INDUSTRY, FOREIGN TRADE AND EMPLOYMENT IN EU COUNTRIES; COMPARISON OF FRANCE, GERMANY, ITALY, SPAIN AND THE UK WITH THE UNITED STATES

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Abstract

The main aim of this article is to analyze the effects of industrial and trade policy of the European Union on economic development, with particular reference to the negative effects of excessive trade deficits and industrial decline on non industrial development, real wages and employment, in some EU countries for the period 2000-2010. We compare 5 major EU countries (France, Germany, Italy, Spain and the United Kingdom) with the United States. We present some macro-econometric models and tests to quantify the positive effects of industry on non industrial economic development. The main conclusion is that Foreign Trade Deficits may lead to unsustainable development and unemployment when they are excessive and are not accompanied by industrial development policies and financial support. Our suggestion is that EU industrial policy should be more effective in order to improve development and quality of life of EU citizens and to avoid financial crisis.

Keywords: Industry and sustainable development; Employment; Foreign Trade; Current Account Balance; macro-econometric models; European Union; EU; France; Germany; Italy; Spain; UK; USA

JEL classification: C5, F16, J21, J31, O51, O52

1. Introduction

For the period 2000-2010 European Union Policies have not shown enough support to industrial development, and its policy of openness to massive imports from low cost countries, usually not subject to the taxes and legal costs compulsory for EU industry, have provoked industrial decline in many countries, foreign trade deficit and financial problems in many EU countries.

Cowling (2011) has stated: "*Industry must be placed centre stage if Europe is to remain a global economic leader. This is the core message of the Communication on "An integrated industrial policy for the globalisation era" adopted by the European Commission on the 28th of October 2010 on the initiative of Vice-President Antonio Tajani. The Communication, a flagship initiative of the Europe 2020 strategy, sets out a strategy that aims to boost growth and jobs by maintaining and supporting a strong, diversified and competitive industrial base in Europe offering well-paid jobs…."* Perhaps this seems a positive change in EU policy in order to avoid industrial decline, but in any case citizens should be more aware of the impact of decisions that some small groups make in the name of the European Union, and thus it is of uppermost importance to increase information and quality of democracy in the European institutions.

In section 2 we analyze the negative consequences that the lack of a proper industrial policy in EU supposed for trade balance deficits in many countries. In sections 3 and 4 we analyze the stagnation or decline in industrial production per capita and the negative consequences for employment, wages and non industrial production. Finally section 5 presents the main conclusions.

2. Balance of Trade of goods, extra-EU27, 1992-2010

Table 1 shows the evolution of the extra-EU27 balance of goods trade, with China and with the World, for the period 2000-2009, in million Dollars at current prices.

Table 1. Extra-EU-27 trade of goods, 2000-2009 (Billion Euros)

Year	Exports to China	Imports from China	Balance With China	Exports to the World	Imports from the World	Balance with the World
2000	32.920	41.467	-8.547	849.7	992.7	-143.0
2001	39.945	45.797	-5.852	884.7	979.1	-94.4
2002	40.810	51.000	-10.190	891.9	937.0	-45.1
2003	46.911	63.855	-16.944	869.2	935.3	-66.0
2004	56.380	86.233	-29.853	953.0	1027.5	-74.6
2005	59.127	115.627	-56.500	1052.7	1179.6	-126.9
2006	71.716	144.491	-72.775	1160.1	1352.8	-192.7
2007	81.060	179.146	-98.086	1240.5	1433.4	-192.9
2008	90.358	199.331	-108.973	1309.8	1564.9	-255.1
2009	91.250	180.540	-89.290	1094.4	1199.2	-104.8

Source: Elaborated by Guisan(2011) from Eurostat Statistics: Extra-EU-27 Trade with the World from Eurostat (2010b), p.476, for years 2000-2004 and Eurostat(2010a), pages 33, 37 and 41, for years 2005-2009. EU-27 with China from Eurostat(2010a) pages 20, 22 and difference. It does not include trade with Hong-Kong. that evolved from 20.3 Exports, 33.5 Imports and -13.2 Balance in year 2000 to 19.3 Exports, 28.5 Imports and -9.2 Balance in year 2009.

We notice that for the period 2002-2008 there was an increase in deficit of EU trade with the rest of the world, evolving from -45.1 Billion Euros in year 2002 to -255.1 in year 2008. We think that EU authorities should be more careful in relation with their foreign trade guidelines, and their agreements with the World Trade Organization, in order to avoid that EU industry suffers unfair competition and in order to avoid strong trade deficits in EU which may lead to an increase in unemployment, financial crisis, and public deficits.

