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Abstract

Conventional wisdom posits that high interest rates stem capital flight and currency depreciation. Some have argued, however, that the standard prescription exacerbates the problem. This paper set out a framework for evaluating the conditions under which an increase in domestic interest rates fails to reverse capital outflow. The possibility that high domestic interest rates might have unorthodox effects arises through a risk premium: If raising interest rates increases the possibility associated with default, the result can be a worsening of the country's capital account position.

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Michael Pakko
Senior Economist
Federal Reserve Bank of St. Louis
411 Locust Street
St. Louis, MO 63102
Phone—(314) 444-8564
Fax—(314) 444-8731
E-mail: pakko@stls.frb.org

Do High Interest Rates Stem Capital Outflows?

In recent financial crises around the world, episodes of capital flight and currency depreciation have created difficult policy choices for the governments of affected nations. The standard policy prescription includes fiscal restraint and the maintenance of high domestic interest rates to stem capital outflows. Although countries which follow this advice are rewarded by the international community with financial assistance intended to further buttress investor confidence, the contractionary effects of these policy prescriptions can be bitter medicine.

In light of the continuing difficulties that many countries have faced following the implementation of such policies, some have argued that the standard prescription exacerbates problems associated with capital flight. For example, Sachs (1998) contends that by following the conventional wisdom to "raise interest rates to stratospheric levels," countries experience a perverse outcome: "Investors do not gain confidence when short-term rates are pushed to dozens of percent . . . The more these economies tried to defend their currencies, the more they incited panic." The implication of this argument is that higher rates can exacerbate problems associated with currency depreciation and capital outflows.

Others are more skeptical of this contention: "I have heard some people propose what amounts to a sort of foreign exchange-interest rate Laffer curve: if you cut interest rates this will strengthen the economy, and the currency will actually rise. This is as silly as it sounds." [Krugman (1998)].

This paper lays out a framework for evaluating the conditions under which an increase in domestic interest rates fails to reverse capital outflows and support a country's exchange rate. That is, when might a "Laffer curve" type of effect be relevant?

This issue is examined in a simple model in which capital flows depend on an interest arbitrage condition that incorporates a default risk. The possibility that high domestic interest rates might have unorthodox effects on capital flows enters through the risk premium: If raising interest rates increases the probability associated with a default on outstanding debt, the result can be a worsening of the country's capital account position.

Because the Laffer curve nature of the model admits the possibility of multiple equilibria, an exogenous event that increases the perceived risk of investing in a country can result in a jump from an equilibrium in which raising interest rates will reverse capital outflows, to one in which the reverse is true. A country facing capital flight due to a crisis of confidence might therefore be plunged into a situation in which *reducing* interest rates might be the appropriate policy.

The Model

The model consists of a small open economy in a world of free capital mobility. To simplify the analysis, assume that the country's net indebtedness is consolidated on the accounts of its government and denominated in terms of a single fixed-return bond. The nominal interest rate on the bond is the government's single policy instrument. Investors consider both the explicit interest rate on the bond, R, and the probability that

the country continues to service its debt, p. The expected real return on the bond is therefore

$$r = pR + e \tag{1}$$

where e is the expected rate of currency appreciation. Returns are assumed to be zero in the default state.

An interest arbitrage condition determines the direction of capital flows; i.e., an investor withdraws capital if the expected real return on the country's bonds falls below the world real interest rate, r^w. If we assume that there is a distribution of beliefs about the default probability, the relationship between capital flows and changes in the return spread can be expressed as depending on changes in the expectations of the median investor.

The possibility of an anti-orthodox effect for high interest rate policies occurs when the probability of a debt default is increasing in the country's expected fiscal deficit. Higher interest rates can increase prospective deficits in a number of ways. Most directly, higher interest rates raise the burden of debt service obligations (particularly when outstanding debt is already large). Higher rates also dampen investment and overall economic activity, and can debilitate a weak financial sector.

A full accounting of all the possible effects set aside, let us assume that the fundamental impact of high interest rate policies is to raise the probability that a country will be unable to service its debt. The probability of default might also be indirectly affected by exchange rate depreciation – especially to the extent that the county's debt is

denominated in foreign currency. Consequently, the probability that the country will *not* default can be expressed as

$$p = \rho(R, e|X) \tag{2}$$

with $\partial\rho(\ )/\partial R<0$ and $\partial\rho(\ )/\partial e>0$. The vector X summarizes the exogenous fundamentals affecting investors' risk assessments.

To the extent that a policy succeeds in raising expected real returns and attracting capital, the currency will also appreciate. Moreover, high interest rates have the beneficial effect of dampening inflation expectations and hence, appreciating the currency. So,

$$e = \varepsilon(R, r|X), \tag{3}$$

with $\partial\varepsilon(\ )/\partial R>0$ and $\partial\varepsilon(\ )/\partial r>0$.

