THE CURRENT ACCOUNT OF THE SPANISH ECONOMY, 1850-2016: WAS IT OPTIMAL?

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ABSTRACT

We analyse the possible optimality of the path followed by the current account of the Spanish economy over a very long period of almost 170 years (1850-2016), according to the intertemporal approach to the current account and using a present-value model. In particular, from the estimation of a bivariate vector autoregression model for the current account, we attempt to assess the extent to which the latter has been used to smooth private consumption over time in the presence of temporary shocks that the economy might suffer. In general, evidence does not seem to be particularly favourable to the validity of the model over the period of analysis.

Keywords: external imbalances, current account, intertemporal approach, Spanish economy

JEL Code: F32, F41, F43, N10

RESUMEN

Analizamos la posible optimalidad de la senda seguida por la balanza por cuenta corriente de la economía española durante un largo periodo de casi 170 años (1850-2016), de acuerdo con el enfoque intertemporal de la cuenta corriente y utilizando un modelo de valor presente. En particular, a partir de la estimación de autorregresión vectorial (VAR) bivariante para la cuenta corriente, intentamos evaluar hasta qué punto ésta

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se ha utilizado para suavizar el consumo privado a lo largo del tiempo ante perturbaciones temporales que la economía pudiera sufrir. En general, la evidencia no parece ser particularmente favorable a la validez del modelo durante el periodo de análisis.

Palabras clave: desequilibrios exteriores, balanza por cuenta corriente, enfoque intertemporal, economía española

1. INTRODUCTION

External imbalances are a central component of the current economic and financial crisis (Obstfeld and Rogoff 2010). Moreover, these imbalances are related to the state of public finances, as well as being able to influence the distribution between government deficit and debt.

The usual way of analysing current account imbalances makes use of the intertemporal approach to the current account. The starting point of this approach is the analysis of the national accounts. Accordingly, since the current account equals the difference between savings and investment and, given that agents' decisions on savings and investment are based on intertemporal factors (such as their life cycle, the expected returns of investment projects and the like), the current account is necessarily an intertemporal phenomenon. The intertemporal approach to the current account originates in the work of, among others, Sachs (1981), Obstfeld (1982) and Svensson and Razin (1983); the whole approach is surveyed in Obstfeld and Rogoff (1995) and Razin (1995).

An important contribution following this line of analysis is Blanchard and Giavazzi (2002). They argue that a greater economic integration leads to a higher external deficit in poorer countries, since this greater integration would mean, for these countries, higher investment and lower savings (through a higher consumption). This analysis has proven to be of a great interest given the subsequent events in the Southern European country members of the European Union (EU), which joined the Economic and Monetary Union (EMU) after 1999.

Optimal consumption models derive from the intertemporal approach to the current account and are used to justify how a country can manage its current account balance in an optimal way (Sachs 1982). On the one hand, by tilting consumption to either the present or the future as a function of the relative values of its subjective discount rate and the world interest rate; and, on the other hand, by smoothing consumption, that is, stabilising the level of consumption in the face of shocks to output, investment or government spending. In addition, these models can be used to measure the degree of international capital mobility (Obstfeld 1989). Specifically, in an optimal consumption model for an infinitely lived

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representative agent, the latter will equal her marginal rate of substitution to the world interest rate. However, in the presence of perfect capital mobility, the marginal rates of substitution for a domestic consumer and a foreign consumer should be equal, since they would benefit from the same interest rate.

The aim of this paper is to analyse the possible optimality of the path followed by the current account of the Spanish economy from a long-term perspective, according to the intertemporal approach to the current account and using a present-value model. There are numerous empirical studies available that provide estimations of the intertemporal model of the current account for both emerging and industrial countries; a non-exhaustive list would include Sheffrin and Woo (1990), Cashin and McDermott (1998), Bergin and Sheffrin (2000), Otto (2003), Nason and Rogers (2006), Mercereau and Miniane (2008), Campa and Gavilán (2011) or Ca' Zorzi and Rubaszek (2012), among many others. The empirical evidence from these and other related papers is far from conclusive, depending, as usual, on the countries and periods analysed. Yet the results are in many cases not fully supportive of the model, being a consensus result that, «while the model-predicted current account is positively correlated with the actual series, the latter is substantially more volatile, leading statistical tests to reject the model» (Mercereau and Miniane 2008, p. 1).

However, since the intertemporal approach to the current account seems to be more appropriate to track longer-run tendencies, the length of the sample used in empirical tests of the model should be of great concern. In this paper, we try to contribute to the literature by using a very long sample of almost 170 years, thanks to the recent availability of Prados de la Escosura's (2017) national accounts series for the Spanish economy over the period 1850-2017. As far as we know, there are no empirical tests available in the literature on the validity of the intertemporal model of the current account from a long-term perspective for such a long period. In particular, we will estimate a bivariate vector autoregression (VAR) model for the current account, to assess the extent to which the current account was used to smooth private consumption in the face of any temporary shocks that the economy might have suffered during that period.

The Spanish economy can be an interesting case of study, since she has experienced a steady process of growth following the first steps of industrialisation at the start of the 19th century. However, and despite following a rather similar evolution to that of the rest of Western Europe, the Spanish economy experienced a relative retardation and the role that the external sector might have played in that evolution is of particular interest. An account of the main developments of the Spanish foreign sector in the last two centuries is provided in Tortella (2000). The role of the external sector as an important modernising factor in the evolution of the

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Spanish economy, despite its small relative size, was emphasised in Prados de la Escosura (1988). In fact, the highest growth periods were those characterised by a greater external openness (e.g. the 1960s or the years after 1986), unlike those episodes where a greater isolation from the rest of the world prevailed (such as the years 1890-1913 or 1930-50), in which the Spanish economy fell behind in relative terms (Prados de la Escosura 2007). On the other hand, in Bajo-Rubio (2012) the role of the balance of payments as a possible constraint on the rate of growth of the Spanish economy was examined, for the period 1850-2000. Overall, according to the results in that paper, the external deficit did not seem to have restrained growth over the long run, except for some shorter and specific subperiods, such as 1940-59 and 1959-74.

