REAL EXCHANGE RATE EURO-DOLLAR AND FOREIGN TRADE BALANCE: ANALYSIS OF SPAIN, GERMANY AND FRANCE IN COMPARISON WITH THE USA. 1960-2007

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Abstract:
One aim of this paper is to relate the evolution of real exchange rate Euro-Dollar to the foreign trade balance, with analysis three European countries: Spain, Germany and France, for the period 1960-2007. A second question is to analyse the effects of changes of REER on the evolution of Exports and Imports. A third point is to evaluate the impact of those changes on industrial and non industrial production and economic growth. We estimate an econometric model for the case of Spain that explains the causes and consequences of the huge increase of the trade deficit during the period 2004-2009 and we insist on the convenience to develop economic policies aimed to get higher levels of industrial production per inhabitant to increase Exports and to moderate foreign trade deficit.
C51, F1, O52

1. Introduction

In this paper we analyze some relationships between Exchange Rates of Euro to Dollar in Spain and in other Euro countries. We have previously published other study by Guisan(2005) with an econometric analysis of the relationship the evolution of Exchange Rates and international prices of Exports in 24 OECD in comparison with the United States, with very good fit and interesting results. There we analyzed several approaches of the economic literature as those included in the references.

One of the questions that we would like to answer is if the exchange rate Euro-Dollar is overvalued and if it would be convenient to evolve towards a depreciation of Euro (increasing the Exchange rate Euro to Dollar) for economic development of Spain and the other countries of the analysis.

Regarding the equilibrium exchange rates Benassy-Quere, Bereau and Mignon(2008) present an interesting analysis comparing FEER (fundamental) and BEER approaches to the explanation of equilibrium. One of the main conclusions of their paper is that accordingly to their estimations the Euro was overvalued in year 2007 and that the exchange rate Dollar/Euro should diminish from 1.4 to 1.2 Dollars per Euro in order to approach equilibrium.

In the graphs in the Annex we find that the Exchange Rate Euro-Dollar fluctuates usually between PPP and ERA (Exchange Rate Adjusted by relative prices) in the case of Spain, but not in the cases of Germany and France.

In section 2 we find a very close relationship between the Real Effective Exchange Rate (REER) and the evolution of foreign trade of three Euro countries in comparison with the USA. In section 3 we analyze the impact of foreign trade and REER on economic growth and development of Spain, through the estimation of an econometric model that has into account the important positive impact of industry on development. In section 4 we present a summary of the conclusions and in the Annex we include several supplementary regressions and graphs.

We expect to include updates of this study in the following months, particularly regarding the directions of causality between exchange rates and foreign trade.

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2. Real effective exchange rate and foreign trade in Spain, Germany and France

The following graphs and estimated equations show that the real effective exchange rate (REER) of each country (Euros at 2000 prices per Dollar at 2000 prices) experienced a diminution, with fluctuations during the analysed period, indicating a trend to the appreciation of the Euro to Dollar.

The evolution of REER in this three Euro countries shows a high positive correlation with the Foreign Trade Ratio (Zi/ZU, for i=E, DE, FR, respectively for Spain, Germany and France). Zi is the Exports/Imports ratio of country I and ZU is the same ratio in the United States. Both Exports and Imports are expressed in Dollars of year 2000. Equation (1) shows the effect of Z and ZU on REER:
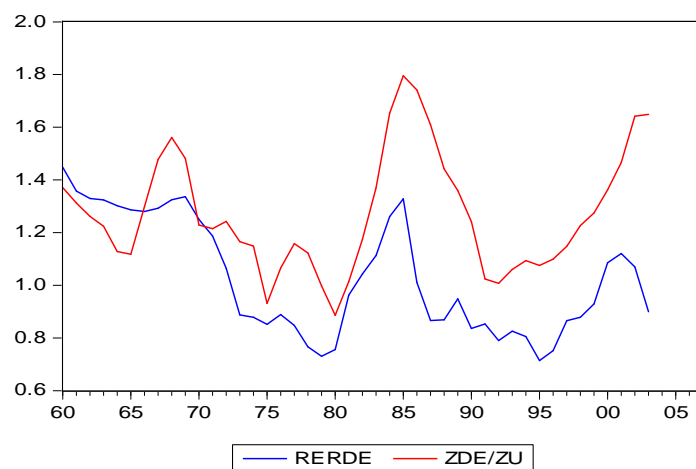
$$REERi_t = \beta_1 \, REERi_{t-1} + \beta_2 \, D(Zi_t) + \beta_3 \, D(ZU_t) + \varepsilon_t \qquad (1)$$

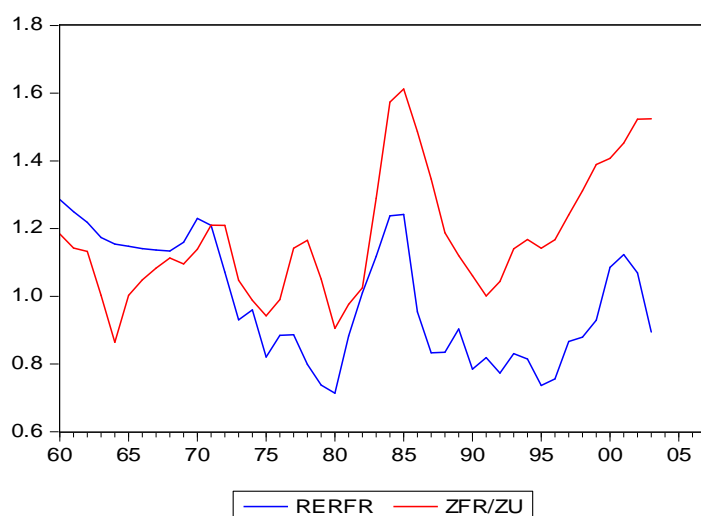Where $D(Zi) = Zi_t - Zi_{t-1}$, for i=E, DE, FR, for Spain, Germany and France, and ZU for the USA.