We mean that unfair competition happens when a massive flow of goods comes from countries where the firms are not subject to similarly levels of mandatory costs related with taxes, social security contributions, environmental rules, and social wellbeing. It happen that what seems to be cheap, at a first view, to many politicians and people, may be really very expensive at medium term because it may imply decline of industrial and non industrial production, lower real wages, and high rates of unemployment, among other negative consequences.

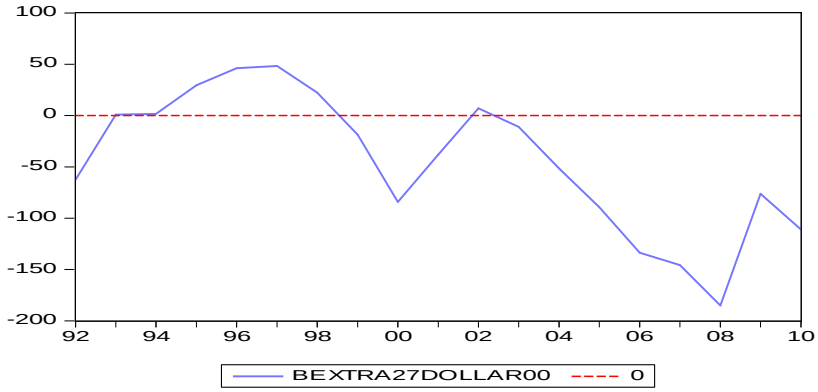
Graph 1 shows the evolution of the foreign trade balance of goods of 27 countries of the European Union for 1992-2010. Before year 2002 there was an average balance near zero, with oscillations, while there was a high increase of deficit for the period 2002-2008 and a diminution of deficit in 2008-2010. Many EU countries have experienced an increase of trade deficit, as consequence of the lack of enough support of EU policies to EU industry, with negative consequences for economic development.

We agree with some voices, such as the European Trade Union Federations (EU-TUF(2011), that have call for a strong industrial policy in the EU: "*Industry remains*

vitally important for a successful European economy to create jobs, boost productivity,… and to raise social standards"

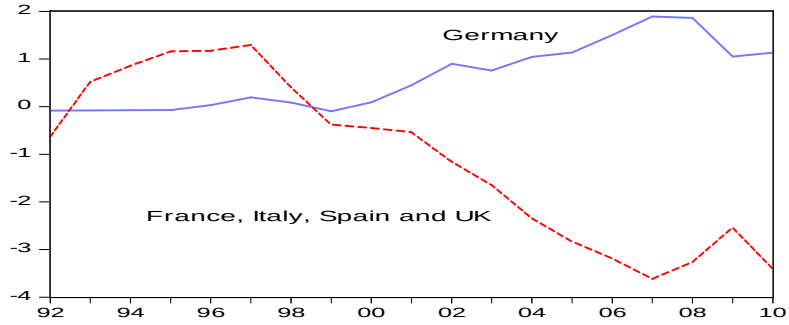
Graph 2 shows the different evolution of Germany and other major EU countries regarding total trade balance of goods and services. As major EU countries are big customers of German goods, the question of big trade deficits with Extra-UE countries should be an important concern not only for other countries but also for Germany, in order to develop economic policies that avoid high deficits in EU trade balance.

Graph 1. Balance of Extra-EU Foreign Trade of Goods, 1992-2010
(Billion Dollars at 2000 prices and exchange rates)



Source: Elaborated by Guisan(2011) from Eurostat statistics. Bextra27Dollar00 is the balance of extra EU trade of goods in billion Dollars at 2000 prices and exchange rates, from Eurostat (2010a) page 18 for years 1992-2009 and Eurostat Website for year 2010. Those data refer to EU-evolutive what means Eu15(1995-2003), EU25(2004-2006) and EU27(2007-2010).

Graph 2.Total Trade Balance per capita of Germany and the sum of 4 major EU Countries (thousand Dollars at 2000 prices and exchange rates)



Note: Elaborated by Guisan(2011) from OECD National Accounts Statistics. Trade of goods and services per inhabitant: thousand Dollars at prices and exchange rates of year 2000

