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Coping with Terms of Trade Shocks: Pegs versus Floats

The choice of the exchange-rate regime has always been an area of great controversy and debate. The discussion has once again taken center stage in the developing world. The sequence of currency crises in the 1990s, the success of currency board arrangements, the dollarization plan of Ecuador, and the apparent swing toward flexible regimes in many emerging economies have revived interest in this debate.

Following the works of Robert Mundell and William Poole in the 1960s, many economists still believe that the relative merits of exchange-rate regimes depend on the nature of the shocks that buffet the economy. When shocks come from the domestic money market, fixed-rate regimes automatically prevent them from affecting the real economy. Money supply will increase as the monetary authority buys foreign reserves to prevent the appreciation of the local currency, and real output is left unchanged. In contrast, flexible-rate regimes require income to fall so that real money demand is reduced back to the unchanged level of real money supply. There-

fore, if these shocks predominate in the economy, this is an argument in favor of fixed-rate regimes.

However, when shocks are mostly real, floats are in theory the more effective choice. Indeed, one of the most important benefits commonly attributed to fully floating exchange-rate regimes is that they allow smooth adjustment to real shocks. When domestic prices are sticky and thus change at best slowly in response to shocks, a negative real shock—say, a fall in export demand or in the terms of trade—leads to a depreciation of the nominal exchange rate.¹ This depreciation in the exchange rate, in turn, reduces the price of the tradable goods at precisely the moment that demand for them has fallen and therefore partially offsets the effect of the negative shock. That is, the exchange rate acts as an automatic stabilizer in flexible-rate regimes.

On the other hand, fixed-rate regimes have to rely on the slow changes of domestic prices to be pulled out from the recession. In other words, pegs simply have to live with the effects of the negative shocks. Moreover, the central bank must prevent the currency depreciation that would otherwise occur by buying domestic money with foreign currency. This response is inherently contractionary and induces an additional fall in employment. The long and agonizing deflationary periods necessary to realign relative prices in the United Kingdom and Argentina during, respectively, the 1920s and 1990s serve as reminders of the costs associated with a fixed nominal exchange rate.

Given the prominent role played by exchange-rate regimes in developing countries and the extent to which this choice of regimes is dictated by the issues elucidated above, it is perhaps surprising that there is scant empirical work addressing the relevance of these

1. As goods demand and output fall, the demand for money also falls. To maintain the money market in equilibrium, the nominal interest rate has to fall, which causes the domestic currency to depreciate in the foreign exchange market.

theories. Here I look at a post-Bretton Woods sample of seventy-four developing countries to test whether flexible regimes can buffer terms-of-trade shocks better than fixed regimes.

First, I classify countries by exchange-rate regime. The basic reference for classification of the exchange-rate regimes is provided by the International Monetary Fund. The IMF classification is *de jure*, based on the publicly stated commitment of the authorities in each country. This information captures the notion of a formal commitment to a regime but fails to consider whether the actual policies were consistent with this commitment. For example, take Central America in the mid-1980s: El Salvador (1983–84), Guatemala (1986–88), and Nicaragua (1985–87) are classified as pegs (with the dollar), despite each having undergone several devaluations, resulting in total depreciations of 10 percent, 41 percent, and 106 percent, respectively. In the case of floats, central banks can subordinate monetary policies to eliminate fluctuations in the exchange rate, rendering a *de jure* float equivalent to a *de facto* peg. India (1993–96) and Bolivia (1985–90) are examples of this pattern.

To mitigate some of these problems, I use a classification that is a combination of *de jure* and *de facto* approaches. Chart 1 shows the evolution of the number of fixed, intermediate (fixed but frequent adjusters, cooperative arrangements, floats within a predetermined range, and heavily managed floats), and flexible regimes. At first glance, the developing world seems to be marching steadily toward floating exchange-rate arrangements.

Guillermo Calvo and Carmen Reinhart suggest, however, that the so-called demise of fixed exchange rates, as evidenced by chart 1—even using a “corrected” classification—is a myth.² Their evidence on the unconditional volatility of exchange rates and foreign

2. G. Calvo and C. Reinhart, “Fear of Floating” (January 2000), www.bsos.umd.edu/econ/ciecalvo.htm and C. Reinhart, “The Mirage of Floating Exchange Rates,” *American Economic Review* 90 (May 2000).