The rest of the paper is organised as follows: we present a brief exposition of the intertemporal model of the current account in section 2; the empirical model to be estimated is examined in section 3; the data and main results are discussed in section 4; and section 5 concludes.

2. THE INTERTEMPORAL MODEL OF THE CURRENT ACCOUNT

The starting point of an optimal consumption model [see, e.g. Ghosh (1995) or, for a broader view, Obstfeld and Rogoff (1996)] is an infinitely lived representative agent whose optimisation problem is:

$$\max \sum_{t=0}^{\infty} \beta^t E[U(c_t)] \quad 0 < \beta < 1$$

subjected to her budget constraint:

$$b_{t+1} = (1 + r)b_t + q_t - c_t - i_t - g_t$$

and the no-Ponzi condition:

$$\lim_{t \to \infty} b_{t+1} = 0$$

where β, discount factor; E, expectations operator; U, utility; b, net foreign assets owned by the representative agent; r, world interest rate; q, level of output or GDP; c, private consumption; i, investment and g, government consumption.

For simplicity, we will henceforth assume that the subjective discount rate equals the world interest rate, which rules out the possibility of consumption tilting. Solving the above problem, we obtain the value of

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optimal consumption c^*:

$$c_t^* = r\left\{b_t + \frac{1}{1+r}E_t\left[\sum_{i=0}^{\infty}\frac{(q_{t+i} - i_{t+i} - g_{t+i})}{(1+r)^i}\right]\right\} \quad [1]$$

or, alternatively:

$$c_t^* = rW_t$$

where

$$W_t = b_t + \frac{1}{1+r}E_t\left[\sum_{i=0}^{\infty}\frac{(q_{t+i} - i_{t+i} - g_{t+i})}{(1+r)^i}\right]$$

is the level of wealth.

On the other hand, the current account balance that smooths consumption is defined as:

$$ca_t = y_t - i_t - g_t - c_t^* \quad [2]$$

where $y_t = q_t + rb_t$ is the national income or GNP (i.e. GDP plus net factor payments); which, replacing the value of c^*, becomes:

$$ca_t = -E_t\sum_{i=1}^{\infty}\frac{\Delta z_{t+i}}{(1+r)^i} \quad [3]$$

where $z_t \equiv q_t - i_t - g_t$ denotes the so-called national cash flow.

The above equation is the open economy version of Campbell's (1987) «saving for a rainy day» equation and shows the current account as the present discounted value of expected future changes in output, investment and government consumption. As can be seen, if the shocks to the national cash flow (i.e. output, investment or government consumption) are permanent, they will not affect *ca*, since their expected variation is zero; however, if the shocks are transitory, they will affect *ca*, which will adjust to keep the present consumption unchanged. Specifically, if agents expect that the national cash flow is going to increase in the future, they will increase their present consumption, which will lead to a current account deficit. In contrast, if agents anticipate a future fall in the national cash flow, the current account will move to a surplus. In addition, it should be noticed that, according to the most recent literature, the «trade channel» stressed by the intertemporal approach to the current account (i.e.

adjustment to an external disequilibrium through future trade surpluses), should be complemented by a «valuation channel» (i.e. changes in the returns on domestic assets held by foreigners relative to the return on foreign assets held by domestic residents through a depreciation of the domestic currency); see Gourinchas and Rey (2007).

3. EMPIRICAL MODEL

We will proceed to estimate equation [3] following the approach in Otto (2003), which is based in turn on the work of Campbell (1987) and Campbell and Shiller (1987); see also Agénor *et al*. (1999) for a similar methodology. More specifically, our estimation will proceed in two steps:

(i) First, we will test whether the actual current account balance incorporates agents' expectations on the future movements of the national cash flow. This can be done by estimating the following equation:

$$\Delta z_t = \pi + \theta \Delta z_{t-1} + \alpha ca_{t-1} + \varepsilon_t$$

and then test whether the coefficient α is negative and statistically significant. From a technical point of view, we would be testing whether the current account Granger-causes variations in the national cash flow. The Granger-causality test, however, does not test all the restrictions that the present-value model imposes on the data; a formal test of the present-value model can be obtained as follows (see Otto, 2003, for details). Starting from the $t+1$ term of equation [3], taking expectations on both sides, assuming rational expectations and operating, we obtain:

$$ca_{t+1} - \Delta z_{t+1} - (1+r)ca_t = \omega_{t+1}$$

where ω is an error term. Under the present-value model, the left-hand side of this equation should be uncorrelated with any variable dated at t or earlier. Accordingly, the model can be tested through the estimation of:

$$x_t = \pi + \theta_1 \Delta z_{t-1} + \theta_2 ca_{t-1} + \nu_t \qquad [4]$$

where $x_t \equiv ca_{t+1} - \Delta z_{t+1} - (1+r)ca_t$, and then testing $\theta_1 = \theta_2 = 0$.

(ii) Second, we will estimate the optimal current account balance, using a first-order VAR model for the variables Δz_t and ca_t:

$$\begin{bmatrix} \Delta z_{t+1} \\ ca_{t+1} \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} \Delta z_t \\ ca_t \end{bmatrix} + \begin{bmatrix} \nu_{1t+1} \\ \nu_{2t+1} \end{bmatrix}$$

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so that, iterating the model forward, taking expectations and using the vector $\begin{bmatrix} 1 & 0 \end{bmatrix}$ to collect the forecast of Δz_t, we can write the infinite sum in the present-value model [3] as:

$$ca_t^* = -\phi\begin{bmatrix} 1 & 0 \end{bmatrix}\begin{bmatrix} \tilde{a}_{11} & \tilde{a}_{12} \\ \tilde{a}_{21} & \tilde{a}_{22} \end{bmatrix}\begin{bmatrix} \Delta z_t \\ ca_t \end{bmatrix}$$

or, more simply:

$$ca_t^* = -\phi(\tilde{a}_{11}\Delta z_t + \tilde{a}_{12} ca_t) \qquad [5]$$

where $\phi = (1+r)^{-1}$ and $\begin{bmatrix} \tilde{a}_{11} & \tilde{a}_{12} \\ \tilde{a}_{21} & \tilde{a}_{22} \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}\left(I - \phi\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}\right)^{-1}$, being I the 2×2 identity matrix.