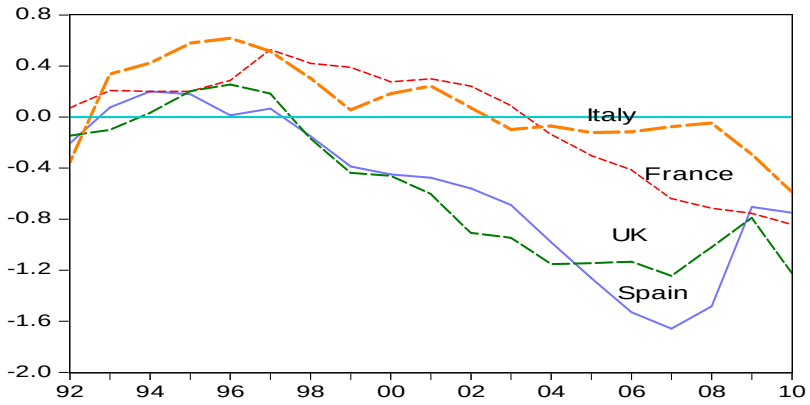
There have been many studies focused to demonstrate the positive impact of trade openness for economic growth and development, and their results shows that under some

satisfactory conditions trade is good for development, but under unsatisfactory conditions it is not.

Generally trade is good when it is evenly balance, as to say when a country buys for the same quantity that sells. From a supply side view, the positive impact of imports on real GDP is usually higher than the absolute value of the negative impact of exports on real GDP and thus the total effect is positive.

Unbalanced trade, with deficit, may be good for a developing country in the first stages of industrialization, provided that the outside financial sources are stable and committed to improve development, and that investments are addressed to increase real GDP. In that case, benefits from future development usually are enough to compensate for the costs.

Graph 3. Total trade balance per capita in France, Italy, Spain and UK
(thousand Dollars at 2000 prices and exchange rates)



Note: Elaborated by Guisan(2011) from OECD National Account Statistics

Unbalanced trade, with surplus, in a club of economies with common currency, like it is the case of Germany in the European Union, may be good for countries with deficit if investments, or other forms of economic cooperation, flow from the country with surplus to those with deficit in order to finance investments and other activities which contribute to economic development. In other case the common currency would not work properly because the economies of countries with deficit would support very severe financial restrictions, stagnation, unemployment and even economic decline.

As seen in Guisan(2005), (2006), and (2009). and other studies, foreign trade is positive for economic development when it avoids industrial decline and when the trade deficits are under control without leading the country to face severe financial restrictions.

The European Union should develop policies addressed to avoid massive deficits in its foreign trade with the rest of the world and to support industrial production in EU countries, given the important and positive impacts of industry on non industrial production and employment as seen in the next sections.

3. Industrial production and economic development

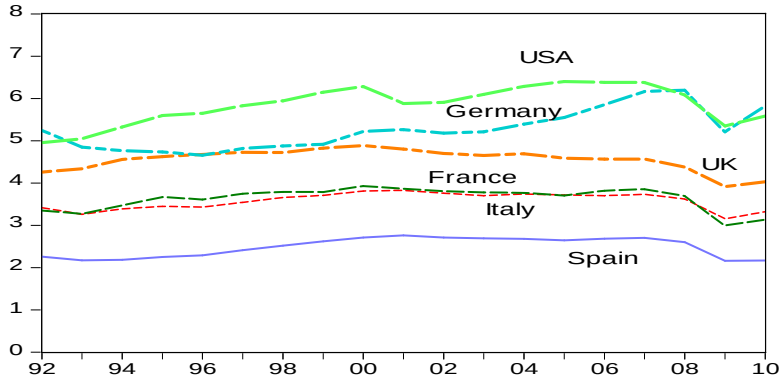
Table 2 shows that cross correlations are higher in the direction of non industrial production per capita (QHNI) as a function of lagged values of industrial production per capita (QHI) than the other way. There is empirical evidence in favour of positive effects of QHI on QHNI. In the Annex we include the results of causality tests in this regard.

Table 2. Cross correlation (lag 10): 1960 2010

	QHNI=f(QHI lagged)	QHI=f(QHNI lagged)
USA	0.4942	0.3130
UK	0.6282	0.1872
France	0.5090	0.1609
Spain	0.4839	0.2196
Italy	0.5293	0.2758
Germany	0.4273	0.3620

Graph 4 presents the evolution of real value-added of industry per capita in 5 major EU countries and the United States.