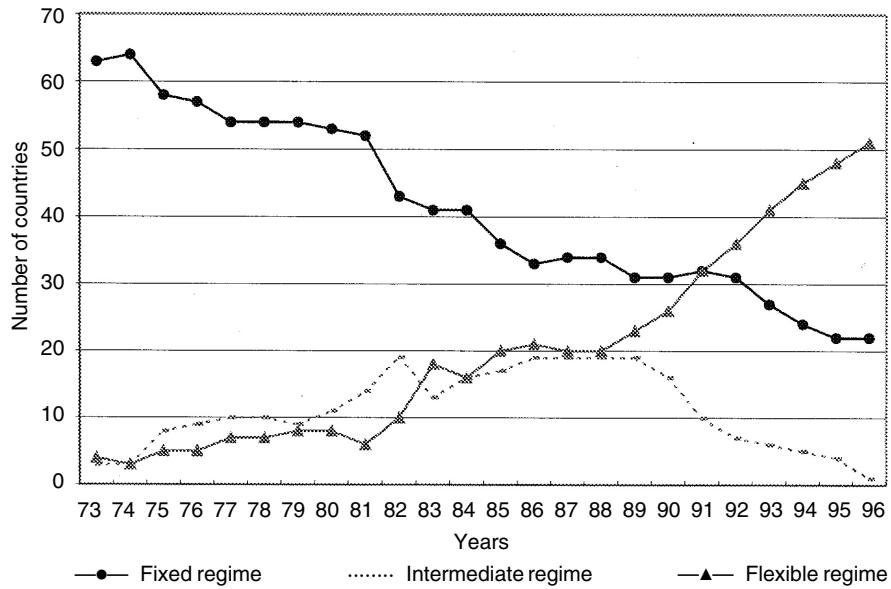


Chart 1. Evolution of Exchange-Rate Regimes for Developing Countries (1973–1996)

reserves suggests that many countries claiming to pursue flexible rates are heavily intervening in the foreign exchange market to prevent their nominal exchange rates from moving freely. Hence, they doubt that the regimes described as flexible are substantively different from the fixed ones. The results presented below contrast sharply with this conclusion.

Consider two economies with different exchange-rate regimes but otherwise possessed of the same degree of openness, financial access, and fiscal policies. How will these economies be differentially affected in terms of changes in real output and real exchange rates when subjected to a negative terms of trade shock? The empirical evidence on this issue is contained in figures 1–4.

We see from the figures that the conventional wisdom that floating regimes are better suited to cope with terms-of-trade shocks receives ample support. The effect of shocks to the terms of trade

on real output in the fixed exchange-rate regime is large and significant. In contrast, in regimes that can use the nominal exchange rate to buffer the shock, the effects are small. Furthermore, the response of the real exchange rate to a negative terms-of-trade shocks is markedly different across the regimes. In pegs, the real depreciation is small and occurs only two years after the shock, while in floats the real exchange rate depreciates immediately and significantly. Moreover, the shock is inflationary in floats and deflationary in pegs (not seen in the figures).

The responses of the real and nominal exchange rates are consistent with the automatic stabilizing property of regimes with flexible nominal rates and with the whole burden of the relative price adjustment relying on home (sticky) prices in fixed regimes. Results are also consistent with the relatively high costs that pegs have to pay to maintain their parity (after a 10 percent fall in the terms of trade, real output falls by 1.7 percent more in the average peg compared to the average float). The real exchange-rate response also gives empirical validity to a proposition found repeatedly in policy discussions regarding developing countries, namely, that in a small country the worsening of the terms of trade will result in a depreciation of the real exchange rate.

Finally, the magnitude of the response of the nominal exchange rate in flexible regimes (around 8 percent two years after the shock) suggests that they have no “fear of floating” when hit by this type of shock. This finding is opposite to the spirit of the results of Calvo and Reinhart. Furthermore, even when I restrict the sample to highly dollarized countries, where the Calvo-Reinhart effect should be strongest,³ the nominal exchange rate reacts substantially in flexible regimes to terms-of-trade changes.

3. They argue that the fear of inflation and the existence of large sectors of the economy indebted in foreign currency or, as it has been dubbed, “liability dollarized” can prevent these countries from using exchange-rate policy.

Figure 1: Under Fixed Regime

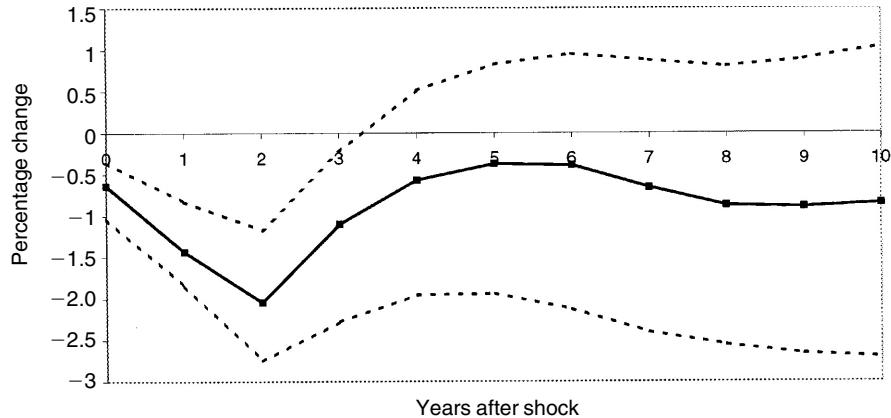
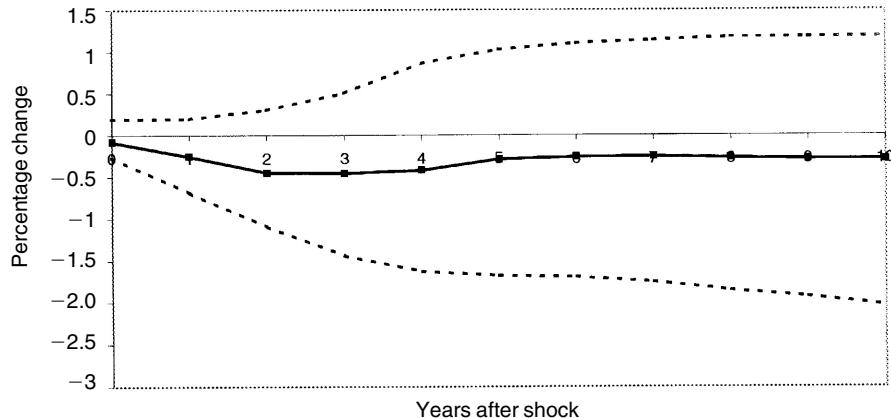


