

Current accounts in the euro area: an intertemporal approach

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Introduction

In recent years sizeable differences have been observed in the euro area countries' current account balances. For instance, while this balance has worsened almost continuously since the late 90s in Greece, Portugal and Spain, it has improved significantly in Austria and in Germany. These differences may be explained, at least in part, as a natural consequence of the greater degree of integration of international markets and, in particular, of the creation of the euro area. Greater economic and financial integration is conducive to the flow of capital from relatively rich countries with scant growth potential towards relatively poorer countries undergoing real convergence. Accordingly, it gives rise to a greater dispersion of current account balances across countries.

In fact, a country's current account balance depends, according to intertemporal models, as much on expectations of future income (relative to that of its trading partners) as on the cost in real terms of lending or borrowing internationally (i.e. on the relative price of future consumption as opposed to current consumption). In order to smooth intertemporally their consumption, countries with high future income expectations (in relative terms) will borrow today and run current account deficits, while countries not expecting such high future income will lend today and have current account surpluses. Likewise, those countries expecting improvements in the relative price of future consumption will reduce their consumption today to increase their future capacity to consume and they will experience improvements in their current account balance.

Nonetheless, in some countries foreign debt has reached historically high levels in recent years. Even bearing in mind the consequences of greater integration, this prompts some uncertainty about the means of correcting these imbalances and their macroeconomic impact¹.

This article summarises a recent paper² that estimates an intertemporal model for current accounts in the euro area over the past three decades. The paper sets out to analyse the extent to which a country's current account fluctuations can be explained by smoothing consumption over time and, therefore, how they are affected by income, interest rate and exchange rate expectations. The rest of the article reports the changes in euro area current account balances against the background of the greater integration of international markets, describes the essential features of the intertemporal current account model and presents the main results obtained on estimating this model.

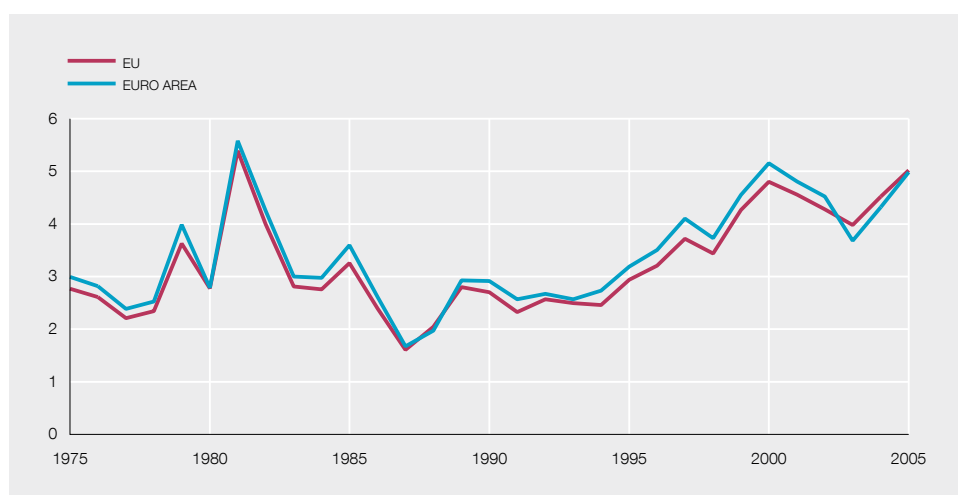
Economic and financial integration, and the current account balance

The greater degree of economic and financial integration of markets affects the current account via two mechanisms. Firstly, it reduces the costs and risks of international loans. Secondly, it promotes competition between countries, the elimination of domestic inefficiencies and economic growth. Insofar as convergence is expected between countries' per capita income as a result of integration, capital flows will tend to be directed towards those countries with lower per capita income and higher growth expectations. Consequently, greater market integration will tend to produce a greater dispersion of current account balances across coun-