Graph 4. Real value-added of industry per capita in EU and USA
(thousand Dollars at 2000 prices and exchange rates)



In spite of vague declarations of support to industry by the EC(2005) the question is that little support received European industry for the period 2005-2010, while strong competition arisen, for many European industries, from authorization of massive imports from countries not subject to similar standards of taxes and regulations: *" The European Commission is presenting a new industrial policy to create a more suitable framework for European manufacturing. Establishing a solid and dynamic industrial base contributes to the growth of the European Union and sustains its economic and technological leadership in a context of growing globalisation."*

Econometric models relating industrial and non industrial production per capita

Table 3 presents a summary of estimation and forecasting capacity for each country of a mixed dynamic model relating non industrial real Value-Added per capita (QHNI) with its lagged value and the increase of industrial real Value-Added per capita (QHI), with

data of 6 OECD countries for the sample period 1961-2005, with 45 observations, and the forecasting period 2006-2010:

$$QHNI_{it} = \beta_1 QHNI_{i,t-1} + \beta_2 D(QHI_{it}) + \varepsilon_{it} \quad (1)$$

Where $D(QHI_{it}) = QHI_{i,t} - QHI_{i,t-1}$ $i=1,2,\ldots,6$; $t=1,2,\ldots.45$

Table 4 presents detailed results for the pool of 6 OECD countries. Tables in the Annex show the positive effect of QHI on QHNI in Spain, France, Germany, Italy, the United Kingdom and the United States, and the good dynamic forecasting capacity of the model that relates QHNI with its lagged value and the increase of QHI. Sample period for estimation is 1961-2005 and the forecasting period is 2006-2010. Variables are expressed in thousand Dollars per capita at prices and exchange rates of year 2000.

As seen in Guisan(2009) and other studies, the increase of imports per capita may help to increase QHNI provided that in case of trade deficit this is small and sustainable, and does not imply strong diminution of QHI.

Table 3. Estimation of relation (1) for 1961-2005 and Forecasting capacity in 2006-2010

Country	b_1 Coefficient of $QHNI_{t-1}$	b_2 Coefficient of D(QHI)	Adj.R^2	%SE 1961-2005	MAP 2006-2010
France	1.019437	1.164076	0.9979	1.36	2.04
Germany	1.014748	0.578332	0.9980	1.24	0.74
Italy	1.018100	0.961844	0.9979	1.47	4.87
Spain	1.017773	1.712383	0.9983	1.33	0.77
UK	1.024597	0.945574	0.9985	1.25	3.63
USA	1.013998	1.212197	0.9967	1.26	0.71

Note: See Annex for more detailed results. Coefficients where significant in each country. S.E. Standard Error. MAPE Mean Absolute Percentage Error. High goodness of fit.

Table 4. Pooled sample: 6 OECD countries 1961-2010

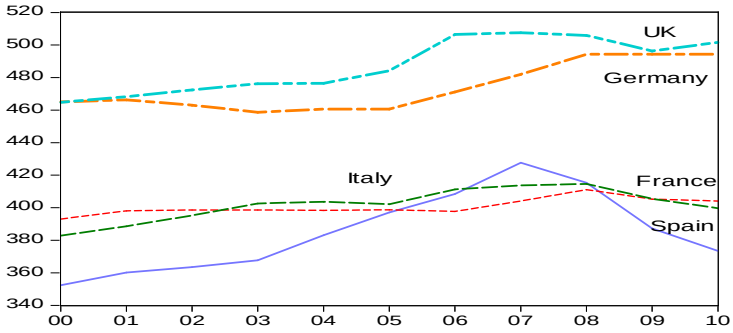
Dependent Variable: QHNI00?				
Method: Pooled Least Squares. Sample: 1961 2010				
Included observations: 50. Cross-sections included: 6. Total obs. 300				
White diagonal standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00?(-1)	1.015836	0.001113	912.4366	0.0000
D(QHI00?)	0.998667	0.126235	7.911147	0.0000
R-squared	0.998857	Mean dependent var		
Adjusted R-squared	0.998853	S.D. dependent var		
S.E. of regression	0.206966	Akaike info criterion		
Sum squared resid	12.76477	Schwarz criterion		
Log likelihood	47.88242	Hannan-Quinn criter.		
Durbin-Watson stat	1.249302			

4. Negative consequences of industrial decline on employment and real wages.

The decline of QHI in the EU during 2008-2010 has led to a diminution of the rate of growth of real GDP per capita and has caused stagnation of the rate of non agrarian employment in Germany and diminution in France, Italy, the United Kingdom and Spain,

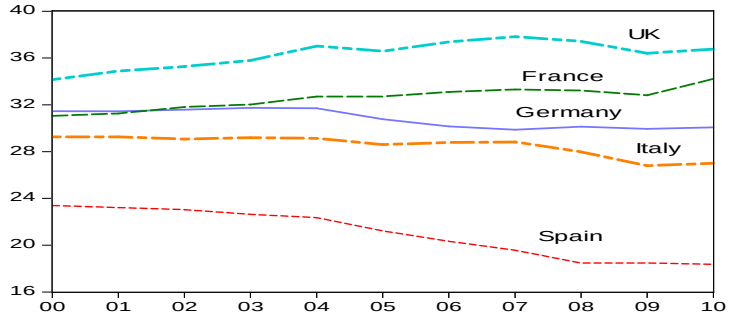
as seen in graph 5. It has caused also stagnation or decline of real wage per worker (compensation of employees divided by the number of empoloyees) as seen in graph 6. Graph 7 presents de evolution of the share of compensation of employees on Gross Domestic Product of the 5 major European Union countries in comparison with the USA.

