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The determinants of import demand in Eurozone Crisis countries - a note

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Abstract

I estimate import demand functions for the countries that were mostly affected by the Eurozone crisis, by separating the effects of the different demand components. Results suggest that elasticities are different across countries, implying that demand components and relative prices affect imports differently in each country.

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1. Introduction

A classic issue in international macroeconomics is the estimation of import elasticities. Typically, imports are associated to income and relative prices (Marquez, 2002). A recent strand in this literature is concerned with separating the effects of different demand variables on imports, either by weighting domestic demand components by their import content (Bussiére et al., 2013) or by directly estimating these different elasticities (Giansoldati and Gregori, 2017) using panel estimation techniques. Providing more evidence on these separate elasticities is a major goal of the present paper.

This exercise is also motivated by the discussion on current account imbalances in the southern countries of the Eurozone. Initially it was argued that imbalances were the natural by-product of convergence and easier access to financing (Blanchard and Giavazzi, 2002). Then it was argued that loss of competitiveness (Arghyrou and Chortareas, 2008) or fiscal policy (Bussiére et al., 2010) (at least in Greece – see Papadogonas and Stournaras (2006)) were significant factors behind the imbalances.

Several contributions offered new evidence on current account imbalances in the Eurozone. Belke and Dreger (2013), using panel cointegration techniques, emphasized that deficit countries primarily needed to restore competitiveness by lowering unit labor costs and secondarily to restore sound public finances in order to contain imbalances. Gnimassoun and Mignon (2015; 2016) stressed the importance of overvaluation, as they found that deviations of REER from its equilibrium value has much stronger effects on current accounts in the Euro area. Similar evidence was found by Gossé and Serranito (2014), who also found that fiscal policy is an important determinant of the current account. Litsios and Pilbeam (2017) emphasized the importance of both budget deficits and investment, as well as the financing of the latter variable, for the evolution of current account in Greece, Portugal and Spain. However, using country models for Greece, Ireland, Italy, Portugal and Spain, Algieri (2013) did not find significant effects of fiscal balance on current account.

Campa and Gavilan (2011) estimated an intertemporal current account model for several countries in the Eurozone and emphasized the role of future expected income in consumption decisions that led to current account deficits in Italy, Portugal and Spain. Chen et al. (2013) supported the view that a combination of the appreciation of the Euro as a whole (not labor costs in Eurozone south), the unfavorable international specialization of southern European countries that competed with Chinese products with an expensive Euro and easy household borrowing because of integrated financial markets in Euro area were the main causes of the imbalances. Diaz-Sanchez and Varoudakis (2016) found that demand shocks, driven by the easier access to credit because of financial integration, was the main reason for deficits in the south of Eurozone while improved competitiveness was more important for the surpluses of the north, but not for the deficits of the south. Gehringer (2015) also found that the credit-fueled consumption and construction boom was the main reason for these imbalances, but he presented evidence that fiscal deficits also played a role, while the effect of REER appreciation was not robust.

Most of the literature cited above used panel techniques. The present study, which is concerned with import demand equations that allow for different elasticities in demand components of Greece, Ireland, Italy, Portugal and Spain, goes one step further and deliberates whether one should impose homogeneity in the estimated coefficients, as in the case of a panel, or separate country models should be preferred. In addition, unlike most papers in the literature that draw results mainly from the significance and the size of coefficients, in this study the importance of each determinant of imports is assessed. The results indicate that there are significant country differences that need to be addressed. Additionally, the determinants of imports are found to be different among the countries in the panel, suggesting that the root causes of the external imbalances are not likely to be the same in all cases. Finally, the results are more compatible with the view that increased private demand was the main reason for the imbalances from the import side of the current account.

2. Methodology and data

The data include GDP components, namely real private consumption (c), real government consumption (g), real investment (i), real exports (x), real imports (m) from Eurostat and relative import prices (rp), which are constructed by dividing prices for imports of goods and services from OECD by GDP deflator from Eurostat. The frequency is quarterly and the sample covers 1995Q1 to 2019Q4 for Portugal, Italy, Ireland, Greece and Spain.

Following Marquez (2002), a baseline model for imports is a simple relation between imports, income and relative prices of the form:

$$\ln(m_t) = a + b_Y \ln(y_t) + b_P \ln(rp_t) + u_t \tag{1}$$

and an extended model allowing for different elasticities of different domestic demand components could be written as:

$$\ln(m_t) = a + b_c \ln(c_t) + b_g \ln(g_t) + b_i \ln(i_t) + b_x \ln(x_t) + b_{rp} \ln(rp_t) + u_t. \tag{2}$$

Both these equations can also be considered as long-run (equilibrium) relationships in a cointegration framework. If data have unit roots and exhibit autocorrelation, the simplest estimable model becomes (see Giansoldati and Gregori (2017)):

$$\begin{aligned}\Delta\ln(m_t) =& a + \sum_{i=1}^{pm} b_{mi}\Delta\ln(m_{t-i}) + \sum_{i=0}^{p} b_{ci}\Delta\ln(c_{t-i}) + \sum_{i=0}^{p} b_{gi}\Delta\ln(g_{t-i}) \\ &+ \sum_{i=0}^{p} b_{ii}\Delta\ln(i_{t-i}) + \sum_{i=0}^{p} b_{xi}\Delta\ln(x_{t-i}) + \sum_{i=0}^{p} b_{rpi}\Delta\ln(rp_{t-i}) + u_t\end{aligned} \tag{3}$$

This specification, with with p=2 and pm=2 is used in this note. This appears to be a reasonable compromise, as no more lags of the regressors were found to be significant in the panel model while at the same time 2 lags of the regressors were enough to clean residuals in the country models.[1]

Several papers in the literature use a cointegration approach to estimate trade elasticities, with emphasis on equilibrium relationships and long-run elasticities, following the contributions of Bahmani-Oskooee (1998) and Caporale and Chui (1999); for more recent applications of this approach one could consult e.g. Narayan and Narayan (2010) for single country analysis or Gregori and Giansoldati (2020) who use panel cointegration techniques. However, this modeling approach was not adopted in this work since the length of the analysis necessary for proper application of

[1] All estimations and other calculations were executed in Gretl (see Cottrell and Lucchetti 2020)

cointegration either on a set of countries or a panel makes it unsuitable for short papers.