1. See Gourinchas (2002). 2. See Campa and Gavilán (2006).

STANDARD DEVIATION OF CURRENT ACCOUNT BALANCES (AS % OF GDP), 1975-2005

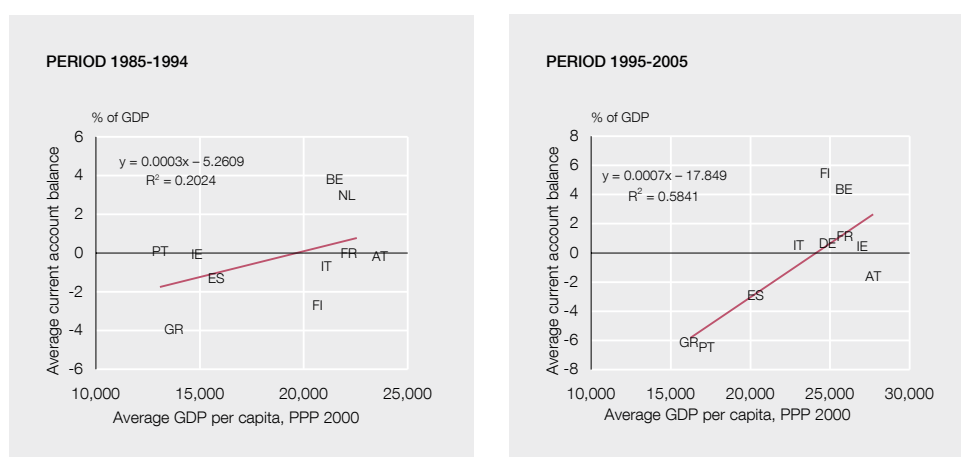
CHART 1



SOURCE: Banco de España, drawing on the *OECD Economic Outlook*.

CURRENT ACCOUNT BALANCES AND GDP PER CAPITA IN THE EURO AREA

CHART 2



SOURCE: Banco de España, drawing on the *OECD Economic Outlook*.

tries and a closer relationship between the income and current account balances of the countries that integrate.

As Charts 1 and 2 show, these assumptions appear to be met in the case of the euro area. Chart 1 reveals that in both the EU and the euro area the dispersion in current account balances increased almost continuously during the 1975-2005 period, precisely when international integration was progressing markedly³. Chart 2 illustrates that there is a positive relationship, for the euro area countries, between a country's current account balance and its income. This positive relationship became more intense in the 1995-2004 period compared with the 1985-1994 period, as would be expected in view of the greater integration of markets in the recent period⁴.

³. Dispersion is measured as the standard deviation of the current account balances as a percentage of GDP. ⁴. A similar result (not shown here) is obtained if broader country samples such as the EU or the OECD are used [see Blanchard and Giavazzi (2002)].

An intertemporal current account model

In addition to understanding the main trends behind recent developments in the euro area countries' current account balances, it is also important to study these developments from a quantitative standpoint. In this respect, and as indicated in Gourinchas (2002), if the scale of the fluctuations observed in the current account of any of these countries deviates excessively from what corresponds to an appropriate adjustment to the new scenario, this country may possibly have to face in the future a current account balance adjustment, based on a reduction in expenditure, with adverse consequences for economic activity.

In order to conduct this quantitative analysis, what is first needed is a model of the current account balance with which to analyse the fluctuations observed. Among those most used in the economic literature in this connection are intertemporal current account models, which consider a small country that may gain access to the international capital market unrestrictedly. The country's level of income, after discounting investment and public spending, the interest rate on the capital market and the exchange rate are exogenous and time-variant. The country's consumers seek to smooth their flow of consumption over time and, to do so, they resort to foreign debt⁵.

The essential implication of the model is as follows. At each point in time, a country's current account balance depends both on its expectations of future income and on expectations about future relative prices. As a result, expressed in terms of the trade balance as a percentage of consumption, it behaves in accordance with the following relationship⁶:

$$CA_t^* = -E_t \sum_{i=1}^{\infty} \beta^i [\Delta no_{t+i} - \gamma r_{t+i}^*] \quad [1]$$

where Δno_{t+i} is the increase between period $t+i$ and $t+i-1$ in income, net of investment and public expenditure, of the country (no); r_{t+i}^* is defined as a weighted average of the model's two relative prices (the interest rate and the exchange rate), which therefore reflects the joint effect of both; and β and γ are parameters of the model representing the discount rate and the elasticity of intertemporal substitution, respectively. This relationship indicates that the consumers of the country, who seek to restrict the oscillations in consumption over time, should consume more today, resorting to foreign debt, if, other things being equal, they expect increases in income or declines in future relative prices, caused either by a fall in real interest rates or by a depreciation of the real exchange rate.

