49	76	55	50	49

* % of total N. of product groups with two-way trade.

**% of two way trade.

Source: Eurostat-Comext (4-digit).

Table A-4

Price-quality structure of Portuguese exports in intra-EU trade by sector*

(%)

		90-92	94-96
Chemicals	H	29	20
	M	34	28
	L	37	52
Plastics	H	3	10
	M	36	69
	L	61	21
Leather Products	H	51	79
	M	45	7
	L	4	14
Wood Products	H	2	4
	M	50	53
	L	48	43
Paper Products	H	3	4
	M	78	79
	L	19	17
Textiles	H	40	44
	M	24	27
	L	36	29
Clothing	H	53	74
	M	29	20
	L	18	6
Footwear	H	0	17
	M	85	83
	L	15	0
Cement	H	Nd	30
	M	Nd	32
	L	Nd	28
Precious Stones	H	38	9
	M	4	10
	L	58	81
Metal. Products	H	26	38
	M	41	35
	L	33	27
Electric Equipment	H	43	58
	M	13	7
	L	44	35
Transport Equipment	H	17	2
	M	79	94
	L	4	4
Professional Instruments	H	31	58
	M	18	7
	L	51	35
Arms	H	1	0
	M	73	0
	L	26	100
Other Manufactures	H	35	47
	M	1	41
	L	64	12

* weight in total exports.
Source:Eurostat-Comext (4-digit)

Table A-5

Price-quality structure of exports in intra-EU trade:

Portugal and competing countries (interval of 27 %)*

(%)

		Textiles		Clothing		Footwear	
		1990-92	1994-96	1990-92	1994-96	1990-92	1994-96
Turkey	H	17	24	1	19	9	1
	M	62	52	77	74	90	75
	L	21	24	22	7	1	24
India	H	2	7	1	1	63	56
	M	25	37	44	66	1	2
	L	73	55	55	33	36	42
China	H	21	39	21	15	0	1
	M	38	36	25	49	50	45
	L	40	25	54	36	50	54
DAE **	H	3	4	2	0	5	2
	M	55	18	79	53	94	9
	L	42	78	19	47	1	89

Source: Eurostat-Comext (4-digit).

* weight in total exports.

** South Korea, Malasya, Taiwan, Tailand, Singapore, the Philippines, Hong Kong.