3. Results

3.1 Elasticities estimates

Table 1 exhibits the results from estimating equation 3. The first column is the panel version of the equation allowing for fixed effects, and results are in line with those of Giansoldati and Gregori (2017) (column 6 of their table 2), though several elasticities are different in magnitude and higher lags are found in this study to be significant in imports, investment and exports. Furthermore, significant elasticities have the expected signs and fiscal policy does not seem to directly affect imports, but the effect of private consumption seems stronger in this sample. Importantly, an F test for the equality of the country estimates rejects the null of equal coefficients in the country models ($F(72, 391) = 1.4378$ with p-value = 0.017). Further F tests on whether each particular country belongs to the panel in tables 5 and 6 in the Appendix suggest that at least Greece and Ireland should not be pooled with the other countries and require separate modeling.

Columns 2 - 6 present country-specific OLS estimates. At first, the results reveal different levels of negative autocorrelation present in the country models, especially those of Spain and Greece on one hand and Italy, Portugal and Ireland on the other, that are not directly observable in the panel case - the panel estimates for these parameters seem to be greatly affected by Spain and especially Greece.

A second observation lies in the elasticities of country models, which exhibit cross country variation and significant differences with the panel estimates. The effect of consumption on imports seems particularly strong in Italy and Portugal, less so in Greece and Spain, while it is weaker and more delayed in the case of Ireland; different consumption preferences across countries could be a candidate explanation for this phenomenon. Government consumption has a significant effect only in Spain (positive) and Greece (negative), confirming previous results attributing low import content on government consumption. The effect of investment on imports is positive in all cases but is particularly strong in Spain while small and insignificant in Italy; Greece and Ireland have elasticities close to the panel estimates while in Portugal investment has a strong contemporaneous effect; possible explanations probably rest on the industrial structure of each country - e.g. Italy produces more capital goods thus needs less imports of such goods. The elasticities of imports with respect to exports are quite homogeneous, suggesting demand for imported intermediate and final goods is similar in the countries of the sample and rather high; yet some differences are obvious in this case too, as Portugal has the smallest elasticities while Spain the largest - perhaps differences in export composition could explain this finding.

The most striking differences are observed in the elasticities of relative prices. Only in the case of Greece one observes a truly significant estimate for the expected negative effect of relative import prices on imports, and it is much stronger than the panel estimate. In all other countries, these effects are small and mostly insignificant - only the first lag was marginally significant in Spain and Ireland. These estimates weaken the common belief that current account imbalances in the southern countries of the Eurozone were the result of the loss of competitiveness, at least in the case of imports. This argument seems relevant only for Greece. Finally, the explanatory power of the model is much lower in the case of Greece.

Table 1: Panel estimates vs country models; dependent variable: total imports ($\Delta\ln(m)$)

	(1) Panel	(2) Greece	(3) Spain	(4) Italy	(5) Portugal	(6) Ireland
constant	-0.0008257	0.001744	-0.003751^{**}	0.001058	0.001035	-0.001700
	(0.001416)	(0.004486)	(0.001820)	(0.001635)	(0.002271)	(0.003733)
$\Delta\ln(m_{t-1})$	-0.4129^{***}	-0.4060^{***}	-0.4218^{***}	-0.3679^{***}	-0.2461^{**}	-0.4577^{***}
	(0.02819)	(0.1125)	(0.09894)	(0.1181)	(0.09709)	(0.1152)
$\Delta\ln(m_{t-2})$	-0.2966^{**}	-0.3539^{***}	-0.1610^{*}	-0.09533	-0.06472	-0.08765
	(0.07977)	(0.09598)	(0.09070)	(0.1448)	(0.07168)	(0.07717)
$\Delta\ln(rp_t)$	-0.2671^{**}	-0.4450^{***}	-0.07086	0.01757	-0.1151	-0.1704
	(0.06839)	(0.1617)	(0.06686)	(0.1006)	(0.09150)	(0.1029)
$\Delta\ln(rp_{t-1})$	-0.002056	-0.06069	-0.1334^{*}	0.04699	-0.05115	0.1598^{*}
	(0.06076)	(0.1290)	(0.07269)	(0.1170)	(0.08587)	(0.09589)
$\Delta\ln(rp_{t-2})$	0.01178	0.1462	-0.04963	-0.005081	-0.04628	0.005116
	(0.04860)	(0.1303)	(0.04914)	(0.08514)	(0.09483)	(0.1176)
$\Delta\ln(c_t)$	0.7182^{*}	0.8737^{***}	0.8339^{***}	1.400^{***}	0.9432^{***}	-0.2116
	(0.2929)	(0.2574)	(0.1640)	(0.3975)	(0.2788)	(0.2506)
$\Delta\ln(c_{t-1})$	0.4714^{***}	0.3145	0.1436	0.9483^{**}	0.7019^{***}	0.3611^{*}
	(0.09513)	(0.2681)	(0.1660)	(0.3804)	(0.2269)	(0.2026)
$\Delta\ln(c_{t-2})$	0.05595	0.09289	-0.2138	-0.1242	-0.3301	0.4114^{**}
	(0.03389)	(0.1866)	(0.1556)	(0.3848)	(0.2237)	(0.1969)
$\Delta\ln(g_t)$	-0.01426	-0.02034	0.2722^{***}	-0.1562	-0.02719	-0.006418
	(0.03285)	(0.1657)	(0.06793)	(0.1355)	(0.2409)	(0.1046)
$\Delta\ln(g_{t-1})$	-0.1015	-0.3447^{**}	-0.1036	0.04430	-0.09352	0.1102
	(0.1085)	(0.1586)	(0.07848)	(0.1888)	(0.1964)	(0.09758)
$\Delta\ln(g_{t-2})$	-0.1324	-0.3645^{**}	-0.1971^{***}	0.2605	-0.1845	0.03941
	(0.1027)	(0.1416)	(0.05932)	(0.2104)	(0.1523)	(0.1098)
$\Delta\ln(i_t)$	0.2457^{***}	0.2296^{***}	0.7134^{***}	0.1305	0.4166^{***}	0.2509^{***}
	(0.003485)	(0.08269)	(0.09292)	(0.08109)	(0.07965)	(0.02449)
$\Delta\ln(i_{t-1})$	0.1158^{***}	0.1638^{***}	0.1219	0.03144	0.03404	0.1235^{***}
	(0.008648)	(0.05330)	(0.09233)	(0.1183)	(0.05896)	(0.03678)
$\Delta\ln(i_{t-2})$	0.08160^{**}	0.09957	-0.04103	0.1008	-0.06814	0.03289
	(0.02066)	(0.06091)	(0.09948)	(0.1200)	(0.06113)	(0.02150)
$\Delta\ln(x_t)$	0.4990^{***}	0.4579^{***}	0.7397^{***}	0.5836^{***}	0.3013^{***}	0.5146^{***}
	(0.03322)	(0.1104)	(0.07194)	(0.1001)	(0.05820)	(0.1290)
$\Delta\ln(x_{t-1})$	0.2899^{***}	0.2426^{**}	0.2163^{**}	0.1870^{**}	0.1388^{*}	0.2864^{***}
	(0.01274)	(0.1179)	(0.1010)	(0.07598)	(0.07441)	(0.07360)
$\Delta\ln(x_{t-2})$	0.2223^{***}	0.1939^{**}	0.07681	0.02753	0.09278	0.1490^{**}
	(0.03080)	(0.07967)	(0.08916)	(0.1294)	(0.07085)	(0.06084)
n	481	97	97	93	97	97
$\bar{R}^2$	0.7277	0.5118	0.8307	0.7198	0.6819	0.8635
ℓ	1071	177.3	300.2	284.9	280.7	212.2