Graph 1. REER of Spain and Foreign Trade Ratio (ZE/ZU)
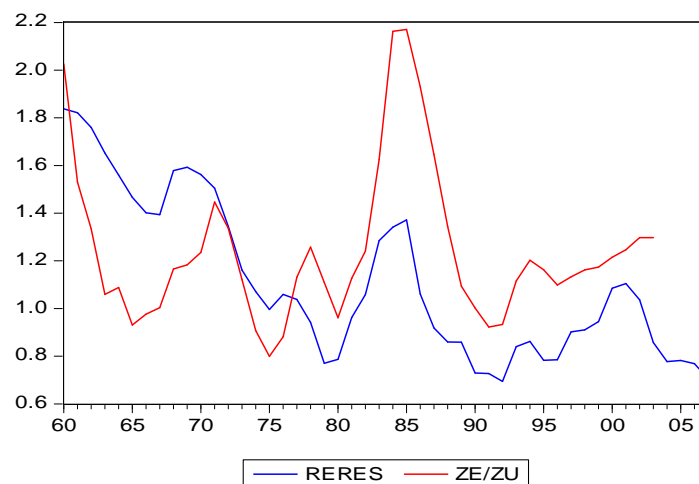
Graph 2. RER of Germany and Foreign Trade Ratio (ZDE/ZU)

Graph 3. RER of France and Foreign Trade Ratio (ZFR/ZU)

Equation 1.1 Real Exchange Rate Euro/Dollar and Foreign Trade: Spain
Dependent Variable: REERE
Method: Least Squares, 1961 2003

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REERE(-1)	0.978103	0.012164	80.40797	0.0000
D(ZE)	0.257105	0.122066	2.106282	0.0415
D(ZU)	-0.641614	0.202077	-3.175098	0.0029
R-squared	0.922159	Mean dependent var		1.126514
Adjusted R-squared	0.918267	S.D. dependent var		0.315419
S.E. of regression	0.090175	Akaike info criterion		-1.906919
Sum squared resid	0.325260	Schwarz criterion		-1.784045
Log likelihood	43.99876	Hannan-Quinn criter.		-1.861607
Durbin-Watson stat	1.454650			

Equation 1.2. Real Exchange Rate Euro/Dollar and Foreign Trade: Germany
Dependent Variable: REERDE
Method: Least Squares, 1961 2003

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REERDE(-1)	0.982093	0.012767	76.92482	0.0000
D(ZDE)	0.467600	0.229302	2.039237	0.0481
D(ZU)	-0.388342	0.190003	-2.043873	0.0476
R-squared	0.837723	Mean dependent var		1.017913
Adjusted R-squared	0.829610	S.D. dependent var		0.210729
S.E. of regression	0.086985	Akaike info criterion		-1.978939
Sum squared resid	0.302658	Schwarz criterion		-1.856065
Log likelihood	45.54719	Hannan-Quinn criter.		-1.933627
Durbin-Watson stat	1.433884			

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Equation 1.3. Real Exchange Rate Euro/Dollar and Foreign Trade: France
Dependent Variable: REERFR
Method: Least Squares, 1961 2003

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REERFR(-1)	0.984222	0.012279	80.15702	0.0000
D(ZFR)	0.618148	0.268699	2.300526	0.0267
D(ZU)	-0.554167	0.173385	-3.196166	0.0027

R-squared	0.788733	Mean dependent var	0.979805
Adjusted R-squared	0.778170	S.D. dependent var	0.170163
S.E. of regression	0.080145	Akaike info criterion	-2.142751
Sum squared resid	0.256927	Schwarz criterion	-2.019876
Log likelihood	49.06914	Hannan-Quinn criter.	-2.097438
Durbin-Watson stat	1.642370		

The estimation of model (1) shows a significant and positive effect of increases of domestic Z and a significant and negative effect of increases in ZU in the evolution of REER, what implies that increase of Z are related with depreciation of Euro and decreases of Z are related with appreciation of the Euro, while changes in the foreign trade ratio of the United States (ZU) have the opposite effects: when ZU increases contribute to diminution of the real exchange rate Euro/Dollar (appreciation of Euro) and when ZU diminishes contributes to increase the Euro/Dollar real relation (depreciation of Euro).

3. Effects of Industry, Foreign Trade and Exchange Rate on real GDP: Econometric model of Spain
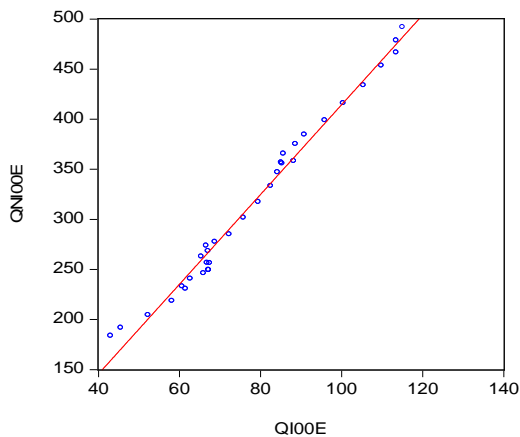
The following graphs show some important macroeconomic relationships between industrial real GDP (QI), non industrial real GDP (QNI), real Exports (EXP) and real Imports(IMP). The positive effect of industry on non industrial production is remarkable in several areas of the World, as seen in Guisan(2006) and (2007), due not only to its direct positive effect on QNI but also indirectly through the positive effects that industry has in the increase of Exports and Imports which have finally additional positive effects on QNI. Other variables have also important effects on QNI, IMP and EXP and we will include some additional explanatory variables in the estimation of the Spanish model.
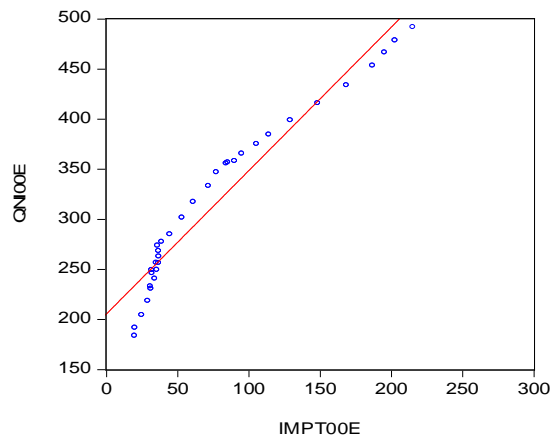
$$QNI = F(QI, IMP); \qquad IMP = F(EXP); \qquad EXP = f(QI)$$
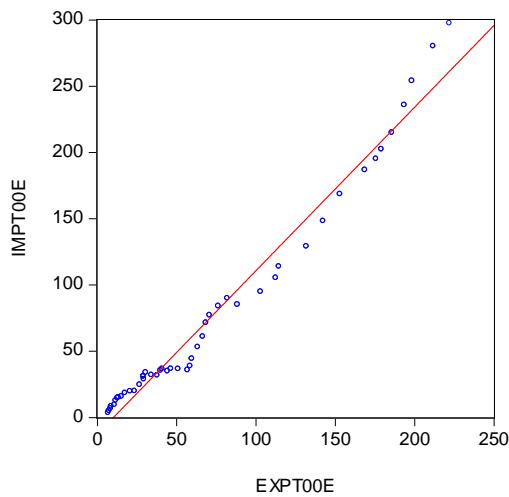
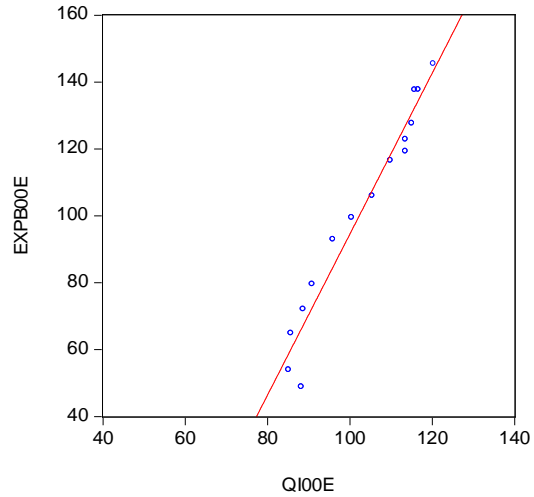Graph 4. QNI and QI in Spain   Graph 5. QNI and Imports in Spain