The variable ca_t^* is the optimal current account balance, that is, an estimate of the current account, consistent with the VAR [1] model and with the constraints derived from the intertemporal model. In the end, a graphical comparison of the actual current account balance, ca_t, and its optimal value, ca_t^*, will allow us to assess the validity of equation [3]. Notice, finally, that, for the optimal current account to equal the actual current account, two constraints from [5] must hold:

$$w_{\Delta z} \equiv -\phi\tilde{a}_{11} = 0$$

$$w_{ca} \equiv -\phi\tilde{a}_{12} = 1$$

4. DATA AND EMPIRICAL RESULTS

Our data source is the new set of historical national accounts provided by Prados de la Escosura (2017). In particular, our two variables of interest, z and ca, are computed, respectively, as:

- GDP minus gross fixed capital formation, minus changes in inventories, minus government consumption.
- GDP minus private consumption, minus gross fixed capital formation, minus changes in inventories, minus government consumption, plus net primary income from the rest of the world, plus net current transfers from the rest of the world.

Notice that the series for all variables cover the period 1850-2017, except for the net primary income and net current transfers, which are only available until 2016. Accordingly, our period of analysis will be 1850-2016.

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The two variables were converted into real terms using the GDP deflator (2010 = 100). Finally, since the model is based on a representative agent, both *z* and *ca* are computed in *per capita* terms dividing by total population. The GDP deflator and total population have been taken, respectively, from Table 7 and Table 3; net primary income and net current transfers from the rest of the world, from Table 3; and the rest of variables, from Table 2. All tables refer to the Electronic Appendix of Prados de la Escosura (2017), which can be accessed at http://espacioinvestiga.org/bbdd-chne/?lang=en. The final variables are measured in 2010 € per person.

To have a first glimpse of the data, we show the evolution of the Spanish current account as a share of GDP, over the period 1850-2016, in Figure 1.

Once the Spanish economy had been able to leave behind all the disruptions brought about by the loss of the American colonies, through the second half of the 19th century foreign trade began to grow at a faster pace than in France or Britain (Tortella 2000). Regarding the current account, Prados de la Escosura (2010) characterised two main periods in its evolution during the period before the First World War: one of persistent deficits between 1850 and 1890; and another where surpluses prevailed, between 1891 and 1913 (with the exception of the years 1899-1904). According to this author, economic growth at the end of the 19th century was stimulated by high amounts of foreign capital inflows, which helped to finance current account deficits and complemented domestic savings. In turn, reversals of net capital inflows (in the form of «sudden stops», i.e. significantly and unexpectedly) after 1891 slowed down growth since investment had to rely solely on domestic savings.

The broad pattern detected by Prados de la Escosura (2010), that is, current account deficits in the periods of higher growth, and surpluses in the periods of lower growth, remains roughly valid in subsequent years. Current account deficits, then, reappeared throughout the booming 1920s, after the highest surplus of the whole series: 7.4 per cent of GDP in 1919, coinciding with the acute crisis after the end of the First World War. Next, the current account balance stayed at low levels during the turbulences of the central years of the 20th century, that is, the sequels of the Great Depression in the 1930s, and the autarchic policy stance imposed by the Franco regime at the end of the Spanish Civil War and during the 1940s and 1950s. The increased openness of the economy following the Stabilisation Plan of 1959 paved the way for the high-growth period of the 1960s and early 1970s, which contemplated the re-emergence of large current account deficits, reaching a then maximum of 7 per cent of GDP in 1966. After some years of economic stagnation, growth and large current account deficits returned in the second half of the 1980s, following membership into the EU; and even more after joining EMU in 1999, reaching the highest current account deficit ever: 9.6 per cent of GDP in 2007. Finally, these huge deficits faded away, and even turned into surpluses,

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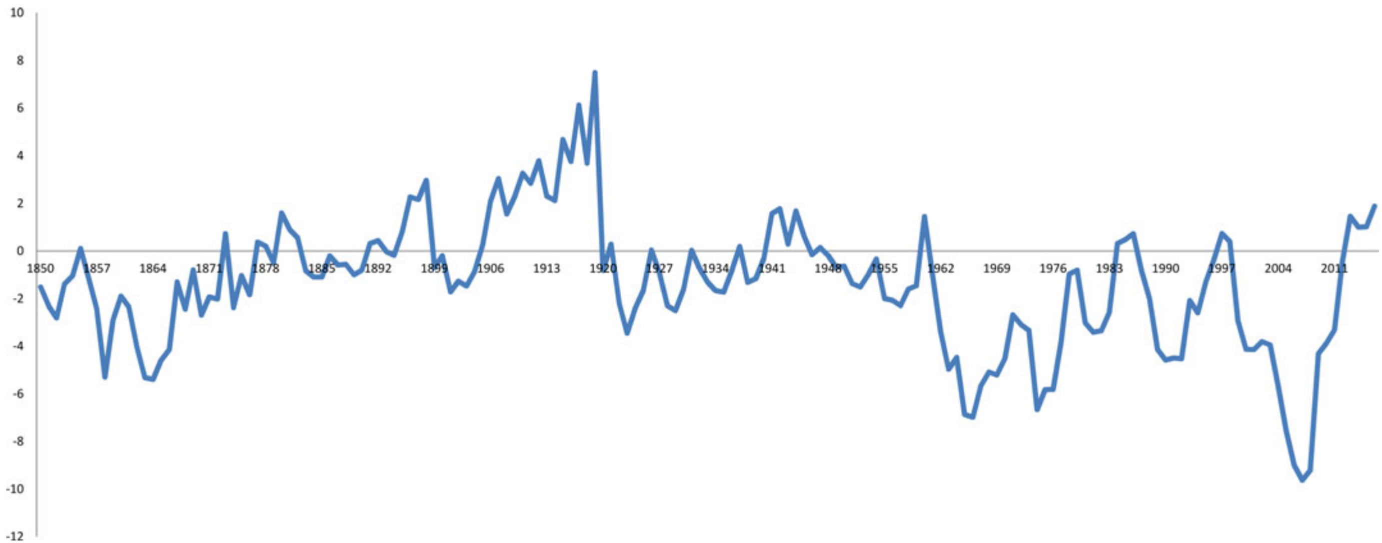
FIGURE 1
CURRENT ACCOUNT AS A SHARE OF GDP: SPAIN, 1850-2016.