Standard errors in parentheses; n: sample length. Variables: m: real imports; rp: relative prices; c: real private consumption; g: real government consumption; i: real investment; x: real exports. Significance: * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. In all cases heteroskedasticity and autocorrelation consistent standard errors have been used. F(72,391) test for panel vs country models : 1.4378 with p-value = 0.0168

Table 2: Panel estimates vs country models with BIC selection; dependent variable: total imports ($\Delta\ln(m)$)

	(1) Panel	(2) Panel BIC	(3) Greece	(4) Spain	(5) Italy	(6) Portugal	(7) Ireland
constant	−0.0008257	−0.0009836	−0.0009796	−0.003527**	0.001267	0.001974	0.001831
	(0.001416)	(0.001014)	(0.004407)	(0.001752)	(0.001441)	(0.002524)	(0.003661)
$\Delta\ln(m_{t-1})$	−0.4129***	−0.3014***	−0.3738***	−0.3672***	−0.3820***	−0.1933**	−0.4143***
	(0.02819)	(0.05564)	(0.1001)	(0.09375)	(0.08929)	(0.09025)	(0.1060)
$\Delta\ln(m_{t-2})$	−0.2966**		−0.3598***				
	(0.07977)		(0.07187)				
$\Delta\ln(rp_t)$	−0.2671**	−0.2975**	−0.3931**	−0.07271	−0.007732	−0.1108	−0.1853*
	(0.06839)	(0.1044)	(0.1549)	(0.06613)	(0.08975)	(0.07775)	(0.09540)
$\Delta\ln(rp_{t-1})$	−0.002056			−0.1862**			
	(0.06076)			(0.07453)			
$\Delta\ln(rp_{t-2})$	0.01178						
	(0.04860)						
$\Delta\ln(c_t)$	0.7182*	0.7040**	0.9268***	0.7516***	1.382***	0.8827***	−0.02918
	(0.2929)	(0.2507)	(0.2138)	(0.1920)	(0.2956)	(0.2874)	(0.2148)
$\Delta\ln(c_{t-1})$	0.4714***	0.3262	0.2682	−0.01993	0.8023**	0.5643***	0.4460**
	(0.09513)	(0.1674)	(0.2138)	(0.1489)	(0.3655)	(0.1990)	(0.1891)
$\Delta\ln(c_{t-2})$	0.05595			−0.4535***		−0.6292***	
	(0.03389)			(0.1708)		(0.1714)	
$\Delta\ln(g_t)$	−0.01426			0.3309***			
	(0.03285)			(0.07070)			
$\Delta\ln(g_{t-1})$	−0.1015						
	(0.1085)						
$\Delta\ln(g_{t-2})$	−0.1324			−0.1717**			
	(0.1027)			(0.06830)			
$\Delta\ln(i_t)$	0.2457***	0.2427***	0.2124**	0.7279***	0.1143	0.4103***	0.2525***
	(0.003485)	(0.01007)	(0.08214)	(0.09167)	(0.07504)	(0.08635)	(0.02509)
$\Delta\ln(i_{t-1})$	0.1158***	0.07466***	0.1074**	0.08688	0.1110	0.02623	0.1047***
	(0.008648)	(0.01208)	(0.04306)	(0.1221)	(0.1037)	(0.06243)	(0.03361)
$\Delta\ln(i_{t-2})$	0.08160**						
	(0.02066)						
$\Delta\ln(x_t)$	0.4990***	0.4789***	0.5076***	0.7258***	0.5392***	0.3312***	0.5433***
	(0.03322)	(0.03737)	(0.1018)	(0.08104)	(0.06425)	(0.06268)	(0.1346)
$\Delta\ln(x_{t-1})$	0.2899***	0.2187***	0.2591**	0.1679*	0.1968***	0.1384*	0.2606***
	(0.01274)	(0.01582)	(0.1105)	(0.08880)	(0.07387)	(0.07896)	(0.07346)
$\Delta\ln(x_{t-2})$	0.2223***		0.2058***				
	(0.03080)		(0.06651)				
n	481	486	97	97	94	97	98
$\bar{R}^2$	0.7277	0.6910	0.5199	0.8279	0.7249	0.6955	0.8642
ℓ	1071	1053	174	296.5	283.4	278.2	209.7