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Graph 6. Imports and Exports in Spain   Graph 7. Exports and QI in Spain

One of the main restrictions to economic development in Spain is the low level of industrial production per inhabitant in comparison with more developed countries. Besides, during the period 2001-2008 the country followed economic policies more addressed to increase foreign trade deficit, with Imports growing more than Exports, than to increase industry and exports in order to moderate foreign trade deficit.

It is of great importance for Spain to develop economic policies direct to a real convergence with more developed countries regarding industrial GDP per capita, because this important variable has experienced little increase in the last years of the sample, since year 2001, and its value is clearly low in comparison with France, Germany and the United States, as it is shown in graph 8.

Graph 8. Industrial real GDP per inhabitant
(thousand dollars at prices and exchange rates)
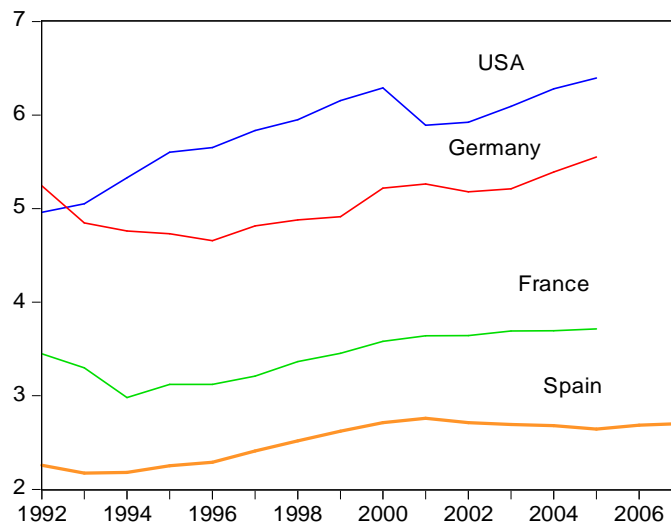
Graph 9 presents the evolution of the ratio between real Imports of goods (IMPG) and real industrial GDP (QI) in Spain in comparison with France, Germany and the United Kingdom for the period 1992-2007, where we see that the ratio has increased in all the cases but particularly in Spain.

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The high value of Spain was the consequence of inadequate economic policies addressed to increase non industrial production (in building and services) without enough industrial development.

Graph 9. Ratio IMPG/QI: Imports of goods and Industrial GDP
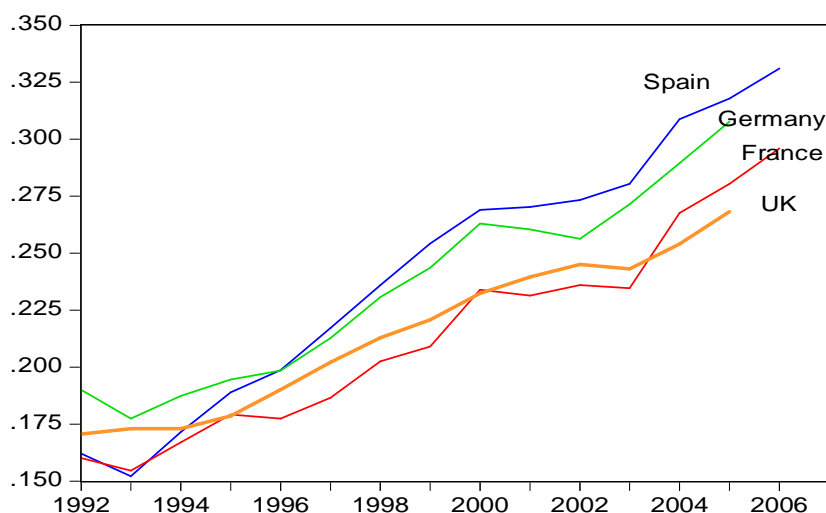
With the purpose to analyse the important effect of industry and foreign trade on economic development of Spain, we estimate several equations which show that increase of QI is of uppermost importance to increase exports, diminish foreign trade deficit of Spain and foster economic development. In those equations we include the effects of changes in real exchange rate on the real economy.

Equation 2 relates real Imports of Spain with its lagged value (with coefficient restricted to unity), real exports (with coefficient restricted to unity), expected increase in domestic demand, as a function of the rate of increase of lagged GDP, and expected increase of REER (with estimated coefficient of -0.27). This means that an increase of REER (depreciation of Euro) has a negative effect on Imports, because they are more costly in domestic currency, while a decrease of REER (appreciation of Euro) has a positive effect on Imports as they are less costly in domestic currency.