Results

There are several methods to evaluate empirically the intertemporal current account model⁷. One of the most commonly used methods is based on comparison of the current account balance values resulting from the model with those observed in reality. To obtain the former, the habitual practice in the literature has been to consider that individuals form their expectations about income and future relative prices on the basis of the patterns followed in the past by these variables. More specifically, at each point in time t , expectations are obtained about the future income flow ($\{no_{t+i}\}_{i=0, 1, 2, \dots}$) and about the flow of future relative prices ($\{r_{t+i}^*\}_{i=0, 1, 2, \dots}$) in accordance with a vector autoregressive model (VAR) that includes the three variables of equation [1]: CA^* , Δno , and r^* . Once these expectations have been generated, equation [1]

5. See, for instance, Bergin and Sheffrin (2000). This model is similar to the permanent income models but, instead of being applied to an individual, it is applied to a country. 6. Generally, the empirical behaviour of the current account balance defined in this way and that of the balance defined in accordance with the more conventional definition are qualitatively very similar. 7. Generally, these methods are based on those developed by Campbell (1987) and Campbell and Shiller (1987) for the empirical study of permanent income models. One important characteristic they all share is that they focus on the dynamic predictions of the model, whereby all the variables used in the analysis are expressed as deviations in relation to the sample mean.

provides the current account balance that would be consistent with the model at each point in time.

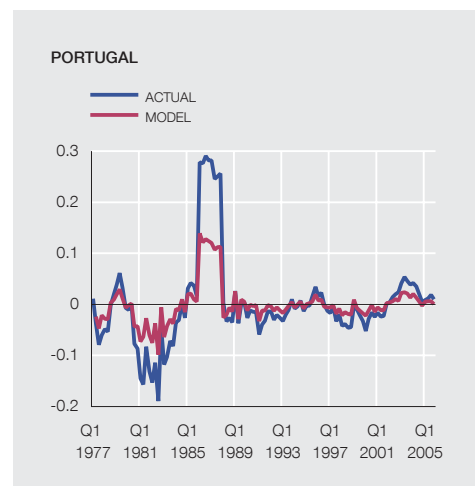
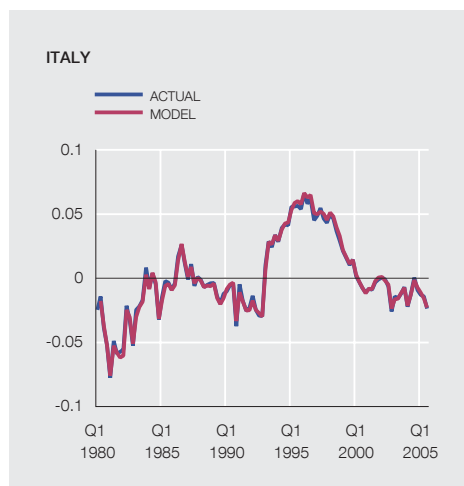
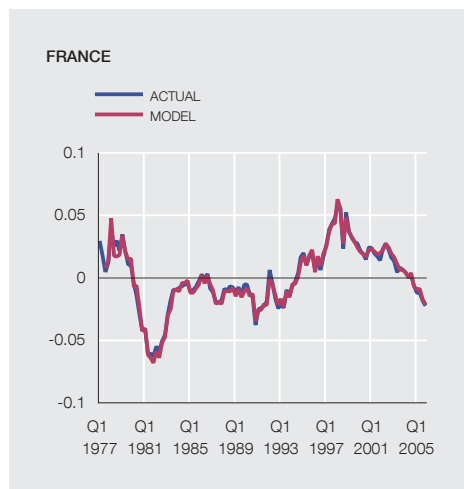
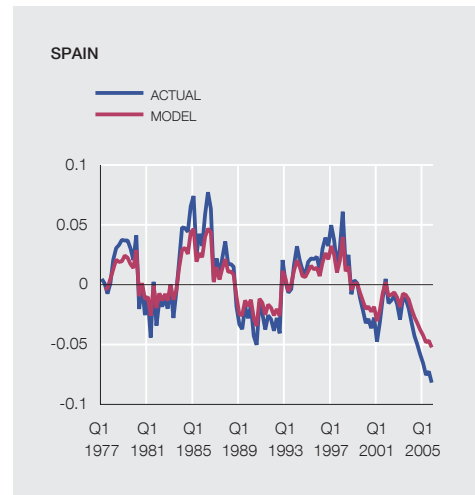
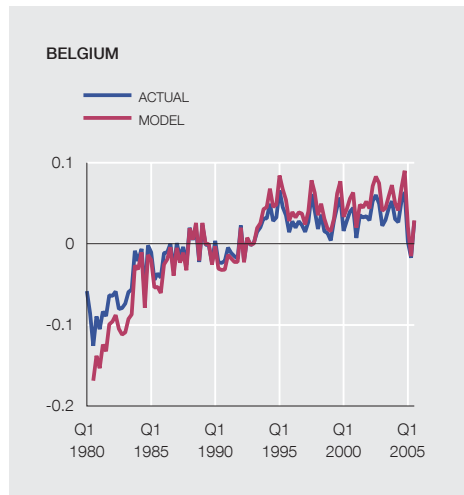
When this method is applied to evaluate the empirical behaviour of the model from the late 70s to the end of 2005 in 10 euro area countries, it is found that the current account balances of Austria, Finland, Germany and Ireland do not appear to behave according to equation [1], while in the cases of Belgium, France, Italy, the Netherlands, Portugal and Spain, this equation provides a reasonable approximation to the performance of these balances, especially when elasticities of substitution of less than 0.75 are considered⁸.

