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*Portugal in the EU:  
the Perspective of  
Convergence*

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**Square 19: Herfindahl and Hirshman Indexes. Year of 1997**

	Portugal/ France		Portugal/ Germany		Portugal/ Spain		Portugal/ UK	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Herfindahl	0,2022	0,120688	2,07E-01	0,124253	0,123306	0,123306	0,216098	0,112711
Gini-Hirshman	44,962	34,74012	45,51838	35,2495	35,11497	35,11497	46,48638	33,57245

Source: own estimations using data from base Chelem/ CEP II

The fluxes of trade were less and less concentrated in just some chains. The competition increased over time because the indexes generally diminished since 1986. On a larger European market with free circulation of goods, the more open Portuguese economy was losing concentration levels. The strategy of domination of its firms over others didn't seem to be working, for lack of domination capacity outside the domestic frontiers and also because of the principles of the European Union reduce the imperfections of the market and incentive the competition among firms and industries, products and chains.

After the consideration of the indicators for some countries relations, this paper proposes an investigation of the results for the regional block itself according to its several enlargements between 1970 and 1997. Instead of considering the fifteen countries all through the period, this paper differentiates five sub-periods: between 1970/72 (Benelux, France, Germany, Italy and Netherlands), 1973/80 (adding Ireland, United Kingdom and Denmark), 1981/85 (adding Greece), 1986/1994 (adding Portugal and Spain) and 1995/97 (adding Austria, Finland, Sweden). The square 20 and the square 23 follow this reasoning power.

According to the explained above, the estimations were made in the following way:

- as exportations - Portugal to the other state-members
- as importations - from the other state-members to Portugal

**Square 20: Herfindahl and Hirshman Indexes for the Portuguese fluxes with the Regional Block according to its several enlargements. Exports.**

Product	1970	1974	1984	1985	1986	1992	1993	1996	1997
Energy	0,0005	0,0001	0,0006	0,0013	0,0010	0,0005	0,0007	0,0002	0,0001
Food									
Agriculture	0,1162	0,0468	0,0104	0,0093	0,0105	0,0064	0,0060	0,0051	0,0051
Textiles	0,0061	0,0751	0,1315	0,1533	0,1557	0,1550	0,1557	0,1071	0,0990
Wood Paper	0,0509	0,0233	0,0220	0,0196	0,0201	0,0134	0,0138	0,0115	0,0113
Chemicals	0,0413	0,0100	0,0116	0,0109	0,0114	0,0093	0,0096	0,0091	0,0088
Iron & Steel	0,0003	0,0001	0,0004	0,0004	0,0002	0,0001	0,0001	0,0001	0,0001
Non Ferrous	0,0007	0,0001	0,0001	0,0000	0,0000	0,0001	0,0001	0,0001	0,0001
Machinery	0,0006	0,0007	0,0035	0,0030	0,0037	0,0044	0,0047	0,0046	0,0036
Vehicles	0,0000	0,0000	0,0014	0,0010	0,0017	0,0069	0,0044	0,0237	0,0338
Electrical	0,0001	0,0009	0,0008	0,0010	0,0014	0,0044	0,0060	0,0073	0,0067
Electronic	0,0025	0,0064	0,0100	0,0067	0,0035	0,0028	0,0024	0,0034	0,0027
NES	0,0000	0,0075	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
Herfindahal	0,2191	0,1710	0,1923	0,2066	0,2094	0,2034	0,2035	0,1720	0,1713
Gini- Hirshman	46,811	41,353	43,849	45,448	45,758	45,101	45,113	41,470	41,388

Source: own estimations using data from base Chelem/ CEP II

The values are consistent with the analysed above when the consideration weighted under the four previous countries since the Portuguese export fluxes never shown big indexes of concentration. The Portuguese relation towards the other state-members is the one of competition and not domination of market. That is even clearer when each chain is observed. Only the chain of the Textiles seems to reflect a concentration around the 15% after 1985, all the others, even the chain of Food and Agriculture, lost domination all through the years. So, the Portuguese chains are perhaps losing some competitiveness? Perhaps. Why? The problem of these indexes is that they are endogenous, the observations may not be interpreted in a causal way and they also don't have systematic relations with variables like demand or costs, not allowing us to say much more.