Implications for Interest Rate Policies

A policy of raising interest rates will attract capital and appreciate a country's currency to the extent that expected real returns rise. The possibility of an anti-orthodox outcome arises if the reverse is true; that is, if $\partial r(\ )/\partial R<0$. Combining equations (1), (2), and (3) and differentiating, this condition is:

$$\frac{\partial r}{\partial R} = \frac{p - \rho_R R + \varepsilon_R(1+\rho_e R)}{1-\varepsilon_r(1+\rho_e R)} < 0 \tag{4}$$

where subscripted terms denote absolute values of partial elasticities.

The denominator of the expression in (4) captures the commonly-cited vicious/virtuous circle of feedback between exchange rates and capital flows.[1] For example a policy that lowers expected real returns and results in capital flight depreciates a country's currency, further increasing the prospect of default and, hence, lowering expected real returns.

Assuming that this multiplier-effect is positive, inequality (4) is satisfied and the anti-orthodox outcome occurs if:

$$R > \frac{p + \varepsilon_R}{\rho_R - \rho_e \varepsilon_R} \tag{5}$$

An interest rate increase will be more likely to have the anti-orthodox effect of encouraging further capital outflows and currency depreciation if: (a.) the perceived default probability at the time of the policy change, 1-p, is already high; (b.) the sensitivity of expected currency depreciation to interest rate changes, ε_R, is low; (c.) The sensitivity of the default probability to currency depreciation, ρ_e, is low; and (d.) interest rate increases have a substantial direct impact on the probability of future default (ρ_R large). Factors (a.), (b.), and (c.) can be thought of as facilitating conditions for the possibility that (d.) will dominate the effect of changes in the nominal interest rate on expected real returns.

Inequality (5) shows that it is feasible for the expected real return on a country's debt to be *decreasing* in the nominal interest rate over some ranges. Figure 1 illustrates

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[1]See, for example, Corsetti, *et al* (1998).

an example of the relationship between the explicit interest rate and expected real returns – a "risky-return Laffer curve." For interest rates lower than R_L, the expected real return lies below the world real interest rate. The country experiences capital outflows, but these can be eliminated by the conventional policy of raising interest rates. Further increases in the interest rate above R_L result in positive net capital flows. Beyond the critical point R_M, however, higher interest rates tend to decrease capital inflows. If interest rates are raised beyond R_H, the country will experience capital *outflows*, and efforts to reverse those flows by raising interest rates further will only exacerbate the problem.

The existence of two points associated with zero net capital flows in Figure 1 suggests a possible sequence of events which could result in a country moving from one equilibrium to another following an exogenous disturbance. Consider the situation illustrated in Figure 2. Initially, the interest rate is R^0, which is associated with expected real returns equal to the world real interest rate and zero net capital flows.

Suppose that an exogenous event causes investors to reassess their evaluation of the country's default risk, lowering expected returns and causing a capital outflow.[2] The appropriate policy is to raise interest rates to R', reestablishing equality of expected returns. Lacking precise knowledge of the appropriate size of a rate increase, however, the government might take more forceful action, raising the interest rate above R'. If the government raises the interest as high as R'', the capital outflow will be unaffected

[2]The analysis of an increase in the world interest rate requires only slight modification.

and an even more aggressive interest rate increase *worsens* the capital outflow. For a country with interest rate R'', the appropriate policy is to *reduce* the rate.

Discussion and Conclusions

The fundamental feature of the model which makes the anti-orthodox result possible is the hypothesized relationship between high interest rates and a greater probability of default. It is not at all surprising that for higher rates to worsen capital outflows, this relationship must be relatively strong. In countries that are experiencing capital flight and currency depreciation, it is likely that investors subjective beliefs about the probability of default would, in fact, be quite sensitive to changes in macroeconomic conditions.

Some of the other features of condition (5) which make the anti-orthodox outcome more likely are similarly more likely to occur in countries experiencing financial crisis. For example, the effect of higher interest rates on expected inflation and exchange rate depreciation is likely to be small in countries like Brazil, where the exchange rate regime was credited with eliminating hyperinflation and where fears of renewed inflation are unlikely to be calmed even by the tightest monetary policies.

As a Laffer curve type of relationship, the mechanism described in this note has features in common with other similar analyses. Examples include models of seigniorage like that of Bruno and Fischer (1995), and the "debt relief Laffer curve"of Krugman (1989). Like any such analysis, a theoretical framework highlights only the feasibility of anti-orthodox outcomes, the question of whether or not it such outcomes

are *plausible* is a measurement issue. While it is possible to speculate that some of the conditions implied by (5) are more likely to occur in countries experiencing fiscal or balance of payments crises, an evaluation of the likelihood of unconventional policy outcomes depends crucially on measuring the fundamental opposing forces near the critical point of the Laffer curve. Hence, while the framework described here is suggestive for thinking about the plausibility of anti-orthodox outcomes, more definitive measurement of the relevant effects is left for future research.