Chart 3 compares the model-produced (MODEL) and actual (ACTUAL) current account balances in the six countries in which the intertemporal model cannot be statistically rejected. In the case of France and Italy, both series proved to be very similar. In contrast, in the Netherlands, Portugal and Spain the current account balance resulting from the model is less volatile than the actual balance, the average ratios between the two respectively standing at 77%, 60% and 80%. Finally, the model overestimates the volatility of the current account in the case of Belgium.

It is particularly worthwhile analysing what the main determinant of fluctuations is in the current account balance in each country. To do this, and as established in equation [1], it is simply necessary to determine which portion of the fluctuations in the current account captured by the model is due to changes in expectations about future income (i.e. the first term of the right-hand side of the equation) or to changes in expectations about future relative prices (i.e. the second term of the right-hand side of the equation). The result of this exercise shows that the relative contribution of these two components varies substantially from country to country. Thus, while in Belgium, Portugal and Spain the first component (income expectations) has more weight, in France, Italy and the Netherlands the second component (expectations about relative prices) prevails.

As previously described, in the empirical analysis of the intertemporal model, individuals' expectations about the flow of future income, $\{no_{t+i}\}_{i=0, 1, 2, \dots}$, are derived for each moment in time t , using a VAR model with three variables (income, relative prices and current account)⁹. The analysis of these expectations makes for notable results. Specifically, on the basis of the estimated expectations about the flow $\{no_{t+i}\}_{i=0, 1, 2, \dots}$ it is possible to derive, for each moment in time t , the level of permanent income that individuals expect, no_t^* , according to the model. This value is defined as the level of income such that the current discounted value of an infinite flow of constant income at that level has the same current discounted value as the flow of future income that individuals expect. In this respect, if at a specific moment in time the ratio between the expected permanent income and the actual income of a country is more (less) than 1, then we may conclude that this country expects to grow (decrease) in general terms in the future. Likewise, the higher the ratio is, the greater the country's future growth expectations.

8. Greece and Luxembourg are not included in the analysis. In the case of Greece, quarterly data are not available. As to Luxembourg, given its special characteristics, the model considered in this article will not, it is thought, be appropriate for studying its current account. Moreover, in Germany the analysis only begins in 1991, owing to reunification, and in Ireland data are only available from 1997. The rejection of the model for Germany and Ireland can be understood in the light of the very small size of their samples. In the case of Finland, this can be explained partly by its special economic relationship to the countries of the extinct Soviet Union. The rejection in the case of Austria is more difficult to interpret. Campa and Gavilán (2006) describe and apply other analytical methods for the empirical evaluation of this model. The results obtained with these methods are similar to those presented in this section. 9. Expectations about the course of relative prices in the future are also obtained.



