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THE ROLE OF CAPITAL FLOWS IN EXTERNAL CONSTRAINED GROWTH: THE EXPERIENCES OF SPAIN AND PORTUGAL IN THE EUROZONE

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Abstract

Broadly speaking, the balance-of-payments constraint hypothesis has been empirically supported. Yet, it shows some shortcomings highlighted in the literature. In our opinion, two of them must be analysed. First, temporary disequilibria and capital flows must be incorporated into the balance-of-payments constrained growth models. Second, the role of relative prices must be made explicit, since it can be relevant even in an external constraint framework. This study is aimed at developing a model that incorporates both possibilities: temporary external disequilibria and the impact of relative prices. This model is subsequently used to analyse the evolution of the Spanish and Portuguese economies in last decades, and, in particular, the different paths shown by both countries since their accession to the Eurozone.

JEL: E12, F41, F43

Key words: Growth, external constraint, Exchange rate

1. Introduction

The Spanish and Portuguese economies experienced a similar performance in the decades leading up to entry into the Eurozone. Yet, since joining the euro and up to the current crisis, each economy has responded differently: while Portugal has suffered a deep stagnation, Spain has experienced a significant boost. Why have these countries shown such contrary performance since joining the EMU?

This paper is aimed at answering this question, and at this aim we have developed an augmented balance-of-payments (BoP) constrained growth model that departs from Thirlwall´s pioneering model (Thirlwall, 1979) by giving a more important role to BoP disequilibria and relative prices. Our model turns out to be very fruitful in explaining the different experiences of Spain and Portugal in the Eurozone for several reasons. First, our findings show that both economies are indeed BoP constrained. Second, according to Thirlwall´s theory, and most of the models inspired by it, it is irrelevant to long-run growth whether an economy uses an independent or a common currency. But our estimates indicate that this is not the case, at least not for the Iberian countries. Finally, Spain and Portugal have followed an opposite path after joining the EMU, at least until very recent years, for reasons closely related to what our model predicts: the European common

currency has amplified the economic cycles for both countries. For Portugal, this has meant a longer time in the bottom side of the cycle; for Spain it has meant a longer time on the top of it. The experiences of both countries can be extrapolated to other BoP constrained economies joining a monetary union. Some important lessons can be learnt from the experience of the Iberian countries in the Eurozone.

2. Portugal and Spain in the Euro Area: An Opposite Experience

Prior to their entry into the euro area, Spain and Portugal showed a similar economic performance. Trade barriers were reduced, fiscal and monetary conditions improved and income per capita had been approaching the European average. As a consequence of the modernisation of their economies, both countries met the so-called Maastricht criteria and gained access to the EMU in 1999. However, since joining, each economy has responded differently: while Portugal has suffered a deep stagnation, Spain has experienced a significant boost. Between 1995 and 1999 GDP grew 4.1% per year in Portugal and 3.3% in Spain, while between 1999 and 2007 the annual GDP growth rate declined to 1.4% in Portugal but increased to 3.6% in Spain. The gap between both countries was even larger between 2002 to 2007: 3.4% in Spain and 0.9% in Portugal.

Why have these countries shown such contrary performance since joining the EMU? Why has Spain experienced an economic boom unknown since the 1960s, while Portugal has suffered such a long-lasting stagnation? Our hypothesis is twofold. On the one hand, both economies are BoP constrained. On the other, the EMU has amplified their respective economic cycles. Spain has exhibited growth over a longer period of time because capital inflows have financed BoP deficits during a longer timeframe than usual, since no currency devaluation was expected. Portugal, on the contrary, has experienced a longer-than-usual stagnation because the return to BoP equilibrium has taken a longer time than usual, since no devaluation — which could improve the BoP outcome — has occurred. Both countries joined the euro in different phases of their respective BoP cycles: Spain was close to equilibrium, while Portugal had a large deficit. Between 1995 and 1998 – just prior to joining the EMU – Spain exhibited a small BoP (goods and services) surplus (0.3% of GDP), while Portugal experienced a large deficit (7.6%). Yet, from 1999 onwards, the Spanish surplus turned into a high deficit, while the Portuguese deficit decreased. By 2007 the BoP outcome for both countries was similar. In addition, as we shall see below, while the conversion rate of the Spanish currency against the euro was close to its PPP value, the Portuguese currency was converted at a notably appreciated rate.

