

The balance-of-payments constraint on economic growth in a long-term perspective: Spain, 1850-2000^{*}

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Abstract

The balance of payments can act as a constraint to the rate of growth of output, since it puts a limit to the growth of the level of demand to which supply can adapt. In this paper we examine this issue for the case of Spain, using time series data extending over one-and-a-half century, i.e., the period 1850-2000.

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1. Introduction

The Spanish economy has experienced a steady process of growth since the beginning of industrialization at the start of the 19th century. However, though following a rather similar evolution to that of the rest of Western Europe, she underwent a relative retardation as compared to those countries. Specifically, the real GDP of Spain multiplied by 40 over the period 1850-2000, with an annual average rate of growth of 2.4 percent; in per capita terms, GDP multiplied by 15 over the same period, and the average rate of growth was 1.7 percent per year. But, despite the intense catching-up that took place in the last fifty years, the per capita GDP of Spain at the end of the 20th century was still around three quarters of Western Europe's, roughly the same than one hundred years before (Prados de la Escosura, 2007).

The important modernizing role played by the foreign sector on the evolution of the whole economy, though limited by its small relative size, has been emphasized elsewhere (Prados de la Escosura, 1988). In fact, the Spanish economy would have experienced a higher growth over those periods characterized by a greater external openness (as in, e.g., the 1960s, or the years after 1986); and, likewise, she fell behind coinciding with periods of a greater isolation against the rest of the world (such as the years 1890-1913, or 1930-1950) (Prados de la Escosura, 2007). On the whole, the lower weight of foreign trade on GDP as compared to the "European norm" (Molinas and Prados de la Escosura, 1989) could explain the relative backwardness of the Spanish economy until the last third of the 20th century.

On the other hand, it has been also argued that the trade deficit had been a chronic problem of the Spanish economy, given the traditional weakness of exports, and the need for essential imports such as energy, raw materials, intermediate products, and equipment goods. This, in turn, would have been translated into a subordination of growth to the evolution of the trade balance; see, e.g., Segura and García-Viñuela (1978).

The recent availability of long time series for both GDP (Prados de la Escosura, 2003) and the foreign sector (Tena, 2007) invites to a re-examination of the relationship between growth and foreign trade for the case of the Spanish economy. In particular, we will analyze whether or not the trade balance would have meant an impediment to

further GDP growth over the period 1850-2000. If the answer to this question was negative, then a greater exposure of the Spanish economy to international competition would have most probably led to a higher GDP growth and catching-up as regards the rest of Western Europe. The paper is organized as follows: the theoretical framework is briefly discussed in section 2, and the empirical results are presented in section 3; section 4 concludes.

2. Theoretical framework

The balance of payments can act as a constraint to the rate of growth of output, since it puts a limit to the growth in the level of demand to which supply can adapt. So, an increase in domestic output, by increasing imports, can lead to a deficit in the balance of payments, which may require either a fall in demand or an exchange rate depreciation (i.e., a worsening of the terms of trade) in order to assure the sustainability of the foreign deficit. Accordingly, an unsustainable external deficit would require sooner or later a correction, which puts a brake on further output growth.

A customary way of analyzing this issue follows Thirlwall's approach to calculate the balance of payments-constrained growth rate, as the rate of growth of exports divided by the income elasticity of the demand for imports; see Thirlwall (1979) or Thirlwall and Hussain (1982). By comparing such a growth rate with that prevailing in a particular country, it would be possible to assess whether the balance of payments would have worked as a constraint to economic growth in the country analyzed. This approach, on the other hand, is equivalent to the well-known Krugman's (1989) result, so that countries growing faster face a higher income elasticity for their exports than for their imports.

Assume that the demands for exports and imports are described by the standard functions (see Goldstein and Khan, 1985):

$$\begin{aligned}
 X &= X(Y^*, Q) & \frac{\partial X}{\partial Y^*} > 0, \frac{\partial X}{\partial Q} > 0 \\
 M &= M(Y, Q) & \frac{\partial M}{\partial Y} > 0, \frac{\partial M}{\partial Q} < 0
 \end{aligned}$$

where X and M stand for exports and imports volumes, and Y^* and Y for foreign and domestic real output, respectively; Q is the real exchange rate, measured as the price of

foreign goods relative to domestic goods. The model is completed with the equation for the trade balance:

$$B = X - QM$$

where B denotes the trade balance in domestic currency, in real terms.