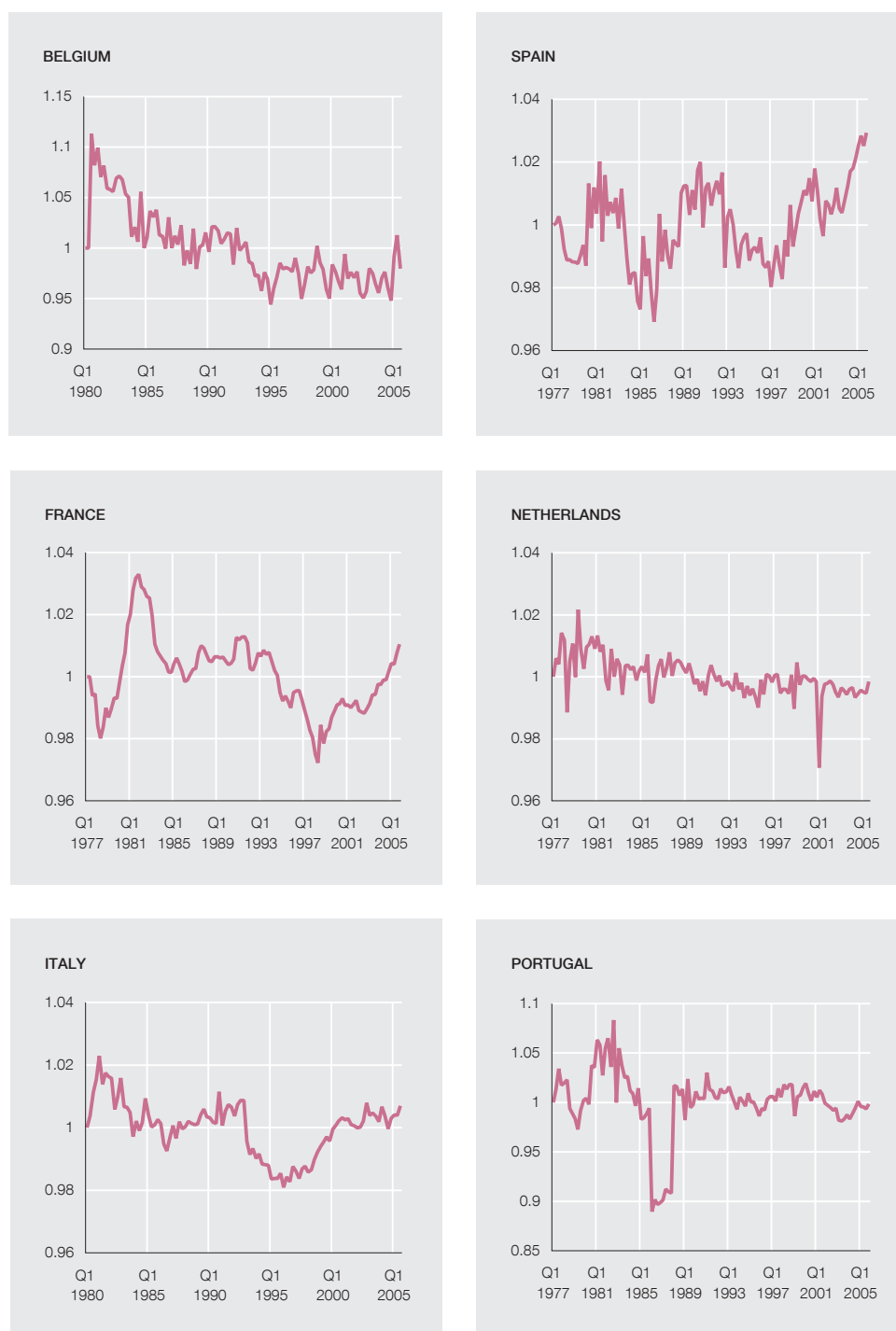


Chart 4 shows this ratio of expected *permanent income* to actual income in the estimation period for each of the six foregoing countries. As can be seen, the southern euro area countries (France, Italy, Portugal and Spain) shared during the second half of the 90s increases in their expectations of future income growth, motivated perhaps by the creation of the euro area. Around 2001, these expectations were revised downwards. Since then, the ratio has held stable at around its 2001 values in Italy, it has fallen in Portugal and it has increased once again in Spain and in France. In this respect, it should be highlighted that Spain's growth expectations reached a historical high in 2005 Q4. Nonetheless, even with these expectations, the current account balance that would result from the intertemporal model is substantially lower than that observed in this period.

Conclusions

The fundamental implication of an intertemporal current account model is that countries smooth their consumption flow over time and that changes in their current account balance thus depend on expectations of income and future relative prices. When applied to the euro area countries in the recent period, this implication is rejected for Austria, Finland, Germany and Ireland, but has empirical support in Belgium, France, Italy, the Netherlands, Portugal and Spain. The current account resulting from the model, however, shows less volatility than that observed for the Netherlands, Portugal and Spain, and greater volatility for Belgium.

The analysis of the expectations of future income that prove consistent in each country with the actual current account balance highlights, according to the intertemporal model, a synchronised increase in such expectations in France, Italy, Portugal and Spain in the late 90s. These implicit expectations fell around 2001 and, since then, their behaviour has been uneven across these countries. Broadly, they have remained stable in Italy, decreased in Portugal and increased once again in France and in Spain. In Spain's case, growth expectations consistent with the country's current account balance reached higher levels in 2005 than those previously observed.

It should be qualified that the intertemporal model considered, while in general consistent with the fluctuations observed in the current account of the six above-mentioned countries, is highly stylised and lacking certain elements that could help better understand these fluctuations. In particular, this model considers that there is no imperfection in the international capital market, that investment is exogenous and does not contribute to the capacity to increase future income of the countries that make such investment, and that there has been no structural change associated with the creation of the euro area. The inclusion in future analyses of credit restrictions that are eased over time, the endogenous determination of the level of investment in the country or the existence of a structural change in the process of determining the current account further to the creation of the euro area might help contribute to a better explanation of the behaviour of the current account balances of some of the countries considered in this article.

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