BIC algorithm in country models selects country-specific variables on top of the original variable selection for panel. In the panel the first lag was always included in the regressors set. The first column replicates column 1 of table 1. See table 1 for explanations. F(43,431) test for panel vs country models: 3.2958 with p-value = 0.000.

Table 2 shows the results using a BIC minimization criterion to choose the best set of exogenous regressors, first in the panel and then in country models (in countries the optimal panel regressors are kept and the algorithm searches for other BIC-minimizing regressors).[2] The results are similar in spirit with those described above, though some differences are apparent, like that consumption has a weaker effect on imports in the case of Spain and Portugal. The rejection of equality of coefficients among countries is much more clear in this case - an F(43,431) test for panel vs country models is equal to 3.2958 and p-value is 0.0000. Table 7 in the Appendix where the BIC algorithm has picked regressors without restrictions highlights the aforementioned differences between the countries in the sample. Overall, the estimates in both tables (as well at those in table 7 in the Appendix) highlight the importance of different factors for the evolution of imports in each country.

3.2 The importance of various import determinants

The different elasticities estimates of the previous section suggest that import determinants may vary in importance in each country. In addition, the overall effect of imports determinants is also dependent on their variability, which may also differ in the countries of the sample. Table 3, which presents the standard deviations of the determinants of imports for each country, reveals that there are important differences in their variability, both among the variables and among the same variable in the different countries of the sample; for example, Greece exhibits the highest variability of all imports determinants other than investment, the latter being more volatile in Ireland; Irish investment is the most volatile of all variables in the sample, probably due to the big revision of Irish national accounts in 2016.

Overall, table 3 shows that in all countries investment and exports are more volatile, followed by relative prices and then government consumption, while private consumption is the least volatile variable in all cases. However, the ranking is different across countries: investment is the most volatile variable in Greece and Portugal, while exports are more volatile than other variables in Italy and Spain. In addition, the relative volatilities of the variables are different between the countries of the sample: investment is 50% more volatile than exports in Greece, while the opposite is true in Italy; the volatility of both variables is almost equal in Spain; in all cases the volatility of private consumption is less than half of than that of either exports or investment.

To show the importance of each demand component in the various countries, I multiplied the standard deviation of each regressor by the sum of coefficients for the current value and all lags that are present in the models for each country; the results are presented in table 4 for the models of tables 1 and 2. The results in the upper half of the table, in sub-tables A and B, refer to the panel models in the first two columns of table 2, the baseline unrestricted equation in A and the one obtained by applying BIC algorithm in B respectively, and thus have been calculated using equal coefficients for all countries. In this case, differences in the magnitude of the effects are generated by the varying standard deviations of the explanatory variables in each country. In the second half of the table, in sub-table C coefficients are taken by columns 2-6 of table 1, where unrestricted country models are presented; in sub-table D coefficients are taken from columns 3-7 of table 2 which present country models with optimized set of regressors; so in panels C and D differences reflect both different variability of regressors and different elasticities estimates.

[2] The first column replicates column 1 of table 1, the baseline equation for the panel, to facilitate comparison.

Table 3: Standard deviations of country-specific regressors

	rp	c	g	i	x
Greece	3.36	2.06	2.61	8.76	5.84
Spain	2.04	0.96	1.61	2.26	2.46
Italy	1.60	0.56	0.89	1.74	2.64
Portugal	1.75	0.92	0.82	3.10	2.42
Ireland	2.73	1.46	2.39	30.08	4.06

Author's calculations; sample 1995Q1 - 2019Q4

Table 4: Importance of regressors in each country

	A. Panel					B. Panel BIC				
	rp	c	g	i	x	rp	c	g	i	x
Greece	-0.86	2.57	-0.65	3.88	5.91	-1.00	2.13	0	2.78	4.07
Spain	-0.53	1.19	-0.40	1.00	2.49	-0.61	0.99	0	0.72	1.72
Italy	-0.41	0.70	-0.22	0.77	2.67	-0.48	0.58	0	0.55	1.84
Portugal	-0.45	1.14	-0.20	1.37	2.45	-0.52	0.94	0	0.98	1.69
Ireland	-0.70	1.82	-0.59	13.33	4.10	-0.81	1.50	0	9.55	2.83

	C. Unrestricted country models					D. Country models using BIC				
	rp	c	g	i	x	rp	c	g	i	x
Greece	-1.21	2.64	-1.90	4.32	5.22	-1.32	2.46	0	2.80	5.68
Spain	-0.52	0.73	-0.05	1.79	2.54	-0.53	0.27	0.26	1.84	2.20
Italy	0.10	1.25	0.13	0.46	2.10	-0.01	1.22	0	0.39	1.94
Portugal	-0.37	1.20	-0.25	1.19	1.29	-0.19	0.75	0	1.35	1.14
Ireland	-0.01	0.82	0.34	12.25	3.85	-0.50	0.61	0	10.75	3.26

The effects of the regressors on imports for each country have been calculated by multiplying the standarddeviation of each regressor for each country with the sum of current value and lags of the coefficientsfor the regressor in the model under consideration.
Sub-table A: coefficients from panel model (column 1 of tables 1 or 2);
Sub-table B: coefficients from panel model with BIC optimization (column 2 of table 2);
Sub-table C: coefficients from unrestricted country models (columns 2-6 of table 1);
Sub-table D: coefficients from country models with set of regressors chosen by BIC (columns 3-7 of table 2).