3. An Augmented Balance-of-Payments Constrained Growth Model

As stated above, our hypothesis regarding the different performance of the Portuguese and Spanish economies in the Eurozone is twofold. On the one hand, both economies are BoP constrained. On the other, the EMU has amplified their respective economic cycles. To test this double hypothesis we have developed an augmented BoP constrained growth model based on Thirlwall´s approach (1979). This approach is built upon the following set of equations:

$$XP = MP^* \text{, where } X = A\left(\frac{P}{P^*}\right)^{\gamma} Y^{*\varepsilon} \text{ and } M = B\left(\frac{P}{P^*}\right)^{\eta} Y^{\pi} \quad (1)$$

where X and M denote export and import volume, respectively; P and P* stand for domestic and foreign price level, respectively, both expressed in a common currency; Y* and Y represent world and domestic income, respectively; A and B are constants, η and γ are price elasticities of imports

and exports, respectively; and π and ε are import and export income elasticities, respectively. Taking logs and time derivatives and plugging the dynamic version of X and M into (1) we obtain the rate of growth of income consistent with trade balance equilibrium[1]

$$\dot{y} = \frac{(1 + \gamma - \eta)(\dot{p} - \dot{p}^*) + \varepsilon \dot{y}^*}{\pi}. \quad (2)$$

If relative prices do not matter, that is, if $(1 + \gamma - \eta)(\dot{p} - \dot{p}^*)$ equals zero, then

$$\dot{y} = \frac{\varepsilon \dot{y}^*}{\pi}. \quad (3)$$

This expression is known as Thirlwall's law. It states that long-run growth depends only on external income growth multiplied by the ratio of income export-to-import elasticities. Although this *law* has been empirically supported in many works, it is important to note the basic assumptions of Thirlwall's model and the criticism of each, since these critiques have been useful in developing further extensions of the model. Thus, the first crucial assumption is contained in equation (1). It states that the BoP must be in equilibrium. This is a plausible hypothesis in the long run but not in the short run. Therefore, capital flows and BoP disequilibria should be incorporated into the model, being the BoP constraint theory still valid as long as capital inflows are not endogenous to potential growth. The second crucial assumption of Thirlwall model relates to relative prices. According to Thirlwall, relative prices do not play a role in long-run growth for two reasons, which are, to some extent, incompatible. The first is the stability of relative prices in the long run, so that PPP theory holds. The second is that price elasticities are very small in absolute terms, so the expression (1+γ+η) is close to zero. Yet, as Alonso and Garcimartín (1998) noted, this is a strong assumption and, furthermore, it is not necessary. What is relevant to the theory is not if relative prices have an impact on growth but whether or not they are endogenous to BoP disequilibria. The crucial test is whether or not income adjusts to BoP disequilibria.

In our opinion, both critiques must be incorporated into any extension of Thirlwall´s BoP constrained growth theory approach. This means that 1) capital flows can play a role in relaxing (temporarily) the BoP constraint; 2) relative prices must not be forced to be irrelevant; and 3) in order not to reject the BoP constraint hypothesis, it must be shown that income adjusts to external disequilibria. Our model is based on these three premises and it is presented in the following five equations, which represent the adjustment path of the relevant variable to its partial equilibrium level, with α_i measuring the partial adjustment speed.