Keeping unchanged the trade balance requires:

$$\frac{dB}{dt} = X(\varepsilon_{X,Y^*}\hat{Y}^* + \varepsilon_{X,Q}\hat{Q}) - QM(\varepsilon_{M,Y}\hat{Y} - \varepsilon_{M,Q}\hat{Q} + \hat{Q}) = 0$$

where ε_{X,Y^*} , $\varepsilon_{M,Y}$, $\varepsilon_{X,Q}$, and $\varepsilon_{M,Q}$ are the (absolute values of the) income and price elasticities of exports and imports, respectively; and the symbol $\hat{\cdot}$ over a variable denotes its growth rate. Assuming that initially $B = 0$, so that $X = QM$, in order to have the trade balance in equilibrium we must have:

$$\varepsilon_{X,Y^*}\hat{Y}^* - \varepsilon_{M,Y}\hat{Y} + (\varepsilon_{X,Q} + \varepsilon_{M,Q} - 1)\hat{Q} = 0$$

As can be seen from the above equation, a country growing relatively faster (i.e., when $\hat{Y} > \hat{Y}^*$) should have, other things equal, a depreciating real exchange rate (provided that the Marshall-Lerner condition holds). However, as shown by Krugman (1989), in a context of imperfect competition those countries showing higher growth rates will increase their shares of world markets, not by reducing the relative prices of the goods they produce, but by raising instead the number of varieties. Accordingly, such countries will enjoy more favourable income elasticities (i.e., a higher ε_{X,Y^*} and a lower $\varepsilon_{M,Y}$) and would be able to experience relatively higher growth rates without the need of real exchange rate depreciation in the long run.

Hence, if there is no long-run trend in the real exchange rate, $\hat{Q} = 0$, we would have the following condition:

$$\frac{\varepsilon_{X,Y^*}}{\varepsilon_{M,Y}} = \frac{\hat{Y}}{\hat{Y}^*}$$

i.e., a country growing relatively faster should have a relatively higher income elasticity for exports than for imports; this is Krugman's (1989) "45-degree rule". From here, we can get a related result, by finding the balance of payments-constrained growth rate, \hat{Y}_B ,

i.e., the maximum growth rate a country can achieve while keeping in equilibrium the trade balance, and provided that the real exchange rate remains unchanged:

$$\hat{Y}_B = \frac{\varepsilon_{X,Y^*}}{\varepsilon_{M,Y}} \hat{Y}^*$$

This rule, derived by Thirlwall (1979) and Thirlwall and Hussain (1982), is the dynamic analogue of the Harrod trade multiplier (Harrod, 1933), and implies that a country growing above \hat{Y}_B will run an external deficit, which would harm its future growth prospects; conversely, a country growing below \hat{Y}_B will run an external surplus.

3. Empirical results

The above theoretical framework has been applied to data on Spanish real GDP, and exports and imports, taken from Prados de la Escosura (2003) and Tena (2007), respectively. Regarding foreign output, the series on real GDP of the European Union (EU) built by Carreras and Tafunell (2005) has been used, as a proxy for the GDP of Western Europe. The period of analysis is 1850-2000. Notice that Western Europe was the main market for Spanish exports over the whole period, with a share on total exports always above 50 percent (Tena, 2007).

The results for the whole period appear in the first row of Table 1, where each column of the table show, respectively, the annual average growth rates of the GDP of Spain and the EU, and their ratio; the long-run income elasticities of the demands for exports and imports, and their ratio; and, in the last column, the balance of payments-constrained growth rate. The exports and imports elasticities have been estimated using the method of Phillips and Hansen (1990), which provides estimates that are robust to the presence of serial correlation and endogeneity bias.

Table 1. Actual growth rates, trade elasticities, and the balance of payments-constrained growth rate. Spain, 1850-2000

	\hat{Y}	\hat{Y}^*	\hat{Y}/\hat{Y}^*	ε_{X,Y^*}	$\varepsilon_{M,Y}$	$\varepsilon_{X,Y^*}/\varepsilon_{M,Y}$	\hat{Y}_B
1850-2000	2.48	2.30	1.08	1.25	1.21	1.03	2.37
1850-1950	1.35	1.75	0.77	0.80	1.02	0.79	1.38
1951-1974	6.23	4.45	1.40	1.82	1.56	1.17	5.18
1975-2000	3.02	2.25	1.34	3.92	2.83	1.39	3.12

Source: Prados de la Escosura (2003), Carreras and Tafunell (2005), Tena (2007), and own elaboration.

As can be seen, over the whole period 1850-2000 the exports and imports elasticities are roughly the same so that, according to Krugman's argument, they should correspond to similar growth rates for the two economies, Spain and the EU. This is indeed true, since the annual average rate of growth of the Spanish GDP was only very slightly above that of the EU for this 150-year period. In addition, the actual and balance of payments-constrained growth rates look also quite similar, indicating that the foreign sector would not have acted as a constraint to the growth of the Spanish economy in the long run.