Source: Prados de la Escosura (2017) and see the text.

TABLE 1
NG–PERRON TESTS FOR UNIT ROOTS

	MZ_{α}^{GLS}	MZ_{t}^{GLS}	MSB^{GLS}	MPT^{GLS}	ADF^{GLS}
Δz_t	−61.20*	−5.46*	0.08	1.80	−6.94*
ca_t	−34.30*	−4.03*	0.11	3.24	−3.96*

Note: *denotes significance at the 5% level. The critical values are taken from Ng and Perron (2001), Table 1. The autoregressive truncation lag has been selected using the modified Akaike information criterion, as proposed by Perron and Ng (1996).

TABLE 2
ESTIMATION OF A VAR [1] FOR Δz_t AND ca_t: SPAIN, 1850-2016

	Δz_t	ca_t
Intercept	46.22 (3.28)	−14.50 (−1.53)
Δz_{t-1}	0.31 (4.16)	0.05 (0.67)
ca_{t-1}	0.05 (−2.35)	0.92 (9.41)
$\bar{R}^2$	0.12	0.84
$\hat{w}_{\Delta z}$	−0.371 [−0.638, −0.117]	
$\hat{w}_{ca}$	0.817 [0.055, 1.479]	

Note: *t*-statistics are given in parentheses, and 95% confidence intervals in square brackets.

once the current crisis started. Overall, current account deficits, by making the arrival of foreign capital inflows possible, would have eased the possibility of higher economic growth; in this sense, the external sector does not seem to have worked as a constraint on the growth of the Spanish economy over the long run (Bajo-Rubio 2012).

We now turn to the empirical results. We start by testing for the order of integration of the variables Δz_t and ca_t using the tests proposed by Ng and Perron (2001), and the results are shown in Table 1. Since the null hypothesis of a unit root (i.e. non-stationarity) is rejected for the tests MZ_{α}^{GLS}, MZ_{t}^{GLS} and ADF^{GLS}, and the null hypothesis of stationarity is not rejected for the tests MSB^{GLS} and MPT^{GLS}, we can conclude that the two variables are stationary.

Next, we present the estimation of a VAR for Δz_t and ca_t over the whole period 1850-2016 in Table 2. The number of lags in the VAR was identified using the Bayesian information criterion, and the optimal lag selected was one. The estimation method is ordinary least squares with the White correction of standard errors for heteroscedasticity (White 1980). We can see that the current account would help to predict future changes in the

TABLE 3
ESTIMATION OF THE ORTHOGONALITY CONDITION: SPAIN, 1850-2016

$x_t = -60.73 - 0.25\Delta z_{t-1} - 0.03ca_{t-1} + \hat{\nu}_t$
(−3.69) (−2.71) (−0.40)
Joint significance of lags p-value = 0.01

Note: t-statistics are given in parentheses.

national cash flow, as predicted by the present-value model. This is shown by the negative and statistically significant coefficient on ca_{t-1} in the first column of the table, even though this coefficient is quantitatively very small.

Now, we proceed to test for the orthogonality condition, from the estimation of equation [4]; the results are shown in Table 3. The real interest rate used to compute the dependent variable x_t (see above) is 2 per cent (from an average over the period of 4.8 per cent for the UK bank rate and 2.9 per cent for the inflation rate; see Hills *et al*. 2015). Since the p-value of an F-test on the joint significance of the lagged values of Δz and ca is 0.01, we can reject the null hypothesis that the latter are uncorrelated with the dependent variable $x_t \equiv ca_{t+1} - \Delta z_{t+1} - (1+r)ca_t$. Hence, according to this test, the present-value model of the current account would be rejected by the data.

Finally, Figure 2 shows the optimal current account, as a share of GDP, computed from equation [5], and compares it with the actual values, shown in Figure 1. The values of the weights of Δz and ca used to compute the optimal current account according to equation [5] are −0.371 and 0.817, respectively; these values, together with 95 per cent confidence intervals, appear in Table 2 and have been computed from the estimation of the VAR. Notice that both values are not too close to the theoretical values 0 and 1, respectively, needed for the present-value model to be a valid characterisation of the path followed by the current account. As can be seen in the figure, the optimal current account does not fit perfectly the movements of the actual current account. More specifically, two broad periods can be detected, before and after the early 1960s (i.e. the years where a significant change took place in the performance of the Spanish external sector), so that in the first period the optimal current account overpredicts the actual current account; unlike the second period, where it underpredicts it. In fact, after 1960 Spanish foreign trade becomes «mature» in the terminology of Serrano-Sanz *et al*. (2008), that is, characterised by the predominance of manufactures and services, unlike the period before the 1930s which was characterised by the predominance of primary products. Finally, we have computed the variances of the two