1) Income

$$\dot{y} = \alpha_1(x + z_1 + xp - m - mp - er) + \gamma_1 Z_2, \quad (4)$$

where Y, X and M represent income, exports and imports, respectively, XP and MP refer to export and import prices, ER is the exchange rate, Z_1 is net unrequited transfers[2] and Z_2 stands for net

[1] Lower-case letters denote logs, and a dot on top of the variables indicates growth rates.

capital inflows. This equation tests the BoP constraint hypothesis, which cannot be rejected as long as α_1 is positive: in the presence of a deficit, the parenthesis of (6) will be negative, and income will tend to decrease. Yet, Z_2 can relax the BoP constraint by affecting the speed of adjustment but not long-run growth.

2) Exports

$$\dot{x} = \alpha_2(x^e - x); \quad x^e = a + \beta_1(xp - p^* - er) + \beta_2 y^* + \beta_3(y - y^*) \ . \tag{5}$$

The equilibrium level of exports is determined by the relative prices of exports (XP/ERP*) and by foreign income (Y*), plus an additional term that incorporates the *export effort* of domestic firms, which depends on relative economic conditions (Y/Y*). If the national economy is behaving worse than the rest of the world $(\dot{y} < \dot{y}^*)$, then domestic firms are supposed to make a bigger effort in foreign markets, thus increasing exports (β_3<0). If the domestic economy is growing faster than foreign markets, the opposite will be true.

3) Imports

$$\dot{m} = \alpha_3(m^e - m); \quad m^e = b + \beta_4(mp + er - p) + \beta_5 y \ . \tag{6}$$

The equilibrium level of imports is defined by the relative prices of imports (MPER/P) and by domestic income.

4) Capital flows

$$\dot{Z}_2 = \alpha_4(K - Z_2). \tag{7}$$

The equilibrium level of capital flows is a constant, than can differ across countries and can be zero. What is relevant for an economy to be BoP constrained is that capital flows do not adjust to BoP disequilibria (at least, not in the long run): BoP deficits cannot be permanently financed by capital inflows.

5) Exchange rate

$$\dot{er} = \alpha_5(er^e - er) + \gamma_2 Z_2; \ er^e = PPP + \delta \tag{8}$$

The exchange rate equilibrium level is the PPP exchange rate plus a constant, since there may be permanent deviations from PPP due to the presence of non-tradable goods or barriers to trade. In addition, capital flows can influence the speed of adjustment of the exchange rate, but not its equilibrium level. Thus, if the exchange rate is above its equilibrium, it will tend to converge toward it, but this path can be mitigated, amplified or even reversed by capital flows.

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[2] As in Garcimartín et al. (2008), we use an index of net unrequited transfers because it facilitates the analytical treatment of the model.

The steady-state rate of growth of income in this model is

$$\dot{y} = \frac{(\dot{x}p - \dot{m}p) + \beta_1(\dot{x}p - \dot{p} - p\dot{p}p) + \beta_4(\dot{p} - \dot{m}p - p\dot{p}p) + \dot{z}_1 + (\beta_2 - \beta_3)\dot{y}^*}{(\beta_5 - \beta_3)}, \qquad (9)$$

This expression can be interpreted as follows. In the long run income is BoP constrained, since capital flows do not permanently finance external deficits. Yet, capital flows can slow down or accelerate BoP adjustment. On the other hand, prices do not play any role if the exchange rate adjusts to its PPP value. Otherwise, they can impact growth (if the Marshall-Lerner condition holds).

Before presenting the results of the estimates of our model for Portugal and Spain, some remarks must be made. First, a dummy, accounting for the effect of the accession to the European Union, has been included in export and import equations (μ_1 and μ_2, respectively). Second, another dummy (γ_3) for the EMU has been incorporated into the capital flows equation, since investors no longer face exchange rate risk, and therefore flows are expected to be more stable. Third, another dummy (μ_3) for the European Monetary System has been introduced in the exchange rate equation. Fourth, equations 1-4 are jointly estimated, while equation 5 must be estimated separately, since from 1999 onwards national currencies have been replaced by the euro, and national exchange rates no longer exist. Fifth, the estimation period is from 1975 to 2007, with the exception of the exchange rate equation, which covers the period between 1975 and1998[3].