Equation 2. Imports related with Exports and lagged values of IMP, GDP and REER in Spain

Dependent Variable: LOG(IMPT00E)
Method: Least Squares
Sample (adjusted): 1962 2007
Included observations: 46 after adjustments
LOG(IMPT00E)=LOG(IMPT00E(-1))+D(LOG(EXPT00E))+C(2)
    *D(LOG(GDP00E(-1)))+C(4)*D(LOG(REERE(-1)))

	Coefficient	Std. Error	t-Statistic	Prob.
C(2)	0.394617	0.262998	1.500453	0.1406
C(4)	-0.277657	0.121253	-2.289899	0.0269

R-squared	0.993797	Mean dependent var	3.941860
Adjusted R-squared	0.993656	S.D. dependent var	1.015964
S.E. of regression	0.080918	Akaike info criterion	-2.148250
Sum squared resid	0.288102	Schwarz criterion	-2.068744
Log likelihood	51.40975	Hannan-Quinn criter.	-2.118467
Durbin-Watson stat	1.919979		

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In the Annex we include other versions of equation 4 (A4.1 and A4.2): one without indicator of domestic demand and another one with current domestic demand, and both with current value of REER instead of lagged one. The coefficient of current domestic demand is significant in that regression. It should be convenient to estimate this model with quarterly data, instead of annual data, and to analyze if really the system is recursive or if it presents some contemporaneous bilateral relationships between Imports and the explanatory variables.

Equation 3 relates real exports of Spain with its lagged value (with coefficient restricted to unity), real value of external demand (DEXT), represented by the sum of GDP of 5 major European countries (excluding Spain) and the United States, real GDP of Spanish manufacturing industries (QM00E) and the expected value of REER in Spain as a function of its lagged value.

Equation 3. Exports related with Manufacturing, External Demand and lagged REER

Dependent Variable: LOG(EXPT00E)
Method: Least Squares
Sample (adjusted): 1965 2004
Included observations: 40 after adjustments
LOG(EXPT00E)=LOG(EXPT00E(-1))+C(1)*D(LOG(DEXT00))+C(2)
    *D(LOG(QM00E))+C(3)*D(LOG(REERE(-1)))

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1.949222	0.336541	5.791931	0.0000
C(2)	0.408157	0.220610	1.850127	0.0723
C(3)	0.118474	0.066287	1.787272	0.0821
R-squared	0.997133	Mean dependent var		3.987062
Adjusted R-squared	0.996978	S.D. dependent var		0.813275
S.E. of regression	0.044710	Akaike info criterion		-3.305185
Sum squared resid	0.073964	Schwarz criterion		-3.178519
Log likelihood	69.10369	Hannan-Quinn criter.		-3.259386
Durbin-Watson stat	1.788041			

The estimated coefficients of equation 3 are positive and statistically significant. The coefficient of REER indicates that an increase in this variable (depreciation of Euro) contributes to increase real Exports because, for a given price in Euros in the domestic market, its price in dollars diminish, while a decrease in REER (appreciation of Euro) has a negative effect on real Exports. In the Annex we include also equation A5 including the current value of REER instead of the lagged one.

Equation 4 show the positive effect of industry (QI) on non industrial GDP (QNI), as well as the joint positive effect of an increase in real Imports and Exports of goods (IMPG and EXPG). Imports increase intermediate goods as production factors for QNI while Exports may be seen as a loss of production factors. As the sum of both coefficients is positive the effect of trade on economic growth is positive, because an increase both in Imports and Exports is not neutral (sum zero effect) but positive, as it has been remarked in Konya and Guisan(2008) and in other studies.

Equation 4. Real Value-Added of Non-Industrial Sectors (QNI) in Spain
Dependent Variable: QNI00E
Method: Least Squares
Sample (adjusted): 1993 2003
Included observations: 11 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QNI00E(-1)	1.018199	0.003115	326.9145	0.0000
D(QI00E)	0.736367	0.464846	1.584108	0.1572
D(IMPG00E)	0.656081	0.222320	2.951060	0.0214
D(EXPG00E)	-0.390634	0.195882	-1.994230	0.0864
R-squared	0.998950	Mean dependent var		420.2354
Adjusted R-squared	0.998500	S.D. dependent var		47.73811
S.E. of regression	1.849155	Akaike info criterion		4.342623
Sum squared resid	23.93563	Schwarz criterion		4.487312
Log likelihood	-19.88442	Hannan-Quinn criter.		4.251416
Durbin-Watson stat	1.905355			

Equation 5 relates QI with the lagged value of the increase of GDP, with a positive effect as the increase in domestic demand and the capability to invest favours industrial development, the lagged value of increase of IMPG, with a coefficient that it is a result of positive effects of complementary goods and negative effects of substitute goods which finally is negative although not significant, and the lagged value of increase of EXPG, with an expected positive coefficient due to its positive effects from the demand side.

Equation 5. Industrial GDP (QI) and lagged values of QI, GDP, IMPG and EXPG
Dependent Variable: QI00E
Method: Least Squares
Sample (adjusted): 1994 2007
Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
QI00E(-1)	0.988104	0.014113	70.01299	0.0000
D(GDP00E(-1))	0.242380	0.125922	1.924834	0.0831
D(IMPG00E(-1))	-0.159978	0.142500	-1.122654	0.2878
D(EXPG00E(-1))	0.247998	0.131366	1.887833	0.0884
R-squared	0.987321	Mean dependent var		106.7352
Adjusted R-squared	0.983517	S.D. dependent var		12.37648
S.E. of regression	1.588953	Akaike info criterion		3.998984
Sum squared resid	25.24772	Schwarz criterion		4.181572
Log likelihood	-23.99289	Hannan-Quinn criter.		3.982082
Durbin-Watson stat	1.796736			

Finally equation 6 presents a summary of effects of Industry and Foreign Trade of goods and services on real GDP. Due to the short sample the degree of multicollinearity is high and the coefficient of QI does not show statistical significance in spite of the importance and relevance

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of this variable on GDP. In the Annex we include another version of this equation (A6) with a larger sample in order to show that the coefficient of QI is positive and significant.