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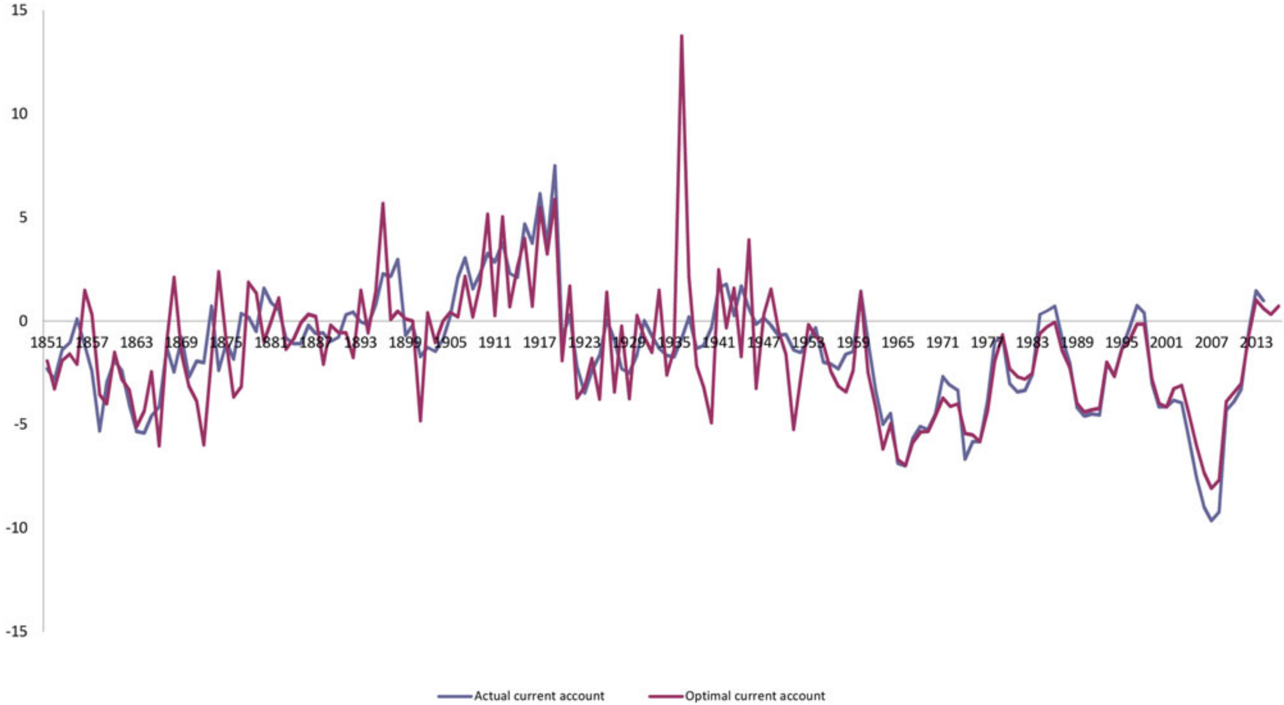
FIGURE 2

ACTUAL AND OPTIMAL CURRENT ACCOUNT AS A SHARE OF GDP: SPAIN, 1850-2016.



Source: Prados de la Escosura (2017) and see the text.

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TABLE 4
STABILITY OF THE CURRENT ACCOUNT: SPAIN, 1850-2016

Tests	
*WD*max	55.18
sup$LR_T(1)$	55.18
sup$LR_T(2)$	56.77
$SEQ_T(2\|1)$	23.76
Number of breaks selected	2

series at 7.52 and 8.92, for the actual and optimal current account, respectively, which would not be significantly different according to an *F*-test of equality of variances.

Due to the length of our sample period (i.e. 167 years), we have allowed for the possibility of a differentiated behaviour of the relevant variables across subperiods. To this end, we have applied a formal test of structural change to the current account series, ca_t. In particular, we use the approach of Qu and Perron (2007) to detect endogenously multiple structural breaks in a VAR system. These authors proposed several test statistics to identify the possible break points:

- The *WD*max test of the null hypothesis of no structural break vs. the alternative of an unknown number of breaks given some upper bound M.
- The supLR_T test of the null hypothesis of no structural break ($m = 0$) vs. the alternative of a fixed (arbitrary) number of breaks ($m = k$).
- The $SEQ_T(l + 1|l)$ test of the null hypothesis of l breaks vs. the alternative of $l + 1$ breaks.

The results of the Qu and Perron tests are shown in Table 4. We have allowed up to two breaks, and used a trimming ϵ of 0.20, so that each segment has at least thirty-three observations. All the test statistics are significant at the 5 per cent level; the critical values are taken from Bai and Perron (1998, 2003). First, according to the *WD*max test, at least one break is present. Next, the sup$LR_T(2)$ test is highly significant, which, together with the significance of sup$LR_T(1)$, means that there is at least one break. Finally, the $SEQ_T(2|1)$ test is also significant and the sequential procedure selects two breaks. The dates of the breaks have been estimated at 1919 and 1959, with confidence intervals of [1914, 1924] and [1956, 1962], respectively.

The year 1919 marks the start of a deep crisis following the economic boom associated with the First World War. Indeed, the Spanish economy enjoyed a period of great prosperity during the war years; since the countries at war moved their economies mostly to satisfy military purposes, neutral countries such as Spain had to substitute imports from these countries, at the same time that the demand for exports rose dramatically. These favourable conditions did not only affect the manufacturing industry, but also service activities such as trade, sea transportation or banking; in fact, as can be seen in Figure 1, in 1919 the current account reached the highest surplus of the whole series, 7.4 per cent of GDP. However, a sharp crisis occurred at the end of the war, characterised by the massive closing of factories, bank failures, a generalised drop in prices, a rise in unemployment and a huge fall in industrial production (Carreras and Tafunell 2010). This situation resulted in growing social unrest that paved the way for the dictatorship of general Primo de Rivera 4 years later. On the other hand, the second break is justified by the approval of the Stabilisation Plan of 1959, which ended the policy of autarky implemented at the end of the Spanish Civil War, and made possible the very high growth rates of the next 15 years (the so-called Spanish miracle). It was only after the 1959 Stabilisation Plan that the timid liberalising measures implemented some years before were in fact able to operate (Tortella 2000)[1].

Accordingly, we have re-estimated the model for the periods 1850-1918, 1919-1958 and 1959-2016. From the estimation of a VAR [1] (again validated by the Bayesian information criterion) for Δz_t and ca_t, we can see in Table 5 that now the current account does not help to predict future changes in the national cash flow in any of the three subperiods, unlike the prediction of the present-value model. In turn, from the results of the test on the orthogonality condition shown in Table 6, we cannot reject the null hypothesis that the lagged values of Δz and ca are uncorrelated with the dependent variable of equation [4]. In other words, for the three subperiods the present-value model of the current account would be rejected by the data according to the first test, but not according to the orthogonality test.