The results from the panel models in sub-tables A and B imply that exports are the most important determinant of imports in all countries except Ireland, where investment is more important due to the much higher variability of this particular variable. The second most important determinant of imports is investment in Greece and Portugal but consumption in Spain and exports in Ireland; in Italy consumption and investment are equally important. Consumption follows in importance in the remaining cases except Spain, where investment is third in importance. Relative prices and government consumption (the latter only in sub-table A) follow in this order in all cases.

Turning to the country models, some important differences are observed. In Greece there is an erroneous impact of government consumption in the full country model, which however does not survive the model reduction step; in addition, the effect of investment is reduced and has become slightly bigger than that of consumption in the optimized model. In Spain, the effect of exports is clearly followed by that of investment and is much bigger than that of consumption, unlike the results in panel estimates; additionally, the calculations from the model with BIC selection of variables suggest that fiscal policy was equally important to consumption for imports, but both were less important than relative prices. In Italy, consumption is clearly more important than investment for imports in both country models, and the effects of relative prices and government are minimal. In the case of Portugal one can conclude that the importance of exports and investment is roughly equal and not much bigger than that of consumption. Finally, in Ireland predominantly investment and secondarily exports determine imports, similarly to the results from panel models; consumption remains third, but with diminished effect relative to the panel models; in the case of BIC selection the effect of consumption is now similar to the one of relative prices.

Overall, the relative importance of demand components for imports vary across countries, but exports are the most important factor behind import growth in most cases. In Spain and Greece, the countries with the biggest external imbalances, investment was the second most important variable for imports; possibly the housing investment boom and especially bust in both countries was the main reason for the importance of investment for imports. In the case of Greece consumption is also found consistently an important determinant of imports, probably reflecting the small contribution of manufacturing in the total value added of this country and the importance of imports for satisfying consumer needs. In Portugal all private demand components appear to play a role, while in Italy exports and consumption are more important for imports. In Ireland, the high variability of investment shadows other effects; only exports retain some importance.

An important finding is that fiscal policy, in the form of direct spending on goods and services, does not appear to play a role on import growth; this suggests that a possible way fiscal policy could increase imports, by raising spending and particularly public sector salaries which in turn increase demand for foreign goods, is not likely to be an important factor behind current account imbalances in the countries of the sample. Perhaps another important policy variable, quite likely transfers, could be the fiscal variable that contributed to the increased demand that eventually raised imports; this is an important detail, because the only fiscal policy variable that is included in the model is not necessarily indicative of the overall fiscal policy stance. Therefore, the results in this paper do not confirm those of e.g. Belke and Dreger (2013), Gossé and Serranito (2014) or Litsios and Pilbeam (2017) who found that expansionary fiscal policy was an important factor behind current account deficits in Eurozone, but due to the difference in the information set they are not directly comparable.

The importance of consumption in explaining imports is evident in all cases for Greece, Portugal and Italy, suggesting that credit to households might be explaining the observed pattern in these countries. The credit channel is also compatible with the strong investment effect, as the biggest part of credit to households is typically directed towards financing mortgages, which facilitated the housing investment boom. In this respect, the results in this work are more compatible with the credit boom explanation for the deficits in Eurozone, as suggested initially by Blanchard and Giavazzi (2002) and then by Chen et al. (2013), Gehringer (2015) or Diaz-Sanchez and Varoudakis (2016).

These findings suggest that containing current account deficits is far from simple - the focus is on deficits, because surplus countries do not face any constraints. Obviously, the common advice to increase competitiveness is applicable in the export side of the current account. However, on the import side of the current account which is the focus in this paper, there is not a clear policy prescription. Improved competitiveness does not appear to be significant in any country other than Greece, and even in this case it is the least important determinant; these results cast doubt on the low competitiveness explanation advocated by e.g. Arghyrou and Chortareas (2008) or Belke and Dreger (2013), for the import side of the current account at least. This leaves demand management and / or import substitution as possible choices, though their applicability inside EU is questionable; in addition, such a policy should not depress demand for investment goods and consequently productive capital stock and the long-run growth prospects of an economy. What can actually reduce imports is the increase of saving by households. But how a country could achieve this without hurting long-run growth prospects or violating single product and capital market regulations is not that obvious.

4. Conclusions

The results in this paper indicate the existence of heterogeneous cross-country effects of common import demand determinants. The strongest influence in imports originates from export growth in the sample; private consumption is a strong determinant of imports; investment is not responsible for such big leakages in imports as usually thought, not in all cases at least. Competitiveness is not a major factor behind import growth, with the exception of Greece and perhaps Spain, but even in these cases its contribution on import growth is smaller than most other determinants. Fiscal policy, in the form of government consumption, is only relevant in Spain. The results also have implications for the factors behind the current account imbalances observed in the majority of these countries: these were not the same across countries and the role of competitiveness does not seem as important as previously thought. Possibly the original explanation in Blanchard and Giavazzi (2002), who stressed the effect of convergence in incomes and the ability to finance deficits in the Eurozone as major explanatory factors behind imbalances before the Crisis, was the most relevant.