Equation 6
Dependent Variable: GDP00E
Method: Least Squares
Sample (adjusted): 1993 2006
Included observations: 14 after adjustments
GDP00E=GDP00E(-1)+C(1)*D(QI00E)+C(2)*D(IMPB00E)+C(3)
    *D(EXPB00E)+C(4)*D(EXPS00E-IMPS00E)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1.165769	1.006788	1.157909	0.2738
C(2)	1.170322	0.369027	3.171374	0.0100
C(3)	-0.095710	0.394382	-0.242684	0.8132
C(4)	0.409533	0.868994	0.471272	0.6476

R-squared	0.996896	Mean dependent var	547.7000
Adjusted R-squared	0.995965	S.D. dependent var	75.23124
S.E. of regression	4.778954	Akaike info criterion	6.201277
Sum squared resid	228.3840	Schwarz criterion	6.383865
Log likelihood	-39.40894	Hannan-Quinn criter.	6.184375
Durbin-Watson stat	1.577178		

4. Conclusions

We have analyzed some important relationships between real effective exchange rates and foreign trade and estimated some econometric relationships for Spain, Germany and France where the effect of trade balance on REER is significant. Besides we have presented an estimated econometric model for Spain, which has into account the effect of REER on Imports and Exports, and the great importance of industrial development in Spain for economic growth and development, having into account the positive effects of industrial development on the increase of non industrial sectors production, as well as in foreign trade, favouring increase of exports and moderation of trade deficit. Accordingly to the Exchange Rate relation with Purchasing Power Parity we find

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[1] Document available at http://ideas.repec.org
[2] Information available at: http://www.usc.es/economet/eaa.htm

Annexes

Annex 1. Other estimated equations

Equation A2.1
Dependent Variable: LOG(IMPT00E)
Method: Least Squares
Sample (adjusted): 1961 2007
Included observations: 47 after adjustments
LOG(IMPT00E)=LOG(IMPT00E(-1))+C(1)*D(LOG(EXPT00E))+C(2)
    *D(LOG(REERE))

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.921324	0.139529	6.603113	0.0000
C(2)	-0.409952	0.124564	-3.291092	0.0019

R-squared	0.993444	Mean dependent var	3.892667
Adjusted R-squared	0.993298	S.D. dependent var	1.059946
S.E. of regression	0.086772	Akaike info criterion	-2.009442
Sum squared resid	0.338823	Schwarz criterion	-1.930712
Log likelihood	49.22189	Hannan-Quinn criter.	-1.979815
Durbin-Watson stat	1.335962		

Equation A2.2 Imports, Exports and REER, Spain
Dependent Variable: LOG(IMPT00E)
Method: Least Squares. Sample (adjusted): 1961 2007
LOG(IMPT00E)=LOG(IMPT00E(-1))+D(LOG(EXPT00E))+C(2)
    *D(LOG(GDP00E))+C(4)*D(LOG(REERE))

	Coefficient	Std. Error	t-Statistic	Prob.
C(2)	0.803133	0.255437	3.144157	0.0029
C(4)	-0.307294	0.117531	-2.614585	0.0121
R-squared	0.994587	Mean dependent var		3.892667
Adjusted R-squared	0.994466	S.D. dependent var		1.059946
S.E. of regression	0.078847	Akaike info criterion		-2.200992
Sum squared resid	0.279759	Schwarz criterion		-2.122262
Log likelihood	53.72331	Hannan-Quinn criter.		-2.171366
Durbin-Watson stat	1.505191			

Equation A3. Real Exports related with External Demand (DEXT), QM and REER, Spain

Dependent Variable: LOG(EXPT00E)				
Method: Least Squares. Sample (adjusted): 1965 2004				
LOG(EXPT00E)=LOG(EXPT00E(-1))+C(1)*D(LOG(DEXT00))+C(2)				
*D(LOG(QM00E))+C(3)*D(LOG(REERE))				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1.946274	0.323814	6.010476	0.0000
C(2)	0.463363	0.212572	2.179793	0.0357
C(3)	0.158207	0.064197	2.464401	0.0185
R-squared	0.997324	Mean dependent var		3.987062
Adjusted R-squared	0.997180	S.D. dependent var		0.813275
S.E. of regression	0.043190	Akaike info criterion		-3.374361
Sum squared resid	0.069020	Schwarz criterion		-3.247695
Log likelihood	70.48722	Hannan-Quinn criter.		-3.328563
Durbin-Watson stat	1.806476			

Equation A4. QNI related with Industry and Foreign Trade, Spain

Dependent Variable: QNI00E				
Method: Least Squares. Sample (adjusted): 1971 2003				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QNI00E(-1)	1.016705	0.003236	314.1539	0.0000
D(QI00E)	1.214667	0.284057	4.276136	0.0002
D(IMPT00E)	0.454927	0.140579	3.236094	0.0030
D(EXPT00E)	-0.260789	0.169282	-1.540554	0.1343
R-squared	0.998831	Mean dependent var		320.6777
Adjusted R-squared	0.998710	S.D. dependent var		85.45182
S.E. of regression	3.068771	Akaike info criterion		5.193644
Sum squared resid	273.1034	Schwarz criterion		5.375039
Log likelihood	-81.69513	Hannan-Quinn criter.		5.254678
Durbin-Watson stat	1.873865			

Table A6. GDP of Spain related with Industry, Imports and Exports
Dependent Variable: GDP00E
Method: Least Squares. Sample: 1971 2007

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP00E(-1)	1.014527	0.002525	401.7233	0.0000
D(QI00E)	2.032872	0.251675	8.077385	0.0000
D(IMPT00E)	0.524192	0.105139	4.985683	0.0000
D(EXPT00E)	-0.326135	0.159164	-2.049055	0.0485

R-squared	0.999461	Mean dependent var		427.9446
Adjusted R-squared	0.999412	S.D. dependent var		127.8292
S.E. of regression	3.100496	Akaike info criterion		5.202807
Sum squared resid	317.2316	Schwarz criterion		5.376961
Log likelihood	-92.25194	Hannan-Quinn criter.		5.264205
Durbin-Watson stat	1.933423			