**Square 21: Herfindahl and Hirshman Indexes for the Portuguese fluxes with the Regional Block according to its several enlargements. Imports.**

Product	1970	1974	1984	1985	1986	1992	1993	1996	1997
Energy	0,00108	0,0016	0,0119	0,0066	0,003	0,0007	0,0008	0,0007	0,0008
Food									
Agriculture	0,00143	0,004	0,0023	0,0029	0,0054	0,0089	0,0125	0,0177	0,0173
Textiles	0,00114	0,0033	0,0052	0,0091	0,01	0,0151	0,0158	0,0144	0,014
Wood									
Paper	0,00089	0,0012	0,0013	0,0014	0,0023	0,0028	0,003	0,005	0,005
Chemicals	0,0329	0,0442	0,0494	0,0495	0,0408	0,0231	0,0196	0,0258	0,0255
Iron & Steel	0,00517	0,0083	0,0034	0,0031	0,0028	0,0015	0,0013	0,0018	0,0019
Non									
Ferrous	0,00079	0,0014	0,0005	0,0006	0,0004	0,0003	0,0002	0,0005	0,0005
Machinery	0,05555	0,0504	0,0249	0,0246	0,026	0,0316	0,0227	0,0216	0,0209
Vehicles	0,01511	0,01	0,008	0,0107	0,0166	0,0269	0,0253	0,0268	0,0238
Electrical	0,00498	0,0054	0,0031	0,0035	0,0029	0,0036	0,0034	0,0047	0,0049
Electronic	0,00447	0,0036	0,0112	0,008	0,0081	0,007	0,0076	0,0075	0,0077
NES	0,00781	5E-05	0,0005	0,0004	0,0002	0,0001	0,0011	0,0012	0,0021
Herfindahl	0,13131	0,1335	0,1217	0,1206	0,1185	0,1216	0,1133	0,1279	0,1244
Gini-									
Hirshman	36,2369	36,532	34,888	34,726	34,419	34,873	33,665	35,759	35,277

Source: own estimation using data from base Chelem/ CEP II

The concentration level of imports is less significant than the one of exports around 33/36%. It's consistent with the fact that the markets aren't dominated by one or other chain, not only in the Portuguese case as we've seen before but in the case of all the state-members. It also means that Portugal doesn't seem significantly dependent of the imports of a particular chain.

### **3.2.2.4 Grugel-Lloyd Indexes**

The Grugel-Lloyd gives the intra-industry trade. A value near 100% reflects intra-industry, closest to zero testifies in favour of higher comparative advantage and inter-industry trade. Having that in mind let's continue with the analysis of the Grugel-Lloyd indexes.

### Square 22: Grugel-Lloyd Index

<b>total values</b>	<b>1970</b>	<b>1986</b>	<b>1997</b>
Portugal/ Austria	0,69874552	0,90330315	0,7946849
Portugal/Benelux	0,46941625	0,98227757	0,8608669
Portugal/Denmark	0,81936423	0,62684874	0,68840109
Portugal/Finland	0,68004853	0,49022928	0,96498428
Portugal/France	0,52588052	0,92876997	0,89153414
Portugal/Germany	0,32980597	0,88769938	0,92982852
Portugal/Greece	0,95668165	0,48062632	0,60258316
Portugal/ Ireland	0,21963523	0,86591181	0,59081197
Portugal/Italy	0,45803292	0,52705643	0,47210961
Portugal/ Netherlands	0,61031899	0,97367661	0,84677285
Portugal/Spain	0,40388467	0,63625556	0,564835
Portugal/Sweden	0,89340993	0,68099557	0,95909452
Portugal/United Kingdom	0,95570455	0,83855595	0,95932505

Source: own estimations using data from base Chelem/ CEP II

From the results an attention is required. For instance, Portugal and Greece face a strong intra-industry trade in 1970. But in the seventies those two countries almost didn't had commercial relations. So, the existent trade had all reasons to be expected intra-industry with low transactions in each chain. The same can be applied to the relations of Portugal and Sweden or with Denmark. Curiously, Portugal and Spain faced inter-industry trade when in the seventies they were economies also considerably close to each other.