Adjustment parameters are significant at a 95% probability, except α_4 in Spain, whose level of significance is 90%[4], and show the expected sign (Table 1). In particular, the positive sign of α_1 indicates that both economies are BoP constrained, and therefore one of the essential hypotheses of this study cannot be rejected. In addition, γ_1 is positive and significant in both countries, which means that capital flows influence the speed of adjustment for income; that is, its short-run rate of variation, but not its long-run growth rate. This is due to the fact that the long-run value of capital flows is a constant, which is positive for Portugal and not significantly different from zero for Spain. In addition, γ_3 is positive and significant in both countries, which implies that the speed of adjustment of capital flows to equilibrium has been reduced since the introduction of the euro.

Regarding trade functions, price and income elasticities are significant and show the expected sign in both countries. Of importance, the term $(1+\gamma+\eta)$ lies below zero in both cases: -0.72 in Portugal and -1.76 in Spain. Therefore, relative prices matter. With respect to the *export effort* term, it is significant (90%) and shows the expected sign only in Portugal. With regard to the absolute values of trade elasticities, although previous studies show significant differences amongst them, broadly speaking, our estimates are slightly higher than the average. Leaving aside differences in sample periods and econometric techniques, this can be attributed to the fact that we employ weighted

[3] The model was estimated using the FIML program "RESIMUL," developed by Clifford Wymer. See Appendix for the definition and sources of variables. The Carter-Nagar system R^2_W statistic is 0.57 for Portugal and 0.27 for Spain and, since the value of the $\chi 2$ at a 99% significance level is 32, the hypothesis that the model is not consistent with the data must be rejected in both cases

[4] The equilibrium growth rates estimated by our model for the whole period are 95.1% for Portugal and 95.7% for Spain. Actual rates are 92.7% and 89.8%. Therefore, our model overestimates Portuguese and Spanish 32-year growth rate by 2.4% and 5.9%, respectively.

averages to measure foreign income and prices, in the case of exports[5]. Finally, concerning the exchange-rate equation, the positive and significant value of α_5 indicates that the exchange rate adjusts to its equilibrium level. This level is its PPP value plus a constant, which stands for a permanent deviation from the PPP value. In addition, γ_2 is negative and significant for both countries, and therefore the exchange rate speed of adjustment depends on capital flows. If the currency is overvalued, it will depreciate, but capital inflows can slow down or even reverse this trend. On the contrary, capital outflows accelerate it.

Table 1. Estimates

			Portugal	Spain
Parameter	Meaning	Expected sign	Value (t-ratio)	Value (t-ratio)
α_1	Income speed of adjustment	+	0.33 (3.80)	0.09 (3.72)
α_2	Exports speed of adjustment	+	1.65 (2.74)	0.96 (2.39)
α_3	Imports speed of adjustment	+	4.03 (4.02)	1.04 (3.99)
α_4	Capital flows speed of adjustment	+	4.26 (2.61)	0.35 (1.72)
α_5	Exchange rate speed of adjustment	+	1.13 (3.01)	0.42 (2.11)
γ_1	Impact of cap. flows on income adjust. path	+	0.02 (4.38)	0.002 (6.77)
γ_2	Impact of cap. flows on ex. rate adjust. path	-	-0.03 (2.24)	-0.02 (3.40)
γ_3	EMU dummy in capital flows equation	+	15.52 (9.08)	15.24 (2.43)
β_1	Price elasticity of exports	-	-0.63 (1.88)	-2.11 (10.20)
β_2	Income elasticity of exports	+	2.71 (14.33)	2.56 (20.92)
β_3	*Export effort* term	-	-0.59 (1.83)	n.s.
β_4	Price elasticity of imports	-	-1.09 (6.43)	-0.65 (5.82)
β_5	Income elasticity of imports	+	1.86(22.95)	2.61 (21.79)
μ_1	EU dummy in export equation	+	0.21 (5.73)	n.s.
μ_2	EU dummy in import equation	+	-0.02 (1.71)	n.s.
μ_3	EMS dummy in exchange rate equation	-	-0.31 (4.06)	-0.05 (1.79)
k	Constant in capital flows equation		0.80 (2.51)	n.s.
δ	PPP exchange rate deviation		0.68 (20.62)	0.45 (6.76)

