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Does the US current account show a symmetric behavior over the business cycle?

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ABSTRACT

Traditionally, the literature that attempts to explain the link between the current account and output finds a linear negative relationship (e.g., Backus, Kehoe, and Kydland, 1995). Using nonparametric regressions, we find a robust U-shaped relationship between the U.S. current account and the GDP cycle. When output is above (below) its trend the current account and detrended output are positively (negatively) correlated. We argue that this nonlinearity might be caused by persistent productivity shocks coupled with uncertainty shocks about future productivity.

1. Introduction

The U.S. current account deficit is by far the most important component of the so-called global imbalances. The concern about such a deficit is probably related to the fear that the effects of a sudden reversal could have on economic activity.[1] One of the several hypotheses about the U.S. external deficit is the *one* proposed by Fogli and Perri (2006, 2015). The authors argue that uncertainty about future productivity plays a significant role in the long-run accumulation of external imbalances. The mechanism of their model is based on the link between uncertainty and consumption. A persistent increase in productivity accompanied with a fall in uncertainty about future productivity (as in the case of the Great Moderation) can generate large positive effects on consumption (large fall in savings) for precautionary motives, causing a drastic reduction in the current account balance.

Motivated by these findings, we analyze the U.S. current account and the role of uncertainty, but from a short-run perspective. More precisely, we investigate the implications of uncertainty shocks of productivity on the cyclical behavior of the U.S. current account. The standard RBC literature only finds and explains linear relationships (correlations) between the current account surplus and the GDP cycle (e.g. Backus, Kehoe, & Kydland, 1995; Baxter & Crucini, 1993). Their conclusion is that the U.S. current account is (weakly) countercyclical. That is, it is negatively correlated with the cyclical component of GDP. In this paper we challenge this common wisdom. Interestingly, this correlation is slightly negative but, statistically speaking, nil.[2] Using nonparametric techniques, we find a robust U-shaped relationship between the U.S. current account and the cyclical component of real GDP. When output is

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[1] Some authors argue that trade-balance reversals imply non-negligible costs in terms of GDP growth (Croke, Kamin, & Leduc, 2005).

[2] The correlation is −0.27 with a standard error of 0.18 during the period of our study. See also the slope estimates reported in Table A2 (column 1).

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below its long-run trend, the current account tends to be inversely related to the GDP cycle, as previous studies find. In contrast, when output is above its trend, the current account tends to be directly related to the GDP cycle.

We do not view this finding as a curious data feature, but as a relationship that deserves attention because of the underlying mechanism at play. In particular, we argue that this empirical fact is caused by a combination of first-moment and second-moment shocks of productivity.[3] Using a stylized model, we show that persistent productivity shocks coupled with uncertainty shocks about future productivity not only generate the typical negative link between the current account and output observed during recessions, but also the positive link we find during expansions. In our model, large positive productivity shocks that carry a component of higher uncertainty would increase output in an amount larger than the total increase in domestic absorption (consumption plus investment) because of the higher volatility that the economic agents face. A higher uncertainty about future productivity discourages investment because physical capital becomes riskier, and lowers consumption due to precautionary motives. These negative effects do not compensate the larger positive effect on domestic absorption caused by the persistent increase in productivity. Given that output grows more than absorption, the current account improves. This implies the positive comovement observed during expansionary periods in the U-curve we find. During recessions, with large negative shocks, the increase in uncertainty just reinforces the effect of the persistent productivity shocks.

It is worth highlighting that uncertainty shocks are neither new nor irrelevant. Since the study of the Great Moderation and, especially, the onset of the Great Recession, macroeconomists have paid more attention to such shocks (e.g., Bloom, 2009). More importantly, the presence of uncertainty shocks has implications in the design of macroeconomic policy. According to Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry (2012), increased uncertainty alters the relative impact of government policies, making them initially less effective. From a theoretical viewpoint, Basu and Bundick (2012) argue that monetary policy usually plays a key role in offsetting the negative impact of uncertainty shocks on output.

Our study also relates to an empirical literature in international finance that models the current account using univariate models. A number of researchers argue that there exist nonlinear dynamics in the form of thresholds. This literature includes works by Freund (2005), Clarida, Goretti, and Taylor (2005), and Christopoulos and León-Ledesma (2010). The former, for instance, concludes that a typical current account reversal begins when the (previous) current account deficit is approximately 5% of GDP. Clearly, their focus is on an asymmetry with respect to the current account itself, not over the business cycle.[4]

In the next section, we document the main finding of our study. Section 3 formulates a simple model to explain it. Section 4 adds some final remarks. The Appendix shows that this finding is robust to alternative measures of external imbalances and cyclical components, different period and country samples, and a number of econometric specifications.

2. The asymmetric link between the US current account and the GDP cycle

2.1. Nonparametric estimator and data

To explore the empirical relationship between the current account and the GDP cycle we use a nonparametric regression. The advantage of this type of estimator is that it is robust to departures from a parametric specification and it does not impose a specific functional form for the relationship of interest. Thus, the current account-to-GDP ratio (ca) is related to the cyclical component of GDP (y) as follows:

$$\begin{aligned} ca_t &= m(y_t) + \varepsilon_t \\ E(\varepsilon_t | y_t) &= 0 \end{aligned} \tag{1}$$

where $m(.)$ is the conditional mean of ca_t given y_t and ε_t is the error term. According to Eq. (1), the link between the current account, adequately scaled by the GDP, and the cycle of output could be nonlinear because $m(.)$ is a function that may take different forms and does not impose any specific mathematical relationship. To estimate $m(.)$ we use the local linear estimator, which is widely studied and employed in the nonparametric econometrics literature.[5] The problem consists of minimizing

$$\sum_{t=1}^{T} K\left(\frac{y_t - y}{h}\right)\left[ca_t - \alpha - \beta(y_t - y)\right]^2 \tag{2}$$

where $K(.)$ is the kernel density, h is the bandwidth, α and β are the parameters to be estimated locally for every value y.

We define ca as the (demeaned) sum of net exports and net primary income from abroad as a percentage of GDP, expressed in percentages. The cyclical component of real output, y_t, is obtained by detrending the log of real GDP using a Baxter-King approximation to the band pass filter ($BP_{12}(6,32)$). We use quarterly seasonally-adjusted data during the 1973.1–2012.1 period.[6]

[3] In this paper we will use the terms "second-moment shock" or 'volatility shock" to refer to the same shock of uncertainty about, unless stated otherwise, future total factor productivity.

[4] Needless to say that our main intention is not to enlarge a well-known literature in international finance populated by empirical findings with alphabetical shapes. Some papers highlight the response of the current account in the form of a J-curve after a rise in the exchange rate (Junz & Rhomberg, 1973). Others find a tilted S-curve between the cross-correlation function for net export and terms of trade (Backus, Kehoe, & Kydland, 1994).

[5] See, for instance, Li and Racine (2007).

[6] The initial period of the sample eases any comparison to other empirical studies and allows us to use available series of the effective real exchange rate in the multiple-regressor analysis (see Appendix A). Main findings hold if we use the 1957.1–2012.1 period and they are available upon request.