Annex 2. Graphs

ERA=Exchange Rate Adjusted by prices: $ER_t = ER_0 * ipc00e/ipc00u$.
ER= Exchange Rate
PPP= Purchasing Power parities
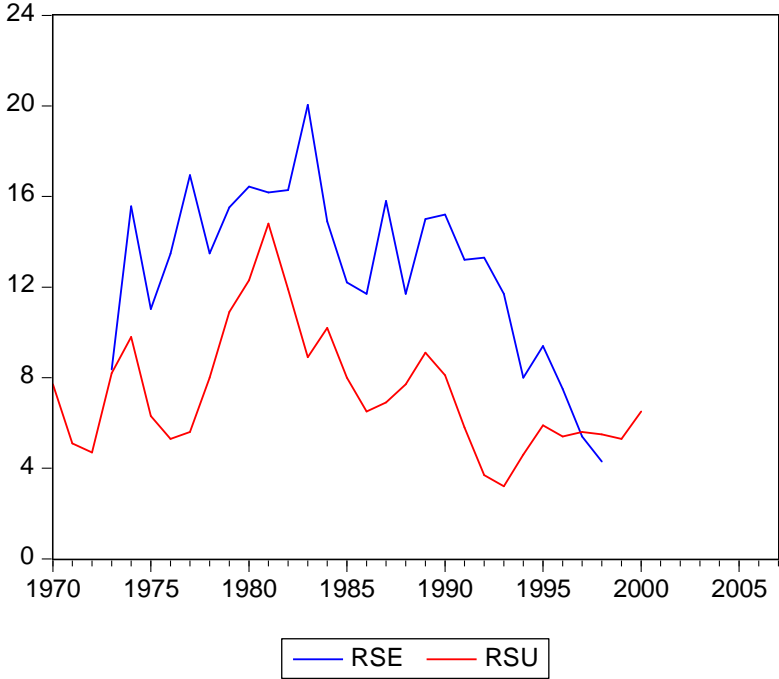
Graph A1. ER, ERA and PPP in Spain
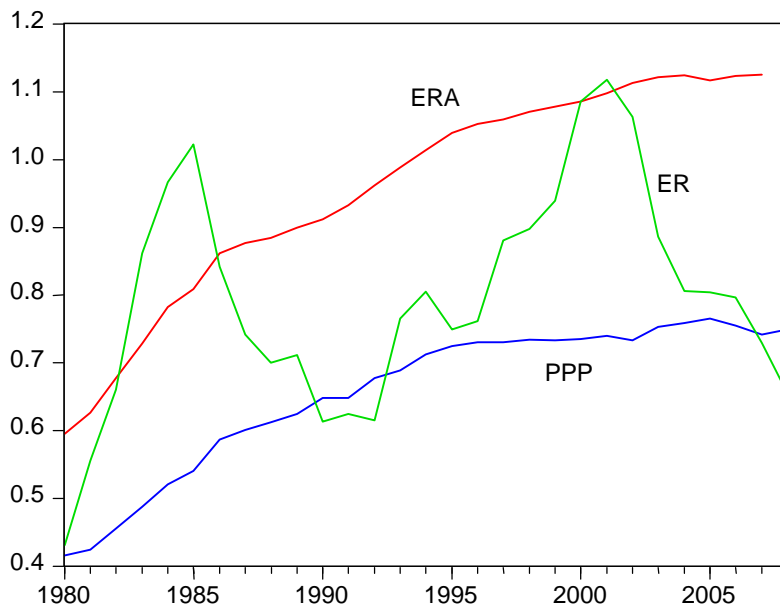
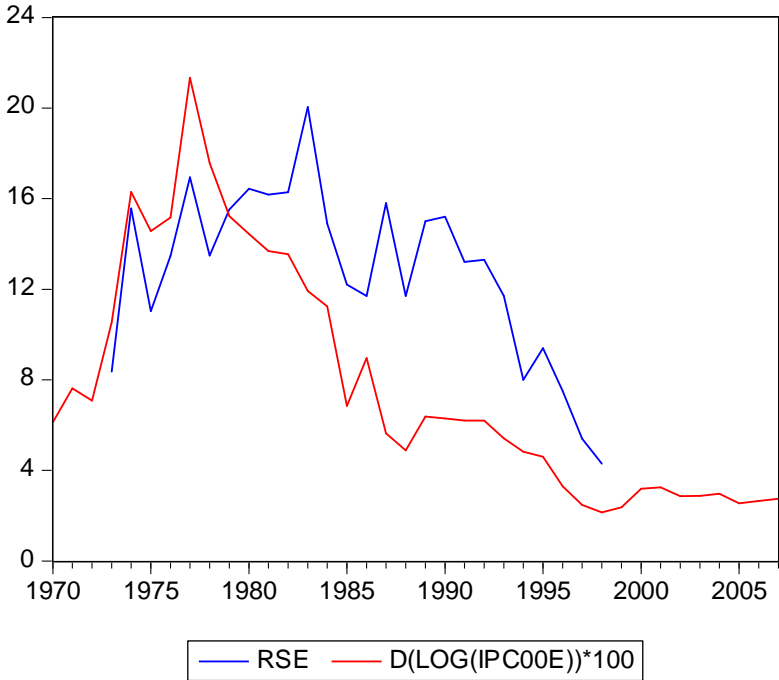Graph A2. ER, ERA and PPP in France
