



A simple test of the effect of interest rate defense [☆]

Allan Drazen ^{a,b,*}, Stefan Hubrich ^{a,b,1}

^a Department of Economics, University of Maryland, College Park, MD 20742, USA

^b T. Rowe Price Associates, Inc., Baltimore, MD, USA

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High interest rates to defend the exchange rate signal that a government is committed to fixed exchange rates, but may also signal weak fundamentals. We test the effectiveness of the interest rate defense by disaggregating into the effects on future interest rates differentials, expectations of future exchange rates, and risk premia. While much previous empirical work has been inconclusive due to offsetting effects, tests that “disaggregate” the effects provide significant information. Raising overnight interest rates strengthens the exchange rate over the short-term, but also leads to an expected depreciation at a horizon of a year and longer and an increase in the risk premium, consistent with the argument that it also signals weak fundamentals. *J. Japanese Int. Economies* 20 (4) (2006) 612–636. Department of Economics, University of Maryland, College Park, MD 20742, USA; T. Rowe Price Associates, Inc., Baltimore, MD, USA.

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1. Introduction

Raising the short-term interest rate is often used to defend a currency under attack. The interest rate defense has had both successes and failures, some quite spectacular. Hong Kong increased overnight rates to several hundred percent and successfully defended its currency in October

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* Corresponding author.

E-mail address: drazen@econ.umd.edu (A. Drazen).

¹ Currently employed as a quantitative analyst in the equity division of T. Rowe Price Associates, Inc., in Baltimore, USA.

1997 against speculative attack. Sweden similarly increased its interest rate by several hundred percent in its currency defense in September 1992, but the success was short-lived. Other cases of both success and failure can be cited, so that even a first look at episodes leaves very much open the question of the effectiveness of an interest rate defense.

Formal econometric tests of this question are also inconclusive. As Kraay (2003, p. 297) puts it, in speculative attacks in developed and developing economies, there is “a striking lack of any systematic association whatsoever between interest rates and the outcome of speculative attacks.” Hence, we really have no clear answer to the question: Is raising the interest rate effective in defending a currency?

This leads to a more fundamental question, namely: Why do high interest rates deter speculation? The standard argument is that they increase the opportunity cost of speculation. When speculators borrow domestic currency to speculate against a fixed exchange rate (when they “short” the domestic currency), high short-term interest rates make such borrowing very costly. However, this argument runs into a simple “arithmetic” problem. If the horizon over which devaluation is expected is extremely short, interest rates must be raised to extraordinarily high levels to deter speculation even when the expected devaluation is small. 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% ($(1.005^{365} - 1) * 100 = 517$) to make speculation unprofitable. (See, for example, the discussion in Furman and Stiglitz, 1998.)

This reasoning has called into question how effective very high overnight interest rates can be in deterring an attack, and has been used to explain why the interest rate defense may be ultimately unsuccessful. Though the “arithmetic problem” addresses the question of why “spectacular” defenses may have only limited effects, it raises other questions. On the one hand, why then is the interest rate defense sometimes successful, especially when the interest rate used to defend is *not* spectacularly high? And, why do short-lived increases in interest rates often appear to have much longer-term effects? On the other hand, why does an interest rate defense sometimes appear to lead to even *greater* speculative pressures against the currency? The effects of raising interest rates must reflect more than a simple cost-of-borrowing effect.

In this paper we investigate these questions by decomposing the effects of an increase in the interest rate on the short-run expected exchange rate into a number of (potentially offsetting) effects. Our focus is empirical, but one suggested by a specific conceptual approach to the effectiveness (or ineffectiveness) of interest rate defense. We argue that the effects of high interest rates may reflect the *information* that increasing interest rates provides to market participants. If so, the direct cost implications of high interest rates for speculators may be secondary to the signal they provide. By raising interest rates, a government signals that it is committed to fixed exchange rates, but it may also signal weak fundamentals. Hence, a key empirical implication is that raising interest rates leads to the expectation that future rates will be high, but may also increase the probability speculators assign to collapse. As a consequence, the net effect may be ambiguous.

A key argument is that if the effects of high interest rates reflect the expectations they engender about future policy (via the signal about unobserved government characteristics under asymmetric information), then these effects should appear in expectations of future exchange and interest rates. Hence, tests of the effectiveness of the interest rate defense looking at these forward-looking variables should be informative. Empirical testing along these lines is the focus of this paper.

Our main conclusion is that while tests looking at the effect of high interest rates on “summary measures” like the outcome of an attack (or the very short-term expected exchange rate) are

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