Graph 5. Rate of non agrarian employment in 5 EU countries
(employed persons per one thousand inhabitants)



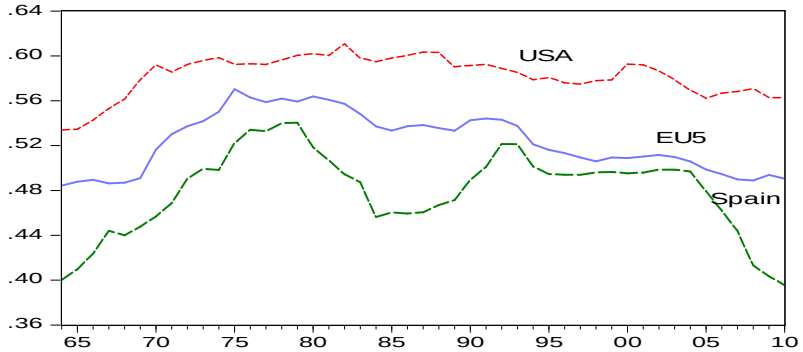
Source:Elaborated by Guisan(2011) from OECD Labour Force Statistics and National Accounts.

Graph 6. Real wage per employee (thousand Dollar at 2000 prices and exchange rate)



Source: Elaborated by Guisan(2011) from OECD Labour Force Statistics (employees) and National Accounts Statistics (Compensation of Employees).

Graph 7. Share of Compensation of Employees on Gross Domestic Product



Source:Elaborated by Guisan(2011) from OECD National Accounts Statistic.

The USA has highest values than the European Union of real wage, employment rate and share of compensation of employees on real GDP, mainly due to its higher level of industrial production per head.

5. Conclusions

The main problem of several EU countries for the period 2005-2010 was that EU policies have not shown enough support to industry and did not avoid strong trade deficits in many EU countries. The consequence, was that in many cases trade deficits were not sustainable and have led to financial restrictions that have provoked industrial decline, with diminution of QHI and, as a consequence, stagnation o diminution of production per capita in non industrial sectors, rate of employment and real wages. The European Union should design policies addressed to avoid industrial decline and strong trade deficits with extra-EU countries. Besides strong balance deficits in intra-EU trade should be avoided if they are unsustainable, as to say if the countries with high surplus do not provide support to the industrial and economic development of EU countries with intra-EU deficit.

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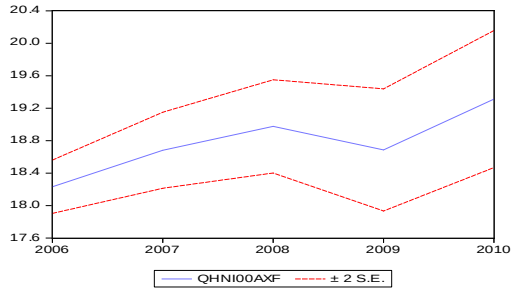
Annex 1. Estimation of equation (1) in each country and forecasting capacity

Table A2.1. Equation of QHNI on its lagged value and D(QHI): Germany 1961-2005

Dependent Variable: QHNI00AX. Method: Least Squares. Included observations: 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00AX(-1)	1.014748	0.001999	507.5249	0.0000
D(QHI00AX)	0.578332	0.160903	3.594280	0.0008
R-squared	0.998091	Mean dependent var		12.73002
Adjusted R-squared	0.998047	S.D. dependent var		3.565583
S.E. of regression	0.157572	Akaike info criterion		-0.814441
Sum squared resid	1.067646	Schwarz criterion		-0.734145
Log likelihood	20.32492	Hannan-Quinn criter.		-0.784507
Durbin-Watson stat	1.032163			

