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Resurrecting the weak credibility hypothesis in models of exchange-rate-based stabilization

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ABSTRACT

We analyze how weak credibility affects the volatility of consumption spending in a model of exchange-rate-based stabilization that allows for both durable and nondurable goods. The inclusion of durables greatly improves the explanatory power of the weak credibility hypothesis. The hypothesis can account for the main qualitative properties of the boom–bust cycle provided the elasticity of durables expenditure with respect to Tobin's q is greater than the intertemporal elasticity of substitution. Moreover, the quantitative effects are very large. In numerical simulations based on conservative assumptions about the expenditure share of durables (20%) and wealth effects (none), aggregate consumption increases 17–22% and the real exchange rate appreciates 24–26% when the crawl decreases from 100% to zero for 3 years. In variants of the model that incorporate supply effects, the consumption boom is equally strong but appreciation of the real exchange rate rises to 30–40%.

1. Introduction

Stabilization programs that formally announce a lower rate of crawl of the currency, once common in less developed countries (LDCs), are now comparatively rare. Nevertheless research on exchange-rate-based stabilization (ERBS) continues to occupy a special place in development macroeconomics. In part this reflects the fact that elements of ERBS are very much present in other stabilization frameworks. LDC central banks often try, for example, to counteract terms of trade shocks, aid surges, and unexpected capital inflows by "leaning against the wind" in the foreign exchange market. The attempt to manage the path of the exchange rate is not called ERBS because it is not part of a larger program that declares a new policy regime. But if the public believes the intervention is unsustainable and that the rate of crawl will soon change, then leaning against the wind is just non-credible ERBS under a different name. ERBS is still an active player in the policy world, albeit in a different form.

The other, more important reason for the ongoing study of ERBS is that the potential payoff is large. ERBS is one of the few unifying experiments in the sprawling field of development macroeconomics. More than 20 LDCs in Latin America, Africa, the Middle East, and East Asia have adopted ERBS programs at one time or another in the past 40 years. In the great majority of cases, the announcement of the program has been followed by large current account deficits, large capital inflows, a pronounced surge in consumption spending, and persistent, strong appreciation of the real exchange rate. This set of stylized facts is remarkably robust to date, geographic location, position on the development spectrum, and the mix

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of policies supporting the lower rate of crawl. Finding a satisfactory explanation for the ERBS syndrome should tell us a great deal therefore about the correct model structure for LDC macroeconomies; the challenge posed by the stylized facts in ERBS episodes disciplines development macrotheory in the same way that the need to explain the U.S. business cycle disciplines developed country macrotheory.

Calvo and Vegh (1993, 1994a) launched the modern ERBS research program with the publication of two seminal papers that focused on weak credibility as the underlying source of the consumption boom. The link between credibility and spending arises when holdings of real money balances affect the cost of consumption. Calvo and Vegh assumed specifically that money demand is governed by a cash-in-advance constraint and that the country operates in a perfect world capital market. In this setup, a temporary (i.e., non-credible) reduction in the rate of crawl lowers the price of consumption today relative to the price of consumption in the future. Intertemporal substitution then leads to a consumption boom and a current account deficit financed by private capital inflows. The bill for high spending during the boom phase is paid in perpetuity in the post-ERBS period: when the policy collapses, consumption drops below its previous level and the country runs a trade surplus year in and year out to cover higher interest payments on the external debt.

While the weak credibility hypothesis exercises a strong intuitive appeal, its explanatory power is thought to be limited by the fact that the intertemporal elasticity of substitution is low in LDCs. In the Calvo–Vegh model, for example, the peak increase in real consumption is a modest 1–3% when the intertemporal elasticity lies between .20 and .50.[1] Consistent with this, Reinhart and Vegh (1995) and Mendoza and Uribe (1996) found that the weak credibility hypothesis predicts increases in consumption only 10–20% as large as the increases observed in the southern cone tablitas and other ERBS episodes. Thus both theory and empirical tests seem to argue that the weak credibility hypothesis cannot deliver strong quantitative effects (Agneor and Montiel, 1996, p. 353).