As we have assessed above, after Spain and Portugal adopted the euro in 1999, economic performance differed for each country. Portugal was beginning to descend from the recently-reached peak of its cycle and its BoP showed a huge deficit (10% of GDP). From 1999 to 2003 capital flows sharply decreased, which should have accelerated the depreciation of the escudo, fuelled exports, decreased imports, improved the BoP and fostered income growth. However, this could not happen because the escudo no longer existed, and consequently, the adjustment was

[5] See Senhadji and Montenegro (1999), Antunes and Souziakis (2009). Faini et al. (1988), Bennett et al. (2008) or Bagnai (2008) for Portugal; Mauleón and Sastre (1994), Alonso and Garcimartín (1998), Buisan et al. (2003), Banco de España (2008) or Bennett et al. (2008) for Spain.

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forced to take place via income. On the contrary, Spain had a much better BoP situation and, as shown below, the value of its currency was much closer to its PPP value. Following the adoption of the euro, the country continued to grow and the BoP started to deteriorate. By 2004 Spain had a deficit of 4% of GDP and had experienced a growth rate above 3% in seven of the previous eight years. Under normal conditions the economy would have adjusted via a reduction in income growth, experiencing currency depreciations and capital outflows. Yet, the euro changed this pattern. Capitals continued to flow into the country since exchange-rate risk had vanished. This made it possible to finance the BoP deficit for a longer period of time, and the economy continued growing above its external constrained level. In sum, the euro changed the speed of adjustment, as it has also been pointed out by Decressin and Stavrev (2009). In the case of Portugal, depreciation was no longer possible and the country remained below its equilibrium level for a longer period, while in the case of Spain, the euro facilitated the entry of capital flows and the country remained above its equilibrium level for a sustained period of time.

It is important to note that the path of the escudo prior to the introduction of the euro was different to that of the peseta. Thus, between 1991, the year before the last crisis of the European Monetary System, and 1999, the escudo depreciated by 16.3%, while its PPP value dropped by 27.4%, which implies an 11.1% appreciation of the Portuguese currency against its PPP value. The peseta, on the contrary, depreciated by 15.4% against its PPP value in the same time period. In fact, when the Iberian countries joined the euro, the escudo/deutsche mark exchange rate was set at 102.5 and the peseta/deutsche mark at 85.07. Yet, according to the estimates of our model, the equilibrium exchange rates should have been 129.9 and 90.58, respectively. Therefore, Spain joined the euro with a slight (6%) appreciation of its currency following a period of depreciation, while the escudo was highly overvalued[6]. To see the impact of this overvaluation of the escudo, we can compare accumulated equilibrium growth rates between 1999 and 2007 inside and outside the euro area; that is, with a fixed exchange rate and with an equilibrium exchange rate. The former would have yielded 23.4% and the latter 36.4. While these results can be biased because of the time it takes to reach equilibrium values, they serve to highlight an important point: relative prices matter even in the context of BoP constrained growth. Spain's story is different. It joined the euro when the BoP and the exchange rate were close to equilibrium levels. Under normal conditions, the natural sequence of events would be income growth above equilibrium for some years and external deficits financed by capital inflows. In fact, the situation is very similar between the periods 1987-1991 and 1998-2000: high growth rates and external deficits. Yet, there is a crucial difference between both periods. At the end of the former cycle growth began to slow, the BoP started to move toward equilibrium, capital outflows began and the currency depreciated, boosting exports and reducing imports. The reaction was different at the end of the second period, especially from 2004 onwards. Income continued to grow at high rates and the external deficit continued to increase. What made this possible was the strong inflow of capital. In sun, the euro has reduced the speed of adjustment: making expansions, as in the Spanish case, and recessions, as in Portugal, last longer. Currently, the Spanish economy has started their path to equilibrium, exports are growing while domestic demand and income stay weak. Since exchange rate depreciation is not longer available, the future of Spain may resemble the past of Portugal.