Table A1.2. Forecasting QHNI: France 2006-2010



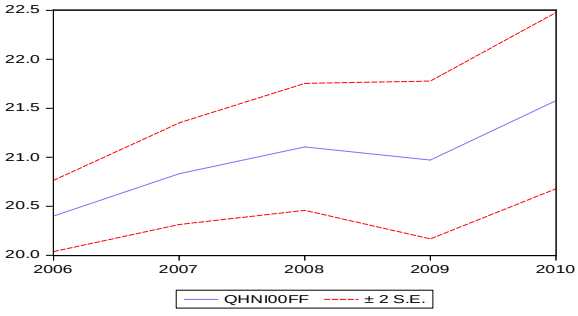
Forecast: QHNI00AXF
Actual: QHNI00AX
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	0.191857
Mean Absolute Error	0.138946
Mean Abs. Percent Error	0.738839
Theil Inequality Coefficient	0.005127
Bias Proportion	0.524489
Variance Proportion	0.305240
Covariance Proportion	0.170271

Table A2.1. Equation of QHNI on its own lagged value and D(QHI): France 1961 2005

Dependent Variable: QHNI00F. Method: Least Squares. Included observations: 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00F(-1)	1.019437	0.002116	481.8646	0.0000
D(QHI00F)	1.164076	0.270565	4.302388	0.0001
R-squared	0.997976	Mean dependent var		13.01599
Adjusted R-squared	0.997929	S.D. dependent var		3.880123
S.E. of regression	0.176560	Akaike info criterion		-0.586888
Sum squared resid	1.340454	Schwarz criterion		-0.506592
Log likelihood	15.20499	Hannan-Quinn criter.		-0.556955
Durbin-Watson stat	1.786335			

Table A2.2. Forecasting QHNI: Italy 2006-2010



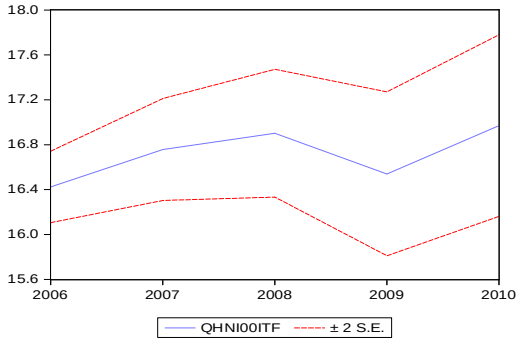
Forecast: QHNI00FF
Actual: QHNI00F
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	0.549670
Mean Absolute Error	0.419394
Mean Abs. Percent Error	2.040815
Theil Inequality Coefficient	0.013232
Bias Proportion	0.582156
Variance Proportion	0.160846
Covariance Proportion	0.256998

Table A3.1. Equation of QHNI on its own lagged value and D(QHI): Italy 1961 2005

Dependent Variable: QHNI00IT. Method: Least Squares. Included observations: 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00IT(-1)	1.018100	0.002268	448.8680	0.0000
D(QHI00IT)	0.961844	0.203447	4.727737	0.0000
R-squared	0.997969	Mean dependent var		10.56808
Adjusted R-squared	0.997922	S.D. dependent var		3.404028
S.E. of regression	0.155179	Akaike info criterion		-0.845048
Sum squared resid	1.035463	Schwarz criterion		-0.764752
Log likelihood	21.01358	Hannan-Quinn criter.		-0.815114
Durbin-Watson stat	1.304308			

Table A3.2. Forecasting QHNI: Italy 2006-2010



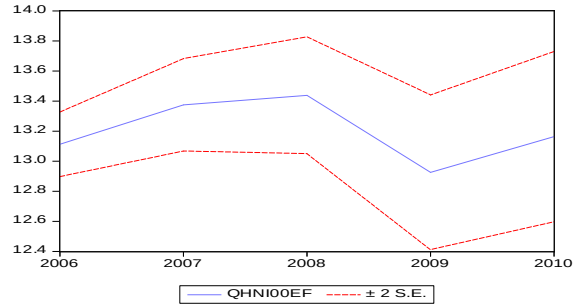
Forecast: QHNI00ITF
Actual: QHNI00IT
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	0.872603
Mean Absolute Error	0.768907
Mean Abs. Percent Error	4.866856
Theil Inequality Coefficient	0.026708
Bias Proportion	0.776452
Variance Proportion	0.013873
Covariance Proportion	0.209676

Table A4.1 Equation of QHNI on its lagged value and D(QHI): Spain 1961-2005

Dependent Variable: QHNI00E. Method: Least Squares. Included observations: 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00E(-1)	1.017773	0.002276	447.1808	0.0000
D(QHI00es)	1.712383	0.247356	6.922734	0.0000
R-squared	0.998388	Mean dependent var		7.842640
Adjusted R-squared	0.998351	S.D. dependent var		2.568782
S.E. of regression	0.104315	Akaike info criterion		-1.639367
Sum squared resid	0.467914	Schwarz criterion		-1.559071
Log likelihood	38.88576	Hannan-Quinn criter.		-1.609434
Durbin-Watson stat	1.315368			