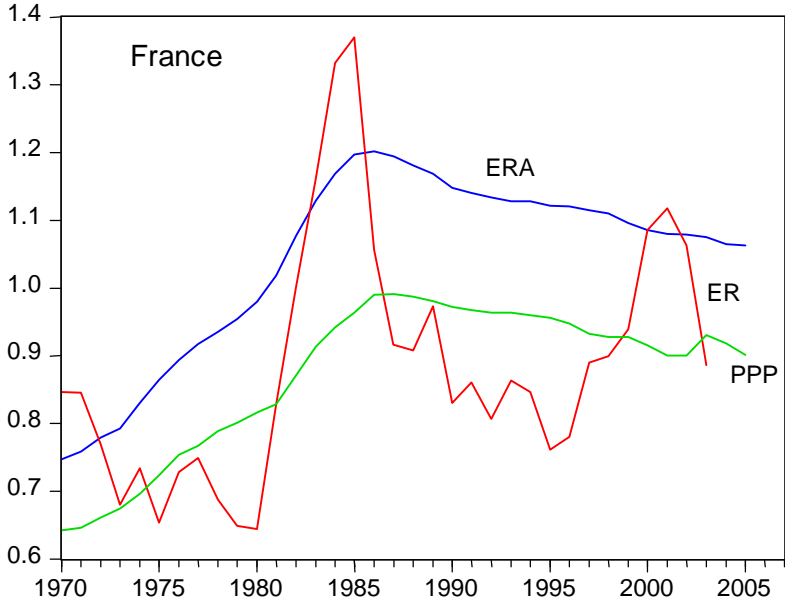
Graph A3. ER, ERA and PPP in Germany
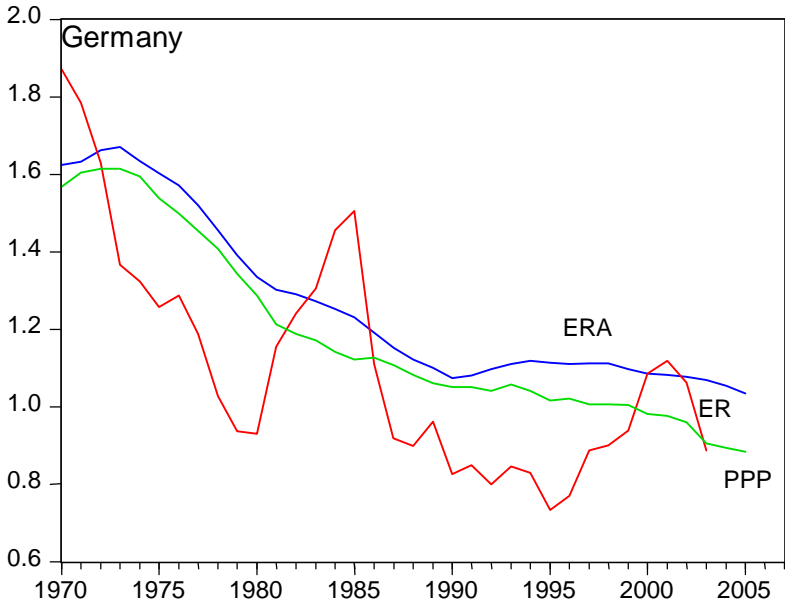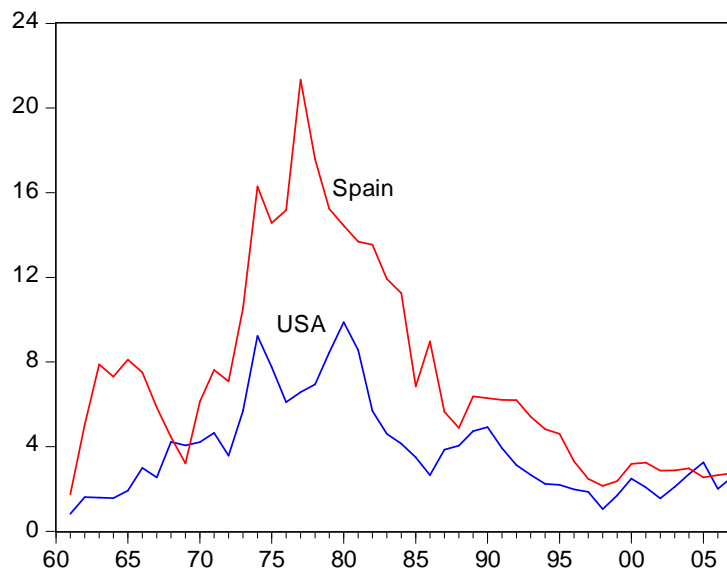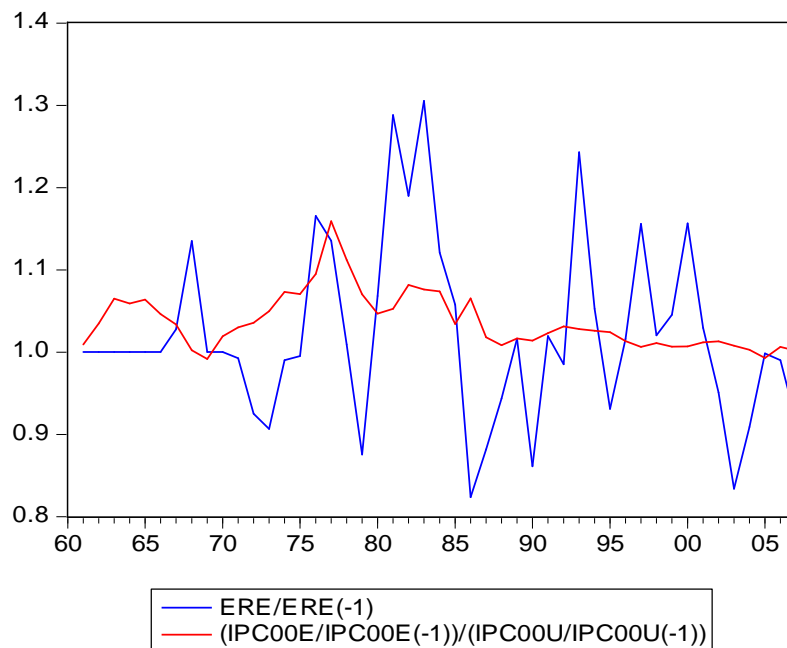
Graph A4. Short term interest rates in Spain and the USA