[6] Alberola. et al. (1999) and Alberola and López (2001) found similar results for Spain. Bulir and Smidkova (2005) and Barrell et al. (2002) also note the deep negative impact on the Portuguese BoP of the overvalued escudo (10% - 20%) in the final stage of the EMU, and Blanchard (2007) and Martinez-Mongay (2008) argue in similar terms

Concluding remarks

Throughout this paper we have defended that relative prices and capital flows matter in the real world, at least in the short run, and therefore should be incorporated into BoP constrained growth models. To this aim, we have presented a model where capital flows influence the speed of adjustment of income and exchange rates, and prices do have a role. We have used our model to analyse a case in which prices and capital flows indeed have played a significant role: the opposite evolution of Portugal and Spain after the introduction of the euro. While the former has suffered a deep stagnation, the latter has experienced a significant boost. According to our model, both economies are BoP constrained. But, while the Portuguese economy joined the Euro in a moment when it was far from equilibrium (strong external deficit and overvalued currency), Spain did so close to equilibrium. The European common currency amplified the economic cycles for both countries. For Portugal, this has meant a longer time in the bottom side of the cycle; for Spain a longer time on the top. Yet, Spain has already entered into the adjustment phase and, as the Portuguese lesson shows, it may take a long time to complete it; longer than in the past.

Finally, let us stress that we do not mean that a monetary union is a bad thing in a BoP constrained growth world. Undoubtedly, it has many positive effects on trade and growth. What we mean to demonstrate is that it can be dangerous if relative prices move far away from the equilibrium level. As Blanchard (2007) assessed in his analysis of the recent evolution of the Portuguese economy, the return to equilibrium can be difficult and take a long time.

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Appendix Data description and data sources

The variables used to estimate the model are in constant prices, except Z_1, which must necessarily be in current prices. The sample period is 1975-2007, except for the estimation of the exchange rate equation, whose sample period is 1975-1998.

- Y. GDP. Source: World Bank.

- X. Exports of goods and services. Source: World Bank.

- M. Imports of goods and services. Source: World Bank.

- XP. Exports price deflator. Source: Source: World Bank.

- MP. Imports price deflator. Source: Source: World Bank.

- P. GDP price deflator. Source: World Bank.

- P*. Foreign price level. This index was constructed by weighting the GDP deflators of Portuguese and Spanish export destination countries:

$$P^* = \frac{\sum_j P_j w_j}{e_j},$$

where P_j, is the GDP deflator of country j, e_j represents the exchange rate against the currency of country j, and w_j is the weight of country j in Portuguese and Spanish exports. To construct this indicator we used the top-36 export destinations. All foreign prices have been converted into deutsche marks, which has been used as vehicular currency in this paper. Source: World Bank.

- Z. Index of net current transfers, net FDI and EU transfers (Regional and Cohesion Funds until 1991 and Structural Actions afterwards). Source: for the first two variables, World Bank, for the latter, European Commission.

- Y*. Weighted foreign GDP. The weights are the share of each country in Portuguese and Spanish exports. Source: World Bank

Z_2. Net portfolio investment and net other investment. Source: World Bank.

ER. Exchange rate against deutsche mark. Source: World Bank

PPP. Purchasing Power Parity exchange rate. It has been computed by multiplying the actual exchange rate by the World Bank PPP conversion factor to official exchange rate ratio.