Table A4.2. Forecasting QHNI: Spain 2006-2010



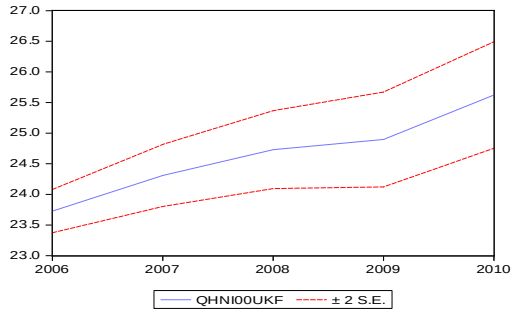
Forecast: QHNI00EF
Actual: QHNI00E
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	0.119927
Mean Absolute Error	0.101363
Mean Abs. Percent Error	0.772497
Theil Inequality Coefficient	0.004542
Bias Proportion	0.001303
Variance Proportion	0.049339
Covariance Proportion	0.949358

Table A5.1. Equation of QHNI on its lagged value and D(QHI): UK 1961-2005

Dependent Variable: QHNI00UK. Method: Least Squares. Included observations: 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00UK(-1)	1.024597	0.001871	547.7375	0.0000
D(QHI00UK)	0.945574	0.216173	4.374143	0.0001
R-squared	0.998544	Mean dependent var		13.73831
Adjusted R-squared	0.998510	S.D. dependent var		4.434254
S.E. of regression	0.171180	Akaike info criterion		-0.648776
Sum squared resid	1.260011	Schwarz criterion		-0.568480
Log likelihood	16.59746	Hannan-Quinn criter.		-0.618842
Durbin-Watson stat	1.054187			

Table A5.2. Forecasting QHNI: UK 2006-2010



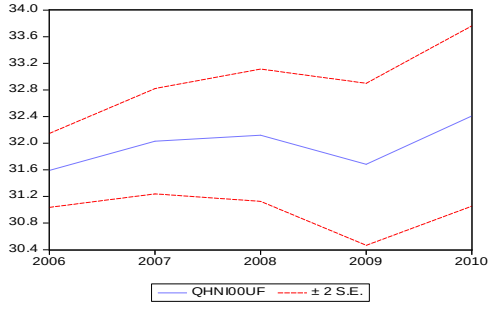
Forecast: QHNI00UKF
Actual: QHNI00UK
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	1.169532
Mean Absolute Error	0.855883
Mean Abs. Percent Error	3.629677
Theil Inequality Coefficient	0.024085
Bias Proportion	0.431401
Variance Proportion	0.023773
Covariance Proportion	0.544826

Table A5.1. Equation of QHNI on its lagged value and D(QHI): USA 1961-2005

Dependent Variable: QHNI00U. Method: Least Squares. Included Observations 45				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00U(-1)	1.013998	0.002083	486.8218	0.0000
D(QHI00U)	1.212197	0.234739	5.164017	0.0000
R-squared	0.996828	Mean dependent var		21.39484
Adjusted R-squared	0.996754	S.D. dependent var		4.733643
S.E. of regression	0.269686	Akaike info criterion		0.260307
Sum squared resid	3.127406	Schwarz criterion		0.340604
Log likelihood	-3.856917	Hannan-Quinn criter.		0.290241
Durbin-Watson stat	1.424264			

Table A5.2. Forecasting QHNI: USA 2006-2010



Forecast: QHNI00UF
Actual: QHNI00U
Forecast sample: 2006 2010
Included observations: 5

Root Mean Squared Error	0.242922
Mean Absolute Error	0.227062
Mean Abs. Percent Error	0.705665
Theil Inequality Coefficient	0.003789
Bias Proportion	0.512076
Variance Proportion	0.036424
Covariance Proportion	0.451501

Annex 2. Causality tests: Granger and modified Granger, sample 1992-2010

Table A7 shows that Granger test that QHI does not cause QHNI, at the 5% or 10% of significance levels, in 5 out of the 6 countries, while the hypothesis that QHNI does not cause QHI is rejected in only 3 cases. The results are more favourable to the important impact of QHI on QHNI than to the reverse relationship, although both directions of causality are usually present in many countries. Besides we should interpret the results of this test with caution, because the lack of rejection of the hypothesis that QHI does not cause QHNI in one country, may be due to uncertainty in the results more than to evidence in favour of null effect.