When Portugal entered in the Community in 1986, a remarkable thing happen in the relations of Portugal with France, Benelux, Germany, Ireland and Netherlands. The intra-industry trade increased exponentially.

The results above show how the Portuguese intra-industry trade became very strong, especially with old partners like the United Kingdom, France and Germany.

The Portuguese trade with countries like Sweden, Finland and Austria increased after 1995 (when those three became state-members) and the volume didn't seem to have changed the distribution of those imports and exports for chains because the trade continued mainly intra-industry. Curiously, countries like Spain show a surprising and decreasing indicator under the 60%.



**Square 23: Grugel-Lloyd Index for the Portuguese fluxes with the Regional Block according to its several enlargements.**

Product	1970	1973	1974	1983	1984	1985	1986	1992	1993	1996	1997
Total	0,427	0,758	0,692	0,879	0,995	0,964	0,928	0,779	0,768	0,813	0,806
Energy	0,322	0,184	0,143	0,433	0,234	0,567	0,455	0,476	0,501	0,209	0,189
Food											
Agriculture	0,580	0,510	0,712	0,569	0,638	0,683	0,908	0,623	0,563	0,538	0,538
Textiles	0,772	0,469	0,565	0,347	0,329	0,370	0,453	0,680	0,675	0,697	0,716
Wood Paper	0,653	0,591	0,607	0,502	0,386	0,396	0,558	0,875	0,880	0,984	0,991
Chemicals	0,467	0,412	0,402	0,562	0,656	0,671	0,628	0,610	0,596	0,578	0,567
Iron & Steel	0,115	0,149	0,114	0,469	0,511	0,553	0,385	0,254	0,263	0,235	0,252
Non Ferrous	0,408	0,207	0,237	0,290	0,482	0,462	0,360	0,646	0,598	0,449	0,450
Machinery	0,057	0,124	0,119	0,431	0,547	0,546	0,495	0,452	0,454	0,482	0,436
Vehicles	0,005	0,038	0,032	0,432	0,601	0,486	0,434	0,461	0,406	0,784	0,891
Electrical	0,055	0,345	0,352	0,605	0,686	0,736	0,756	0,825	0,892	0,918	0,881
Electronic	0,335	0,725	0,827	0,834	0,976	0,990	0,728	0,559	0,574	0,630	0,574
NES	0,020	0,286	0,277	0,127	0,169	0,425	0,275	0,245	0,224	0,140	0,159

Source: own estimations using data from base Chelem/ CEP II

The preferred chains in the seventies were, like seen before, the Food Agriculture, the Textiles and the Wood Paper. The trade was more concentrated in just some chains, reason for which was very much inter-industry trade.

In the eighties the Textiles gained relevance in the Portuguese fluxes to the Regional Block, this because it was almost just exported. Chains like the Electronic and the Electrical verified a higher intra-industry trade and for two reasons: for being more transacted than before and in both directions; a closer situation was verified by the chain of the Chemicals.

The Machinery was a highly inter-industry trade but after the approximation to the community the situation became balanced, around the fifty per cent. The Energy was always inter-industry trade, which is to be expected since Portugal had very little export capacity in this field. The Iron & Steel continued a highly inter-industry trade chain, even through the nineties. The Wood Paper became in 1983/84 a considerably more inter-industry trade, recuperating from that tendency just afterwards, in such a way that in 1997 became almost 100% intra-industry.

According to this square the intra-industry trade is considerably high between Portugal and the other state-members, around 80%, when begun by being around the 42% in 1970, a remarkable performance in favour of the idea that Portugal is becoming an economy structurally very close to the one of the other state-members, an indicator in favour of the Portuguese convergence. So is trade opening a path for a stronger convergence in the future?