We have also computed the optimal current account from equation [5] for the three subperiods, and compared it with the actual values; the results are shown in Figure 3. Again, the fit between both series is anything but good and no clear pattern emerges, especially for the first subperiod. In the case of the second subperiod the optimal current account generally

[1] The choice of 1959-1960 as a break point instead of for example 1950-1951, can be questionable given the first attempts at liberalisation in the early 1950s. Therefore, for instance, Prados de la Escosura *et al*. (2012) stressed the continuity between the policy stance in the 1950s and 1960s, with the gradual liberalisation during the 1950s being a precondition for the Stabilisation Plan of 1959. However, as discussed by the same authors, the higher growth of the 1950s, compared with the extremely poor performance of the post-war years, proved to be unsustainable over the long run; see Prados de la Escosura *et al*. (2012).

TABLE 5

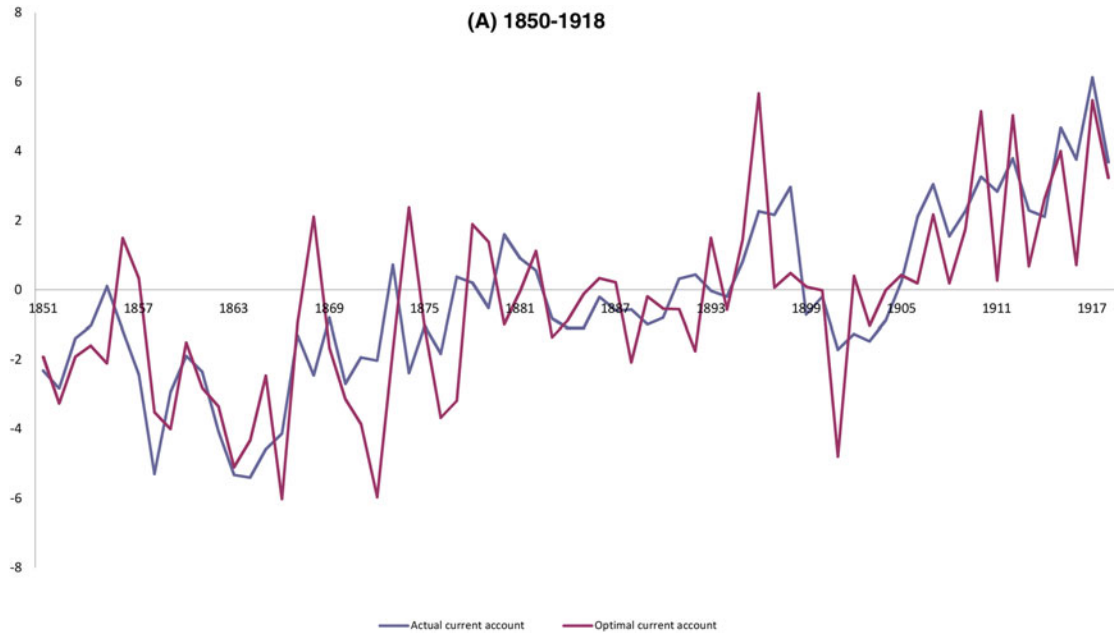
ESTIMATION OF A VAR [1] FOR Δz_t AND ca_t: SUBPERIODS

	1850-1918		**1919-1958**		**1959-2016**	
	Δz_t	ca_t	Δz_t	ca_t	Δz_t	ca_t
Intercept	–15.00 (–1.30)	2.37 (0.70)	26.71 (0.86)	–12.91 (–1.19)	101.09 (2.70)	–162.05 (–2.28)
Δz_{t-1}	–0.14 (–1.20)	0.01 (0.40)	–0.08 (–0.58)	–0.01 (–0.59)	0.54 (3.66)	0.53 (2.25)
ca_{t-1}	–0.07 (–0.30)	0.90 (10.67)	0.10 (0.22)	0.55 (2.09)	0.02 (0.74)	0.85 (7.60)
$\bar{R}^2$	0.02	0.70	0.01	0.33	0.30	0.79
$\hat{w}_{\Delta z}$	0.134 [0.035, 0.282]		0.079 [–0.081, 0.119]		–1.460 [–2.276, –0.387]	
$\hat{w}_{ca}$	0.569 [–1.433, 2.605]		–0.199 [–0.271, 0.173]		–0.280 [–0.846, 0.370]	

Note: *t*-statistics are given in parentheses, and 95% confidence intervals in square brackets.