On the other hand, since the behaviour of the series might be different across different subperiods, we have repeated the above exercise along the three phases analyzed by Prados de la Escosura (2003). After testing for several possible breaks, he detects two structural changes in the trend of the GDP series dated at 1951 and 1975, together with a break in the level at 1936. The results for the three subperiods 1850-1950, 1951-1974, and 1975-2000 appear in the lower part of Table 1.

Beginning by 1850-1950, the picture looks rather similar as compared to the whole period: very low trade elasticities, now smaller for exports, reflecting the predominance of agricultural products in the Spanish foreign trade; a rate of GDP growth now somewhat below that of the EU; and, again, the foreign sector would not appear to have restricted GDP growth. As pointed out elsewhere (e.g., Tena, 1995, 2007), the Spanish economy was a relatively closed one along those years, characterized by a protectionist stance reinforced in some particular events (such as the end of the 19th century, or the years immediately after the Spanish Civil War), and with a revealed comparative advantage in agricultural products, leading to an erratic and even unpredictable foreign trade.

Things seemed to change after the 1950s. Trade elasticities turn to be more favourable according to Krugman's hypothesis, showing a remarkable increase and becoming higher for exports than for imports. This relates in turn to an average annual rate of GDP growth significantly higher than of the EU (and despite the strong increase experienced by the latter). These results would follow after a process of increasing external opening and structural change, especially intense during the 1960s, where manufactures began to take the leading role within the structure of the Spanish foreign

trade. However, the fact that the actual growth rate was well above the balance of payments-constrained one, means that the foreign sector would have acted as a constraint to the growth of the Spanish economy along this period. This evidence is consistent with the appearance of situations of “stop-and-go” during that time: when the economy grew too fast the balance of payments deteriorated, putting pressure on the exchange rate so foreign reserves fell, and a period of slower growth follow in order to correct the external disequilibrium. Such a state of affairs would have been also related to the structural transformations of the 1960s, with an increase in the needs of imported intermediates due to a change in both the composition of exports and the whole productive structure (Fanjul and Segura, 1977).

Finally, the last quarter of the 20th century has contemplated a new process of external opening of the Spanish economy, especially after joining the EU in 1986. Trade elasticities increased again, even more in the case of exports than for imports, which, despite the deceleration in growth rates as compared to the previous period, has allowed for a rate of GDP growth still higher than the EU’s. In turn, the actual growth rate was slightly below its balance of payments-constrained counterpart, suggesting that the foreign sector would not have restrain GDP growth during those years.

4. Conclusions

The Spanish economy has experienced a steady process of growth through the period 1850-2000, following a similar evolution to that of the rest of Western Europe. However, only in the second half of the 20th century Spain could catch-up with these countries, offsetting, at least partially, her relative retardation dating back to the start of industrialization. Although the periods of higher growth have corresponded with increases in the degree of external opening, some concerns have also been raised about a more open foreign sector as being a constraint to further growth via unsustainable trade deficits, given the structural problems of the Spanish economy (as shown in the weakness of exports, and the need for some essential imports).

In this paper we have analyzed whether or not the trade balance would have meant an impediment to further GDP growth in relation to Western Europe, over the period 1850-2000. To this end, we have followed a simple approach, calculating the relative income elasticities of the demands for exports and imports, comparing them

with the relative GDP growth rates of Spain and the EU, and then finding the balance of payments-constrained growth rate. For the whole period, Spanish growth was slightly above that of the EU, and the actual and balance of payments-constrained growth rates were rather similar, so that the foreign sector would not have worked as a constraint to the growth of the Spanish economy in the long run. When repeating the same exercise for the three subperiods 1850-1950, 1951-1974, and 1975-2000, the results did not change dramatically for the first one, although the rate of GDP growth was now somewhat below that of the EU, with very low exports and imports elasticities; again, the foreign sector would not appear to have restricted GDP growth.

As regards the other two subperiods, trade elasticities showed much higher values, even higher for exports, which reflected the increased opening of the Spanish economy (in particular during the first 1960s and after 1986) and the change in the pattern of trade, where the revealed comparative advantage started to turn towards manufactures. In turn, these more favourable values of trade elasticities allowed the Spanish economy to grow significantly above the EU, especially between 1951 and 1974. The foreign sector, however, would have worked as a constraint to growth only during this subperiod, but not after 1975, when growth rates were smaller both in Spain and the EU.

Overall, the evidence in this paper would suggest that an increased external opening had proved to be a relevant factor in the growth of the Spanish economy, and that its potential restrictive role on growth, through a potentially unsustainable trade deficit, would show only in periods of exceptionally high growth rates (such as the “Golden Age”, 1950-1975).

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