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Rational speculators and exchange rate volatility[1]

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Abstract

This paper suggests a plausible microstructural connection between rational speculative activity and exchange rate volatility. When Friedman (Essays in Positive Economics, University of Chicago Press, 1953) claimed that rational speculators must smooth exchange rates, he excluded interest rate differentials from his interpretation of speculator behavior. Informed, rational speculators who consider interest differentials will magnify the exchange rate effects of interest shocks and could increase overall exchange rate volatility. This connection between speculators and volatility, which does not rely on asymmetric information, is structural because speculators affect the exchange rate's generating process. Rational speculation is stabilizing at low levels of speculative activity and destabilizing at high levels. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

A strong correlation seems to exist between trading volume and price volatility in major currency markets (Baillie and Bollerslev, 1991; Dacorogna et al.,

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1993; Ito et al., 1996). Evidence for such a correlation is also abundant for major equity and bond markets (Cornell, 1981; Gallant et al., 1992). Many observers would argue that the high trading volume reflects high speculative activity which, in turn, induces the high price volatility. In fact, over 90% of foreign exchange market participants in Japan, Hong Kong, and Singapore believe that speculation increases volatility (Cheung and Wong, 1996).

Others claim that rational speculation must reduce exchange rate volatility. The classic statement of the latter position comes from Milton Friedman (1953, p. 175): 'People who have argued that speculation can be destabilizing seldom realize that this is largely equivalent to saying that speculators lose money, since speculation can be destabilizing in general only if speculators sell when the currency is low in price and buy when it is high'. He also points out that speculators who regularly lose money this way will be driven out of the market by speculators with more successful strategies. In sum, Friedman's position is that only rational speculators will survive in the market, and that rational speculation cannot be destabilizing.

Important policy issues hinge on the resolution of this debate. The elimination of capital controls in Europe has coincided with a renewal of intra-ERM turbulence which threatens the viability of the EMU. Viewing this as the result of heightened speculative activity, some observers have argued for the reimposition of capital controls, if only on an as-needed basis (Eichengreen et al., 1995). Others with a similar view of speculative activity have argued for the imposition of a foreign-exchange turnover tax (Tobin, 1974; Eichengreen et al., 1994). If Friedman is right, however, a policy-induced reduction of speculative flows would increase foreign exchange volatility, worsening rather than improving the situation.

This paper shows that rational speculators *can but need not* increase exchange rate volatility and that, contrary to Friedman's argument (Friedman, 1953), the circumstances under which they might increase volatility are plausible. An examination of Friedman's line of reasoning reveals that it does not incorporate interest rates or risk, both crucial factors for many speculators when they choose the size and direction of their positions. Changing interest differentials across countries could lead rational speculators to buy currency even when its value is 'high', or to sell when its value is 'low', thus 'destabilizing' the exchange rate.

The result is derived in a straightforward model of the foreign exchange market with two types of traders: 'speculators' and 'current account traders'. The speculators are rational and fully informed. Current account traders are analogous to liquidity traders in standard finance models, and can be interpreted realistically in the foreign exchange context as importers and exporters of goods and services.

We find that speculators' effect on exchange rate volatility varies according to the types of shocks hitting the market, and we divide these shocks into two categories. Some shocks, such as changes in liquidity demand, do not affect