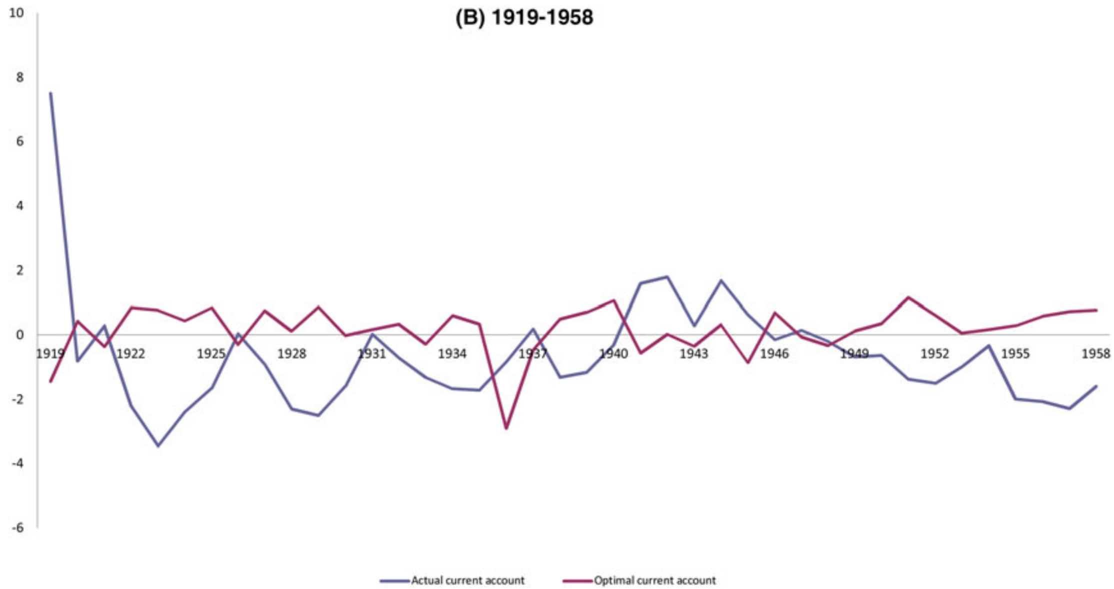
FIGURE 3

ACTUAL AND OPTIMAL CURRENT ACCOUNT AS A SHARE OF GDP: SUBPERIODS (A) 1850-1918, (B) 1919-1958 AND (C) 1959-2016.



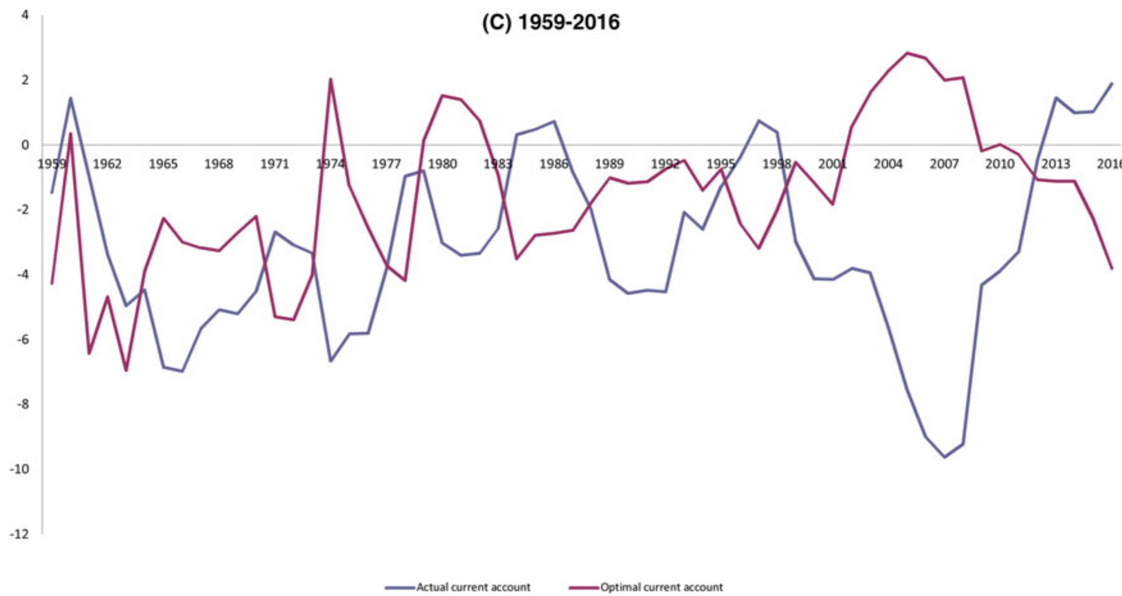
Source: Prados de la Escosura (2017) and see the text.

FIGURE 3
Continued.



Source: Prados de la Escosura (2017) and see the text.

FIGURE 3
Continued.



Source: Prados de la Escosura (2017) and see the text.

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TABLE 6

ESTIMATION OF THE ORTHOGONALITY CONDITION: SUBPERIODS

1850-1918	**1919-1958**	**1959-2016**
$x_t = -13.10 + 0.16\ \Delta z_{t-1} - 0.06\ ca_{t-1} + \hat{v}_t$ (−1.14) (1.46) (−0.29) Joint significance of lags p-value = 0.34	$x_t = -39.63 + 0.07\ \Delta z_{t-1} - 0.57 ca_{t-1} + \hat{v}_t$ (−1.16) (0.46) (−1.00) Joint significance of lags p-value = 0.49	$x_t = -263.14 - 0.01\ \Delta z_{t-1} - 0.18 ca_{t-1} + \hat{v}_t$ (−3.59) (−0.07) (−1.77) Joint significance of lags p-value = 0.19

Note: t-statistics are given in parentheses.

overpredicts the actual one, except for the first half of the 1940s (i.e. the core years of the Second World War). Finally, and unlike the results in Figure 2, for the third subperiod the optimal current account overpredicts the actual current account most of the time, especially on the eve of the current economic and financial crisis. When computing the variances of the actual and optimal current account we now obtain, unlike the case of the whole period, the most usual result of a higher variance for the former than for the latter, namely, 5.84 and 2.31, 3.07 and 0.53 and 7.64 and 5.11, for the first, second and third subperiods, respectively. The two variances are significantly different for the first and second subperiods, but not for the third, according to an *F*-test of equality of variances.

Notice that, in the end, since savings and investment decisions would be the result of agents' optimal decisions, a high current account deficit should not be a matter of concern according to the intertemporal approach to the current account; see for example Corden (2007)[2]. However, even if running a current account deficit is not bad in itself, it might be so when the deficit is very large or, more precisely, if it is «unsustainable». In Stanley Fischer's words, «if the current account deficit is 'unsustainable'—that is to say, if it cannot be financed by drawing down reserves or through borrowing—or if reasonable forecasts show that it will be unsustainable in the future, devaluation will be necessary sooner or later» (Fischer 1988, p. 115).

Regarding the Spanish case, the current account balance was found to be sustainable over the long run in Bajo-Rubio (2012) (more specifically, in the periods 1850-1913 and 1940-2000), from the estimation of a long-run relationship between exports and imports of goods and services as ratios to GDP. One should be careful, however, to interpret these results as unambiguous evidence in favour of the intertemporal approach to the current account. Indeed, Edwards (2002) shows that large current account deficits tend not to be persistent: «the typical pattern of current account deficits is that countries that experience large imbalances do so for a limited time; after a while, these imbalances are reduced, and a current account reversal is observed» (Edwards 2002, p. 66). Such reversals, in turn, have negative effects on economic performance. Therefore, for instance, when assessing the sustainability of current account deficits for a set of developed countries over the shorter and more recent period 1970-2007 in Bajo-Rubio *et al*. (2014a), the results on current account sustainability were not clear-cut for several of those countries, Spain among them.