References

Corsetti, G., Pesenti, P., Roubini, N. 1998. What Caused the Asian Currency and Financial Crisis? Part II: The Policy Debate. National Bureau of Economic Research Working Paper No. W6834.

Bruno, M., Fischer, S. 1990. Seigniorage, Operating Rules and the High Inflation Trap. Quarterly Journal of Economics 105, 353-374.

Krugman, P. 1998. Will Asia Bounce Back? Speech for Credit Suisse First Boston, Hong Kong.

_____, Market Based Debt Reduction Schemes. 1989. In: J. A. Frenkel, J. A., Dooley, M. P., Wickam, P. (eds.), Analytical Issues in Debt. Washington, DC: International Monetary Fund, 1989.

Sachs, J. Making it Work. *Economist*, September 12, 1998.

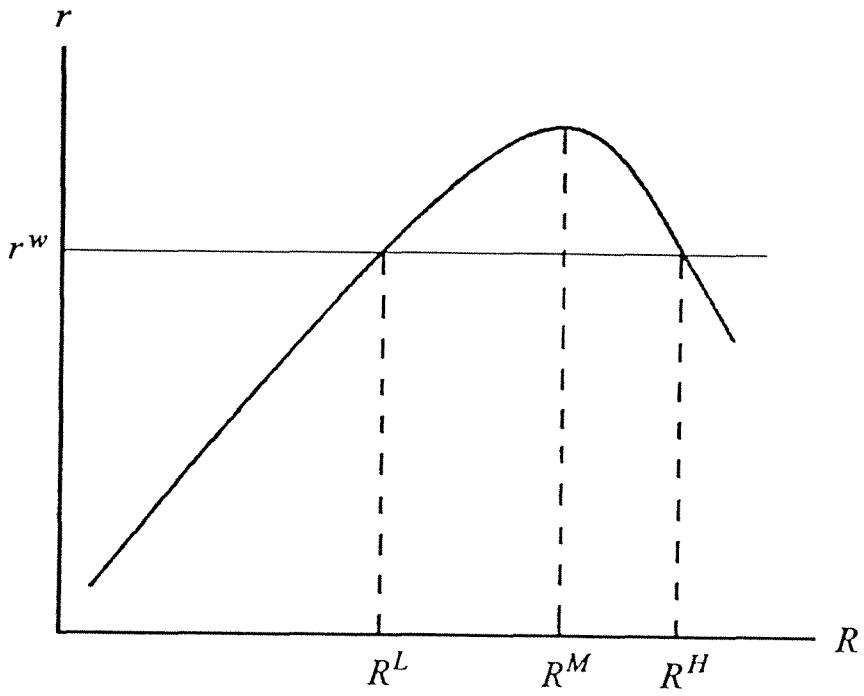

Figure 1: A Risky-Return Laffer Curve

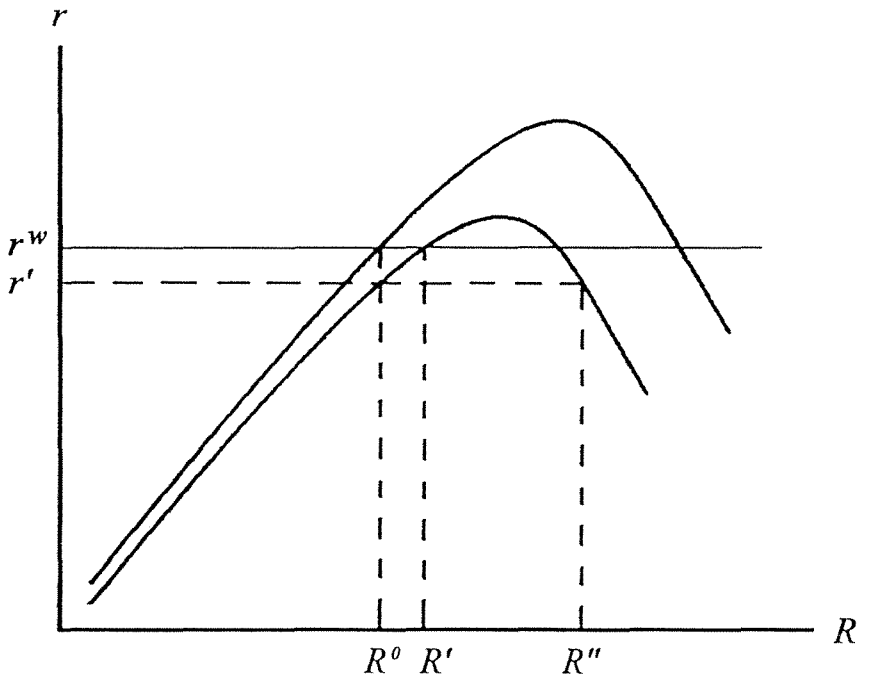

Figure 2: Responses to an Increase in Risk