Figure 3: Under Flexible Regime



Figures 1–4. Real Output Response to a 10 Percent Permanent Fall in Terms of Trade. Notes: 1. Focusing on figure 1, in fixed regimes, real output falls by 0.6 percent in the same period the economy is hit by the negative shock. One period after the shock, real output falls an additional 0.8 percent, to a total of 1.4 percent, and so on. Solid lines are estimates of these magnitudes. Dashed lines represent 90 percent confidence-interval bounds of these estimates, that is, there is a 90 percent chance that the true estimate is within these lines. The remaining figures are to be interpreted similarly.

Figure 2: Under Fixed Regime

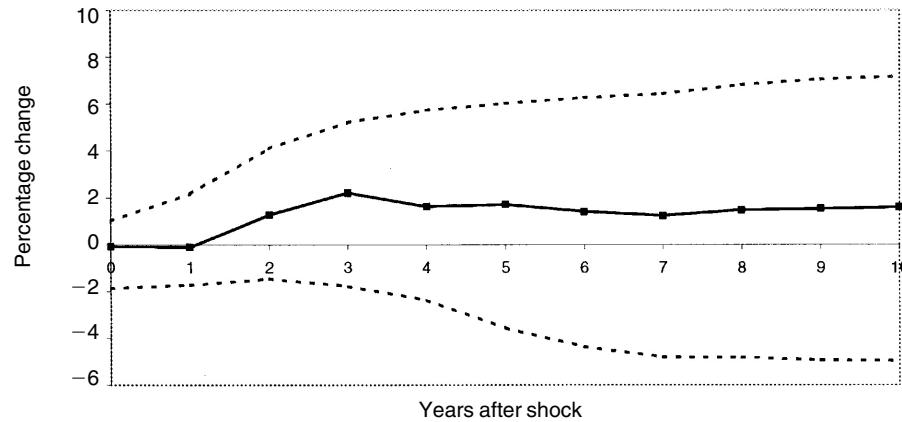
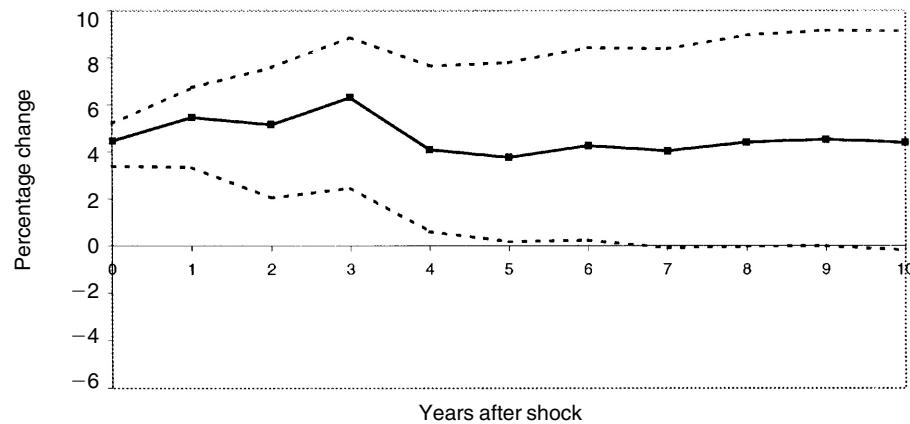


Figure 4: Under Flexible Regime



Figures 1–4 (*continued*). Notes (*continued*): 2. Figures interpreted as in note 1. 3. A rise in the real exchange rate implies a depreciation of the domestic currency.

Conclusions

The results presented show that, in the developing world, flexible exchange-rate regimes can better insulate the economy from real disturbances. Floats have smoother real output paths after terms-of-trade shocks. There also seems to be no fear of floating in response to terms-of-trade shocks because the floating countries typically let their nominal exchange rate depreciate considerably when hit by negative shocks. Furthermore, terms-of-trade shocks are inflationary in floats and deflationary in pegs.

The fixed-versus-flexible debate is still a highly contentious one. In the search for clearer answers, however, we ought to examine the theoretical arguments involved and quantify the relative performance of the regimes. In my research, I have found support for the conventional wisdom regarding the insulating properties of flexible regimes to real shocks. Although this benefit comes at the expense of a more volatile real exchange rate, the magnitudes involved suggest that these insulating properties are, indeed, a powerful argument in favor of flexible regimes for countries that face mostly real shocks.