RSE — RSU

Graph A5. Short term interest rate and inflation in Spain

RSE — D(LOG(IPC00E))*100

Graph A6. Consumption Prices: exponential rates of growth in percentage

Graph A7. Ratio ER(t)/ER(t-1) and Ratio of Prices: Spain and USA

Note: Blue line, with large fluctuations is the ER(t)/ER(t-1) ratio of Euro-Dollar Exchange rate.
The red line represents the effect of prices: IPE(t)/IPE(t-1) divided by IPU(t)/IPU(t-1), where
IPE and IPU are price indexes, respectively, of Spain and the USA

Graph 8 shows the relationship between GDP and REERE . More information in this regard
may be found in Hsing and Guisan(2009) (forthcoming).

Graph 8. Relationship between GDP and REER
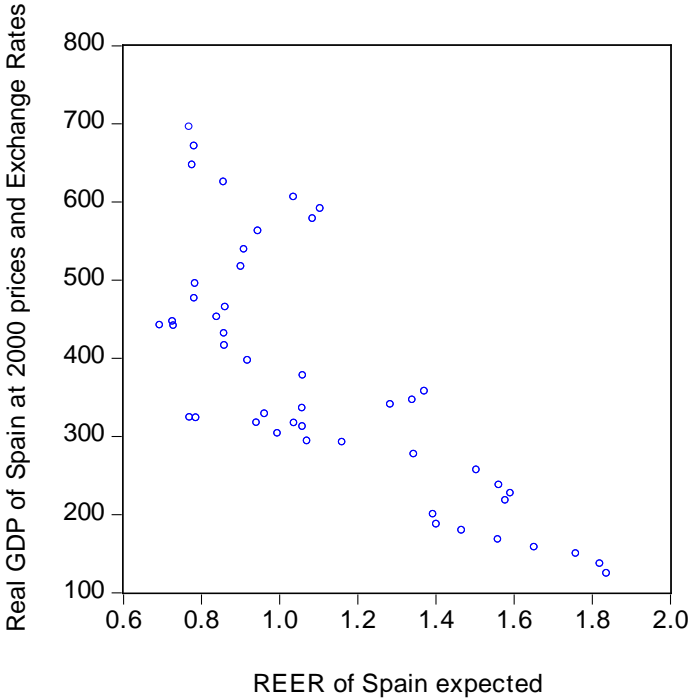
Graph 9 shows that there is a slight negative correlation between the rates of growth of real GDP of Spain and its REER Euro-Dollar, what indicates that real appreciation of Euro (decrease of REER in Spain) is associated with higher rates of real growth of GDP. This does not mean that excessive appreciation should be good for economic growth in Spain, because that would have consequences on foreign trade and growth accordingly to the model here estimated.

Graph 9. Exponential rates of growth (in percentage)
Of real GDP and Real Effective Exchange Rate of Spain

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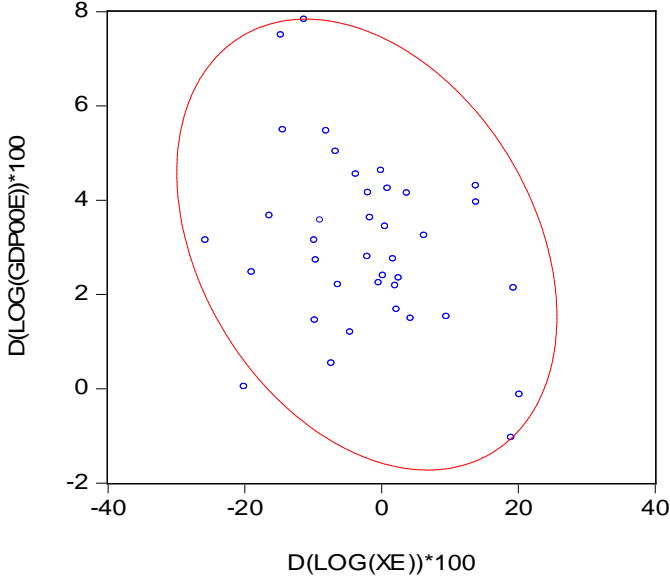
Having into account all the fluctuations of exchanges rates, the evolution of foreign trade and other variables, the final conclusion is that the United States has experienced a better evolution of economic development than Spain and many European countries, as seen in Guisan and Cancelo(2007) and other studies. Graph 10 shows the evolution of real GDP per capita of Spain in comparison with the USA. We notice that after a great increase of the ratio between GDP per capita in both countries during the period 1960-75, there has been little progress in this regard after 1975.

Graph 10. Evolution of real GDP per capita in Spain and the USA
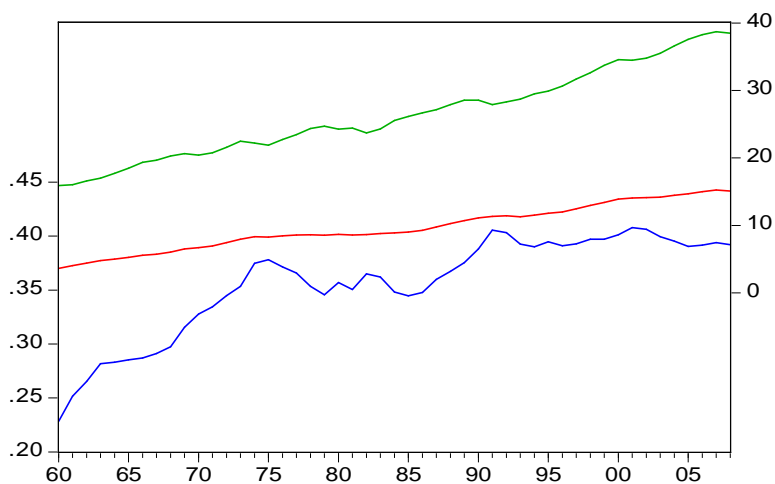
Note: The left scale and blue line correspond to the ratio between GDP per capita of Spain and the USA. The right scale and lines green (USA) and red (Spain) correspond to real GDP per capita (thousand $2000)

We notice an important increase of the ratio Spain/USA for the period 1960-75, an important period in economic development of Spain when important Spanish economists where called by the Ministry of Economy as advisors, and the Spanish Government developed important economic policies for industrialization and openness of the economy to international relationships particularly to trade and tourism. This gold age of economic development in Spain was suddenly stopped by the oil prices crisis of the period 1975-85. An increase in the ratio for the period 1985-91, was followed by of the ratio stagnation since then onwards.

To get new increase in the ratio implies to have into account the conclusions related with the econometric model here presented, as well as other interesting economic studies of Spain that analyze the important role of industry and foreign trade. In this regard it is important to open channels for communication between the voices of economics researchers and policy makers, what is one of the great challenges of Spanish economy and that we analyze in other studies. This has to do with the important role that social capital and government quality indexes have for economic development, as seen in Guisan(2009) and other interesting studies.

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