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Appendix

Table 5: Panel estimates with break for one country; dependent variable: total imports (Δln(m))

	(1) Panel	(2) Greece	(3) Spain	(4) Italy	(5) Portugal	(6) Ireland
constant	-0.0008257	-0.001133	-0.0006346	-0.0008141	-0.0003730	-0.0004432
	(0.001416)	(0.001120)	(0.0007933)	(0.001378)	(0.001392)	(0.001307)
$\Delta\ln(m_{t-1})$	-0.4129^{***}	-0.3850^{***}	-0.4290^{***}	-0.4167^{***}	-0.4223^{***}	-0.3704^{***}
	(0.02819)	(0.04221)	(0.02007)	(0.03046)	(0.02543)	(0.03071)
$\Delta\ln(m_{t-2})$	-0.2966^{**}	-0.1055^{**}	-0.3010^{**}	-0.3058^{***}	-0.3107^{**}	-0.3434^{***}
	(0.07977)	(0.03274)	(0.08382)	(0.07761)	(0.07353)	(0.03218)
$\Delta\ln(rp_{t})$	-0.2671^{**}	-0.1387^{**}	-0.2744^{**}	-0.2890^{***}	-0.2871^{**}	-0.2797^{*}
	(0.06839)	(0.03223)	(0.07479)	(0.06869)	(0.06851)	(0.1019)
$\Delta\ln(rp_{t-1})$	-0.002056	0.04391	0.01476	-0.006547	-0.0003851	-0.04169^{**}
	(0.06076)	(0.06708)	(0.07283)	(0.06614)	(0.07054)	(0.01275)
$\Delta\ln(rp_{t-2})$	0.01178	-0.05767^{***}	0.02911	0.01655	0.01739	0.04045
	(0.04860)	(0.01183)	(0.05276)	(0.04963)	(0.05312)	(0.05659)
$\Delta\ln(c_{t})$	0.7182^{*}	0.4208	0.6751	0.6836^{**}	0.6715	1.010^{***}
	(0.2929)	(0.4405)	(0.3260)	(0.3071)	(0.3178)	(0.09556)
$\Delta\ln(c_{t-1})$	0.4714^{***}	0.6050^{***}	0.4709^{***}	0.4527^{***}	0.4431^{***}	0.3697^{***}
	(0.09513)	(0.1024)	(0.08865)	(0.08946)	(0.08850)	(0.06902)
$\Delta\ln(c_{t-2})$	0.05595	0.09032	0.05035	0.05542	0.08194^{***}	0.07870
	(0.03389)	(0.2179)	(0.03761)	(0.03497)	(0.005611)	(0.03941)
$\Delta\ln(g_{t})$	-0.01426	0.007541	-0.04366^{**}	-0.004861	-0.01534	-0.006148
	(0.03285)	(0.05292)	(0.01384)	(0.03371)	(0.03362)	(0.04628)
$\Delta\ln(g_{t-1})$	-0.1015	0.01121	-0.1106	-0.1020	-0.1084	-0.1992
	(0.1085)	(0.06502)	(0.1400)	(0.1199)	(0.1120)	(0.09550)
$\Delta\ln(g_{t-2})$	-0.1324	-0.02069	-0.1264	-0.1468	-0.1402	-0.1999^{*}
	(0.1027)	(0.06489)	(0.1326)	(0.1107)	(0.1125)	(0.08150)
$\Delta\ln(i_{t})$	0.2457^{***}	0.2541^{***}	0.2446^{***}	0.2458^{***}	0.2438^{***}	0.2564^{***}
	(0.003485)	(0.003102)	(0.003247)	(0.003789)	(0.002339)	(0.02570)
$\Delta\ln(i_{t-1})$	0.1158^{***}	0.1040^{***}	0.1200^{***}	0.1177^{***}	0.1175^{***}	0.1372^{***}
	(0.008648)	(0.01189)	(0.007712)	(0.008387)	(0.007443)	(0.02101)
$\Delta\ln(i_{t-2})$	0.08160^{**}	0.03126^{**}	0.08387^{**}	0.08459^{***}	0.08557^{**}	0.07206^{**}
	(0.02066)	(0.007033)	(0.02210)	(0.02017)	(0.01893)	(0.01897)
$\Delta\ln(x_{t})$	0.4990^{***}	0.5545^{***}	0.4767^{***}	0.4935^{***}	0.5096^{***}	0.4956^{***}
	(0.03322)	(0.04510)	(0.01916)	(0.03687)	(0.03745)	(0.03946)
$\Delta\ln(x_{t-1})$	0.2899^{***}	0.2426^{***}	0.2881^{***}	0.2857^{***}	0.2997^{***}	0.2764^{***}
	(0.01274)	(0.03937)	(0.01361)	(0.01677)	(0.01345)	(0.01533)
$\Delta\ln(x_{t-2})$	0.2223^{***}	0.1036^{***}	0.2265^{***}	0.2247^{***}	0.2342^{***}	0.2226^{***}
	(0.03080)	(0.01843)	(0.02678)	(0.02332)	(0.02051)	(0.01291)