In the period since publication of the Calvo–Vegh papers, theoretical research has concentrated on investigating the properties of models with assorted wealth and supply-side effects in an effort to achieve a better fit with the stylized facts. This strategy has failed. After surveying the literature and conducting additional independent analysis, Rebelo and Vegh (1995) conclude that, even when combined for maximum impact, the proposed effects cannot account for the quantitative magnitude of the consumption boom and real exchange rate appreciation seen in ERBS programs. The bottom line in Uribe (2002), the most recent attempt to secure strong wealth/supply effects, is equally discouraging.[2]

Repeated failure has taken a toll. New research on ERBS now has to battle uphill against the perception that "everything has been tried and nothing works." This is unfortunate because the weak credibility hypothesis was never given a fair hearing. Rebelo and Vegh (1995) and Reinhart and Vegh (1995) were careful to note that the spending boom might be much stronger in models that incorporate durable consumer goods. Certainly there is abundant casual evidence to support this conjecture. According to case studies and Calvo and Vegh's (1999) stabilization time profiles, the boom–bust cycle is driven by the tremendous expansion and subsequent collapse in durables purchases. But despite the "hints" in the data, durables have not figured in most ERBS models. The sole exception is De Gregorio et al.'s (1998) elegant analysis of the "bunching" pattern in durables spending when purchases follow a S–s rule. Their model, however, abstracts from nondurables consumption, treats wealth effects as largely exogenous, and assumes ERBS is permanent and fully credible. It is too stylized therefore to confront with the data or with the competing hypothesis that the consumption boom stems from weak credibility.

This paper reevaluates temporary vs. permanent ERBS in a model that accommodates both durable and nondurable consumer goods. Our results make a powerful case for resurrecting the weak credibility hypothesis. In numerical simulations that assume the rate of crawl decreases from 100% to zero for three years, weak credibility triggers a huge, double-digit spending boom. When there are no supply effects, the consumption boom peaks at 17–22% and the real exchange rate appreciates 24–26%. Throughout, most of the heavy lifting is done by the smallest component of expenditure: durables comprise only 20% of consumption but account for 70–90% of the increase in total spending. Durables also lead in the bust phase of the cycle, strongly overshooting their steady-state level after ERBS collapses. In short, volatile swings in durables spending drive the entire ERBS cycle.

Augmenting the model with supply effects produces even better results. In our preferred specification, the consumption boom is equally strong but appreciation of the real exchange rate rises to 30–40%. In other runs, the consumption boom increases to 25–35% without diminishing appreciation of the real exchange rate (which stays in the 20–25% range). Supply effects are limited, however, to a secondary role. When stabilization is credible, their quantitative kick is bigger but insufficient to compensate for the absence of intertemporal substitution in durables spending. The consumption boom peaks at a modest 5% and the real exchange rate appreciates only 3–8%. Future research may overturn this conclusion, but, for now, the weak credibility hypothesis stands alone as the only hypothesis that explains the stylized facts associated with ERBS.

[1] When the rate of crawl decreases from 100% to 10% for 3 years, the world market interest rate equals 8%, and the ratio of real money balances to consumption is 10%, the solution for the peak increase in consumption (C_p) is $(C_p-C_o)/C_o = .064\tau$, where τ is the intertemporal elasticity of substitution. For $\tau = .20-.50$, the peak increase in consumption is only 1–3%. (The solution stated above is obtained by solving the Calvo–Vegh model for small changes. It is approximately correct for large changes.)

[2] On page 562, Uribe observes that "existing models produce consumption booms and real exchange rate appreciations that are too small compared to the actual data," and then acknowledges that "The quantitative analysis conducted in Section 6 . . . does not help resolve this problem".