Turning to the role of the current account in the evolution of the Spanish economy over our period of analysis, we can see how from 1850

[2] This claim makes up the so-called «Lawson doctrine», named after the British Chancellor of the Exchequer in the 1980s, Nigel Lawson.

to the final years of the 19th century, the current account showed an enduring deficit. However, rather than being used to smooth consumption in the presence of shocks, the resulting inflows of foreign capital enabled the Spanish economy to gain access to imported capital goods and raw materials above the amount allowed by export revenues. Accordingly, foreign capital inflows added to domestic savings, so increasing investment and fostering economic growth. In this way, foreign capital made a distinctive contribution to the investment boom in 19th-century Spain (Prados de la Escosura 2020). This situation reversed at the end of the 19th century, when an inward-looking policy stance was adopted (Tena-Junguito 2006; Carreras and Tafunell 2010). This policy can be described as a mix of protectionism, preservation of the domestic market to domestic production (through strong government interventionism) and economic nationalism (i.e. replacing foreign capital for domestic capital as the main driving force of growth). During these years, characterised by a low degree of external openness, the current account was in surplus most of the time, and growth rates were lower (with the exception of the 1920s). The pattern of the second half of the 19th century, that is, current account deficits and foreign capital inflows, reappeared after 1960 when the Spanish economy enjoyed the highest growth rates in her history. Following a decade of stagnation between the mid-1970s and the mid-1980s, once again after Spain joined what is today known as the EU in 1986, a renewed opening of the economy was associated with a period of sustained growth in which foreign capital again played a leading role (Bajo-Rubio and Torres 1992).

Finally, once Spain joined EMU in 1999 borrowing in international markets became easier due to the disappearance of the exchange rate risk; as a result, the allowable external deficit would be higher in a monetary union (Blanchard and Giavazzi 2002). Accordingly, during this period and until the beginning of the financial crisis, the Spanish economy ran the highest current account deficits in her history; which again was far from being warranted on consumption smoothing grounds. However, as the most recent events have shown, current account imbalances, although possibly explained by fundamentals, can also be a sign of important macroeconomic and financial disequilibria (Obstfeld 2012). However, in a monetary union it is no longer possible to offset such disequilibria by way of a nominal exchange rate depreciation; but, in contrast, through lower growth of domestic prices that might harm future growth prospects[3].

[3] See Catte (1998) for an in-depth discussion of the role of current account imbalances in a monetary union.

5. CONCLUSIONS

External openness has played an important role in the growth of the Spanish economy over the last century and a half, with the highest growth periods corresponding to those of greater external openness (Prados de la Escosura 2007). External openness, on the other hand, did not seem to act as a constraint on economic growth during this time, and the current account balance of the Spanish economy proved to be sustainable over the long run (Bajo-Rubio 2012).

In this paper, we have tried to go further into this line of analysis, and examined the possible optimality of the path followed by the current account of the Spanish economy over a very long period of almost 170 years (namely, 1850-2016), according to the intertemporal approach to the current account and using a present-value model. This procedure would be justified given the inconclusive nature of most of the empirical evidence, since the intertemporal approach to the current account seems to be more appropriate to track longer-run tendencies.

First, from the estimation of a VAR [1] for the change in the national cash flow (i.e. GDP, minus investment and government consumption), z, and the current account, ca, we found a negative and statistically significant effect from the latter (although with a very small coefficient), which in principle would agree with the predictions of the present-value model. However, when testing for the orthogonality condition, so that the variable $x_t \equiv ca_{t+1} - \Delta z_{t+1} - (1+r)ca_t$ should be uncorrelated with the lagged values of Δz and ca, the null hypothesis was rejected. Furthermore, when computing the optimal current account from the observed values of Δz and ca, the estimated weights for the latter variables were not too close to the theoretical values needed for the present-value model to be valid (i.e. 0 and 1, respectively). Accordingly, the optimal current account did not match the actual current account perfectly, overpredicting it before the early 1960s, and underpredicting it after that date.

Due to the length of our sample period (167 years), the previous analysis was complemented with an estimation over the three subperiods 1850-1918, 1919-1958 and 1959-2016, selected using the test of Qu and Perron (2007) to detect endogenously multiple structural breaks in a VAR system. The results, however, were anything but clear-cut. Summarising, for the three subperiods the present-value model of the current account was rejected by the data since the coefficient on the current account was not significant in the equation for the national cash flow in the VAR, but was not rejected according to the orthogonality test. In a similar vein, the fit between the actual and the optimal current account series was anything but good, and no clear pattern emerged.

We mentioned in the Introduction the possible relationship between external imbalances and government deficits. Recall that government spending is included in the national cash flow *z*, and that the intertemporal approach to the current account posits that a relation between the current account and government budget only exists in the case of a transitory shock to government spending; whereas, if the shock is permanent, the adjustment would be through private consumption leaving the current account unaffected. However, the results in this paper allow for the possibility of a relationship between the current account and government deficit although, given the available evidence on the long-run sustainability of the Spanish government deficit (see, e.g. Bajo-Rubio *et al*. 2014b), the latter should only influence the current account in specific periods. In any case, this may be a subject for future research.

To conclude, our evidence is not particularly favourable to the validity of the present-value model of the current account for the case of Spain in a long-term perspective, over the period 1850-2016. In short, evidence shows that, in periods characterised by greater external openness, current account deficits were financed by entries of foreign capital that contributed to foster growth. And the more recent events following the start of EMU cannot be seen as a process of consumption smoothing either, since they would be the result of what Blanchard and Giavazzi (2002) termed an increasing decoupling of saving and investment, with poorer euro area members investing more, saving less, and running larger current account deficits.

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