	(1) Panel	(2) Greece	(3) Spain	(4) Italy	(5) Portugal	(6) Ireland
$\Delta\ln(m_{i,t-1})$		-0.02092	0.007264	0.04872	0.1762***	-0.08730**
		(0.04221)	(0.02007)	(0.03046)	(0.02543)	(0.03071)
$\Delta\ln(m_{i,t-2})$		-0.2484***	0.1400	0.2104***	0.2459**	0.2558***
		(0.03274)	(0.08382)	(0.07761)	(0.07353)	(0.03218)
$\Delta\ln(rpr_{i,t})$		-0.3063***	0.2035*	0.3066***	0.1720*	0.1093
		(0.03223)	(0.07479)	(0.06869)	(0.06851)	(0.1019)
$\Delta\ln(rp_{i,t-1})$		-0.1046	-0.1481	0.05354	-0.05077	0.2015***
		(0.06708)	(0.07283)	(0.06614)	(0.07054)	(0.01275)
$\Delta\ln(rp_{i,t-2})$		0.2039***	-0.07873	-0.02163	-0.06367	-0.03534
		(0.01183)	(0.05276)	(0.04963)	(0.05312)	(0.05659)
$\Delta\ln(c_{i,t})$		0.4530	0.1589	0.7161**	0.2717	-1.222***
		(0.4405)	(0.3260)	(0.3071)	(0.3178)	(0.09556)
$\Delta\ln(c_{i,t-1})$		-0.2906**	-0.3273**	0.4956***	0.2588**	-0.008598
		(0.1024)	(0.08865)	(0.08946)	(0.08850)	(0.06902)
$\Delta\ln(c_{i,t-2})$		0.002575	-0.2641***	-0.1797***	-0.4120***	0.3327***
		(0.2179)	(0.03761)	(0.03497)	(0.005611)	(0.03941)
$\Delta\ln(g_{i,t})$		-0.02788	0.3159***	-0.1513***	-0.01185	-0.0002699
		(0.05292)	(0.01384)	(0.03371)	(0.03362)	(0.04628)
$\Delta\ln(g_{i,t-1})$		-0.3559***	0.006955	0.1463	0.01488	0.3094**
		(0.06502)	(0.1400)	(0.1199)	(0.1120)	(0.09550)
$\Delta\ln(g_{i,t-2})$		-0.3438***	-0.07061	0.4073***	-0.04426	0.2393**
		(0.06489)	(0.1326)	(0.1107)	(0.1125)	(0.08150)
$\Delta\ln(i_{i,t})$		-0.02451***	0.4688***	-0.1153***	0.1729***	-0.005491
		(0.003102)	(0.003247)	(0.003789)	(0.002339)	(0.02570)
$\Delta\ln(i_{i,t-1})$		0.05979***	0.001919	-0.08622***	-0.08346***	-0.01366
		(0.01189)	(0.007712)	(0.008387)	(0.007443)	(0.02101)
$\Delta\ln(i_{i,t-2})$		0.06831***	-0.1249***	0.01623	-0.1537***	-0.03917
		(0.007033)	(0.02210)	(0.02017)	(0.01893)	(0.01897)
$\Delta\ln(x_{i,t})$		-0.09660*	0.2629***	0.09016**	-0.2082***	0.01909
		(0.04510)	(0.01916)	(0.03687)	(0.03745)	(0.03946)
$\Delta\ln(x_{i,t-1})$		$-1.676e-05$	-0.07180***	-0.09865***	-0.1609***	0.009963
		(0.03937)	(0.01361)	(0.01677)	(0.01345)	(0.01533)
$\Delta\ln(x_{i,t-2})$		0.09031***	-0.1497***	-0.1971***	-0.1414***	-0.07364***
		(0.01843)	(0.02678)	(0.02332)	(0.02051)	(0.01291)
n	481	481	481	481	481	481
$\bar{R}^2$	0.7277	0.7551	0.7394	0.7329	0.7344	0.7585
ℓ	1071	1096	1081	1076	1077	1100
F(17, 446)		2.9308	1.1752	0.5103	0.6550	3.3475
P-value		0.0001	0.2809	0.9482	0.8470	0.0000

See table 1 for explanations.

Table 6: Panel estimates with BIC selection and break for one country; dependent variable: total imports (Δln(m))

	(1) Panel	(2) Panel BIC	(3) Greece	(4) Spain	(5) Italy	(6) Portugal	(7) Ireland
constant	-0.0008257	-0.0009836	-0.001425	-0.0009836	-0.0009836	-0.0009836	-0.0002476
	(0.001416)	(0.001014)	(0.001114)	(0.001014)	(0.001014)	(0.001014)	(0.0006122)
$\Delta\ln(m_{t-1})$	-0.4129^{***}	-0.3014^{***}	-0.3884^{***}	-0.3014^{***}	-0.3014^{***}	-0.3014^{***}	-0.2841^{***}
	(0.02819)	(0.05564)	(0.02836)	(0.05564)	(0.05564)	(0.05564)	(0.04465)
$\Delta\ln(m_{t-2})$	-0.2966^{**}						
	(0.07977)						
$\Delta\ln(rp_t)$	-0.2671^{**}	-0.2975^{**}	-0.2359^{***}	-0.2975^{**}	-0.2975^{**}	-0.2975^{**}	-0.2913^{***}
	(0.06839)	(0.1044)	(0.06755)	(0.1044)	(0.1044)	(0.1044)	(0.1077)
$\Delta\ln(rp_{t-1})$	-0.002056						
	(0.06076)						
$\Delta\ln(rp_{t-2})$	0.01178						
	(0.04860)						
$\Delta\ln(c_t)$	0.7182^{*}	0.7040^{**}	0.7209^{***}	0.7040^{**}	0.7040^{**}	0.7040^{**}	0.9684^{***}
	(0.2929)	(0.2507)	(0.2511)	(0.2507)	(0.2507)	(0.2507)	(0.05064)
$\Delta\ln(c_{t-1})$	0.4714^{***}	0.3262	0.4034^{***}	0.3262	0.3262	0.3262	0.2972^{**}
	(0.09513)	(0.1674)	(0.1090)	(0.1674)	(0.1674)	(0.1674)	(0.1410)
$\Delta\ln(c_{t-2})$	0.05595						
	(0.03389)						
$\Delta\ln(g_t)$	-0.01426						
	(0.03285)						
$\Delta\ln(g_{t-1})$	-0.1015						
	(0.1085)						
$\Delta\ln(g_{t-2})$	-0.1324						
	(0.1027)						
$\Delta\ln(i_t)$	0.2457^{***}	0.2427^{***}	0.2502^{***}	0.2427^{***}	0.2427^{***}	0.2427^{***}	0.2412^{***}
	(0.003485)	(0.01007)	(0.005194)	(0.01007)	(0.01007)	(0.01007)	(0.008787)
$\Delta\ln(i_{t-1})$	0.1158^{***}	0.07466^{***}	0.09649^{***}	0.07466^{***}	0.07466^{***}	0.07466^{***}	0.07149^{***}
	(0.008648)	(0.01208)	(0.006479)	(0.01208)	(0.01208)	(0.01208)	(0.008411)
$\Delta\ln(i_{t-2})$	0.08160^{**}						
	(0.02066)						
$\Delta\ln(x_t)$	0.4990^{***}	0.4789^{***}	0.5219^{***}	0.4789^{***}	0.4789^{***}	0.4789^{***}	0.4820^{***}
	(0.03322)	(0.03737)	(0.02674)	(0.03737)	(0.03737)	(0.03737)	(0.03403)
$\Delta\ln(x_{t-1})$	0.2899^{***}	0.2187^{***}	0.2623^{***}	0.2187^{***}	0.2187^{***}	0.2187^{***}	0.2215^{***}
	(0.01274)	(0.01582)	(0.01462)	(0.01582)	(0.01582)	(0.01582)	(0.01521)
$\Delta\ln(x_{t-2})$	0.2223^{***}						
	(0.03080)						