Table A7. Pairwise Granger Causality Test with one lag: 1992-2010

	Null Hypothesis:	F-Statistic	Prob.
	QHNI00AX does not Granger Cause QHI00AX	3.69702	0.0725
	QHI00AX does not Granger Cause QHNI00AX	0.53854	0.4737
	QHNI00F does not Granger Cause QHI00F	0.56818	0.4619
	QHI00F does not Granger Cause QHNI00F	3.07463	0.0987**
	QHNI00IT does not Granger Cause QHI00IT	1.52177	0.2352
	QHI00IT does not Granger Cause QHNI00IT	3.15950	0.0945**
	QHNI00E does not Granger Cause QHI00E	3.82758	0.0681
	QHI00E does not Granger Cause QHNI00E	7.28208	0.0158*
	QHNI00UK does not Granger Cause QHI00UK	8.72254	0.0093
	QHI00UK does not Granger Cause QHNI00UK	3.63202	0.0748*
	QHNI00U does not Granger Cause QHI00U	1.25323	0.2795
	QHI00U does not Granger Cause QHNI00U	4.11103	0.0596*

Besides the modified Granger´s causality test, suggested by Guisan(2001), also allows to reject that QHI does not cause QHNI in the case of Germany, with a sample of the period 1962-2010, as seen in table A8. The modification consists in diminution of multicolinearity, due to a high correlation between the lagged values of both variables, by including two lags for one regressor ($QHNI_{t-2}$) and one lag for the other one (QHI_{t-1})

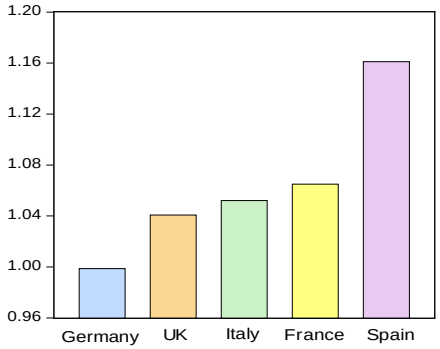
Table A8. Modified Granger test for the case of Germany, 1962-2010.

Dependent Variable: QHNI00AX				
Method: Least Squares				
Sample (adjusted): 1962 2010				
Included observations: 49 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00AX(-2)	0.873206	0.033061	26.41212	0.0000
QHI00AX(-1)	0.500132	0.102627	4.873304	0.0000
R-squared	0.995468	Mean dependent var		13.45437
Adjusted R-squared	0.995371	S.D. dependent var		3.744709
S.E. of regression	0.254771	Akaike info criterion		0.143058
Sum squared resid	3.050693	Schwarz criterion		0.220275
Log likelihood	-1.504924	Hannan-Quinn criter.		0.172354
Durbin-Watson stat	0.979789			

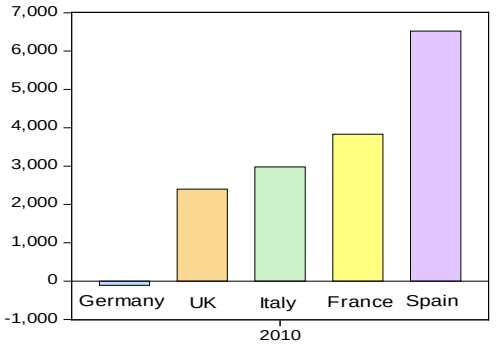
Annex 3. The special case of Spain and suggested policies.

In the case of Spain we should notice that the country has experienced the highest increase of population among the 5 major EU countries, for the period 2000-2010, both in absolute terms as in percentage of population, due to a policy of high increase of immigration, as we can see in Graphs A1 and A2, but unfortunately there was not enough industrial development to support a sustained development of other sectors.

Graph A1. Population ratio year 2010 to 2000



Graph 2. Increase of population (thousand) for the period 2000-2010



Economic policies in Spain for the period 2000-2007 have been addressed to increase employment in building and services with little regard to the lack of enough industrial investment. This feature, together with economic policies of the European Union which showed little protection of industrial production in the EU, contributed to a high increase of foreign trade deficit and international debt. For this reasons Spain has challenged many problems after financial restrictions derived from the international financial crisis of the period 2008-2011.

A most moderate evolution of population in Spain for the period 2000-2010, or a higher level of investment in industry per capita, would have led to higher levels of QHI, QHNI, lower levels of trade deficit, higher rates of employment and higher real wages.

As seen in Guisan(2011) economic policies in Spain should be addressed to increase industrial production per capita, in order to avoid high trade deficits, and to allow financial resources for a sustained development of industrial and not industrial activities and the increase of employment.

Economic policies in other EU countries with low levels of industrial production per capita, addressed to industrial and non industrial development are also advisable, what requires good economic policies both at European level and at country level. We agree with Azariadis et at(2010): *"Development is the only solution"*.