

# Signaling and Defense Against Speculative Attacks

## Pre-Conference on Management of Currency Crises

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### 1. Introduction

In the light of recent currency crises, a key policy question has been the effect of high interest rates on the dynamics of the crisis, both in preventing speculative attack that may be associated with the onset of the crisis and in the recovery from a currency and banking crisis. The Fischer-Stiglitz debate on the role of interest rates in the recovery from a crisis is well known. The role of interest rates in deterring a speculative attack is also a crucial question, but one that has received only limited attention.<sup>1</sup>

The lack of theoretical work is matched by the absence of an empirical consensus on the effects of interest rate defense. Textbook models indicate with imperfect capital mobility high domestic currency interest rates are a tool to attract foreign capital and strengthen the domestic currency. In practice, the efficacy of high interest rates in defending against speculative attack has been questioned. In part, this reflects country experiences in which raising very short-term rates to astronomical levels to defend the exchange rate appeared to have little effect in deterring speculation. There are now several more formal econometric studies. On the basis of probit estimation of the probability of over 300 successful and failed attacks as a function of short-term interest and other explanatory variables, Kraay (1998) argues that high interest rates are neither a necessary nor a sufficient condition for preventing a devaluation. Hubrich (1999), in a large-sample study similar to Kraay's, does identify significant effects of monetary policy during currency crises. He finds that the nominal discount rate is *perverse* related to the outcome of a speculative attack, but that the result is conventional when the monetary policy stance is identified through domestic credit. He also examines how these results are affected by country characteristics, finding, for example, that countries with low prior reserves are more likely to choose an interest rate defense than countries with high reserves.

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<sup>1</sup>Formal models of an interest rate defense include Lall (1997), Drazen (1999), Lahiri and Végh (1999), Drazen (2000), and Flood and Jeanne (2000)

## 2. High Interest Rates as a Deterrent

Central banks often use sharp increases in (short-term) interest rates to stem reserve outflows. The basic intuition is simple. Since large speculation against a currency often involves borrowing domestic currency short-term and using the borrowed funds to buy foreign currency denominated assets from the central bank, sharply raising interest rates will make such borrowing extremely costly. (Some of the most spectacular examples have overnight interest rates rising to 500-1000%, on an annual basis.) If the interest cost of borrowing rises above the capital gain that speculators expect from a devaluation, they will close their short positions and sell foreign currency back to the bank. To defend the exchange rate in the face of a speculative attack, the central bank may need to keep interest rates very high for non-negligible periods of time, but such extreme actions would appear to be sufficient to discourage attacks. This is the basic intuition of interest rate defense. However, the magnitudes cast doubt on the simple argument. For example, even if foreign currency assets bore no interest, an expected overnight devaluation of 0.5 percent would require an annual interest rate of over 500% ( $(1.005^{365} - 1) \times 100 = 517$ ) to make speculation unprofitable.

A different line of argument is that high interest rates are used to signal the commitment of a government to defending the currency. A widely-held view (see, for example, Furman and Stiglitz [1998]) is that high interest rates signal the importance the government places on maintaining the fixed exchange rate relative to other objectives and hence its commitment to defend at all costs. The government's hope is that by signaling this commitment, it will deter future speculation. This argument is explored formally in Drazen (1999), where speculators' beliefs about the government's toughness evolves endogenously over time as a function of the government's past policies and the circumstances under which they were implemented.

However, the probability that a government will mount a successful defense against speculative attack depends not only on its commitment to fixed rates, but also on its *ability* to defend as determined by factors such as reserve levels or its fiscal position. Drazen and Masson (1994) introduced the distinction between the credibility of a policymaker (his "reputation" dependent on beliefs about his unobserved preferences) and credibility of a policy (the expectation that it will be carried out, dependent on the circumstances in which a policymaker

finds himself). We argued that these are not only not identical, but may differ considerably, where actions designed to demonstrate toughness may actually lower the credibility of policy.

In Drazen (2000), I explore the effect of high interest rates on speculation when speculators are unsure of a country's fundamentals, such as its net reserve position or its fiscal position. It is shown that depending on what is unobserved, high interest rates may be read as either a sign of weak or strong fundamentals. For example, if abandonment of the fixed exchange can be triggered by reserves hitting a critical lower bound and if the reserve position is unobserved, then a high interest rate may signal low reserves and hence actually encourage further speculative attack. In common parlance, a high interest rate defense is a signal that the government may be "panicking". In contrast, if the fiscal position is unobserved, the willingness of a government to raise interest rates may be read by speculators as signaling a strong fiscal position and hence serve the purpose of dampening speculative pressures.

### **3. Observed versus Unobserved Fundamentals**

The signaling-of-fundamentals effect of high interest rates obviously depends on some key fundamental being only partially observed, with speculators using the way in which the exchange rate is defended to infer relevant information. However, it is not the case that if fundamentals are fully observed, high interest rates will necessarily have little or no effect on speculation. In fact, if the key fundamental is observed, the effect of high rates may be the *opposite* of the effect when they are unobserved and signaling is important. For example, if the fiscal position is observed rather than unobserved, then high interest rates tend to encourage rather than discourage further speculative attack. Similarly, when the reserve position is observed rather than unobserved, high interest rates, rather than encouraging further speculative demand by signaling the weakness of the reserve position, may help dampen speculation.

This difference suggests that a key question in assessing the signaling role of interest rates, and, more generally, in trying to explain the success or failure of an interest rate defense is the degree of observability of key fundamentals, including the government's to the fixed exchange rate. This will be the focus of the paper.

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