	(1) Panel	(2) Panel BIC	(3) Greece	(4) Spain	(5) Italy	(6) Portugal	(7) Ireland
$\Delta \ln(m_{i,t-2})$			-0.3972^{***}				
			(0.01431)				
$\Delta \ln(c_{i,t})$							-1.077^{***}
							(0.04911)
$\Delta \ln(x_{i,t-2})$			0.2341^{***}				
			(0.01299)				
n	481	486	485	486	486	486	486
$\bar{R}^2$	0.7277	0.6910	0.7324	0.6910	0.6910	0.6910	0.7055
ℓ	1071	1053	1085	1053	1053	1053	1065
F - test			36.774	nan	nan	nan	23.504
P-value			0.000	nan	nan	nan	0.000

See table 1 for explanations. nan signifies that the BIC algorithm did not choose any country-specific variable.

Table 7: Panel estimates vs country models with BIC selection; dependent variable: total imports ($\Delta\ln(m)$)

	(1) Panel	(2) Panel BIC	(3) Greece	(4) Spain	(5) Italy	(6) Portugal	(7) Ireland
constant	−0.0008257	−0.0009836	0.002580	−0.001267	0.0006002	0.002537	0.001674
	(0.001416)	(0.001014)	(0.004406)	(0.001292)	(0.001369)	(0.002154)	(0.003839)
$\Delta\ln(m_{t-1})$	-0.4129^{***}	-0.3014^{***}	-0.1764^{*}	-0.2952^{***}	-0.3807^{***}	−0.05868	-0.4346^{***}
	(0.02819)	(0.05564)	(0.09851)	(0.05394)	(0.08830)	(0.06555)	(0.1027)
$\Delta\ln(m_{t-2})$	-0.2966^{**}		-0.2679^{***}				
	(0.07977)		(0.08553)				
$\Delta\ln(rp_t)$	-0.2671^{**}	-0.2975^{**}	-0.5052^{***}				
	(0.06839)	(0.1044)	(0.1386)				
$\Delta\ln(rp_{t-1})$	−0.002056			-0.2396^{***}			
	(0.06076)			(0.08101)			
$\Delta\ln(rp_{t-2})$	0.01178						
	(0.04860)						
$\Delta\ln(c_t)$	0.7182^{*}	0.7040^{**}	0.9887^{***}	0.8022^{***}	1.536^{***}	0.8782^{***}	
	(0.2929)	(0.2507)	(0.2290)	(0.1581)	(0.2722)	(0.3239)	
$\Delta\ln(c_{t-1})$	0.4714^{***}	0.3262			0.9858^{***}		0.4628^{**}
	(0.09513)	(0.1674)			(0.3133)		(0.1889)
$\Delta\ln(c_{t-2})$	0.05595						
	(0.03389)						
$\Delta\ln(g_t)$	−0.01426						
	(0.03285)						
$\Delta\ln(g_{t-1})$	−0.1015			-0.2053^{**}			
	(0.1085)			(0.09404)			
$\Delta\ln(g_{t-2})$	−0.1324						
	(0.1027)						
$\Delta\ln(i_t)$	0.2457^{***}	0.2427^{***}	0.2016^{**}	0.6879^{***}		0.3749^{***}	0.2548^{***}
	(0.003485)	(0.01007)	(0.07854)	(0.09708)		(0.09017)	(0.02477)
$\Delta\ln(i_{t-1})$	0.1158^{***}	0.07466^{***}					0.1104^{***}
	(0.008648)	(0.01208)					(0.03265)
$\Delta\ln(i_{t-2})$	0.08160^{**}						
	(0.02066)						
$\Delta\ln(x_t)$	0.4990^{***}	0.4789^{***}	0.5063^{***}	0.7183^{***}	0.5731^{***}	0.3355^{***}	0.5639^{***}
	(0.03322)	(0.03737)	(0.08584)	(0.07779)	(0.05358)	(0.07243)	(0.1352)
$\Delta\ln(x_{t-1})$	0.2899^{***}	0.2187^{***}			0.2129^{***}		0.2669^{***}
	(0.01274)	(0.01582)			(0.07429)		(0.07000)
$\Delta\ln(x_{t-2})$	0.2223^{***}						
	(0.03080)						
n	481	486	97	98	94	98	98
$\bar{R}^2$	0.7277	0.6910	0.4635	0.8008	0.7262	0.6423	0.8632
ℓ	1071	1053	166.4	289.1	282	270.6	208.2

See table 1 for explanations. The first lag was alway included in the regressors set.