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Exchange rates, interventions, and the predictability of stock returns in Japan

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Abstract

Using monthly Japanese data for the period 1991–2005, we examined the link between exchange rate movements and stock returns. We found that exchange rate movements per se do not help to explain stock returns. There is, however, evidence of in-sample predictability if one accounts for the interventions of the Japanese monetary authorities in the foreign exchange market. This evidence does not indicate a violation of market efficiency insofar as investors cannot use information on interventions to systematically improve the performance of simple trading rules based on out-of-sample forecasts of stock returns.
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1. Introduction

It is a widely held view that exchange rate movements affect the value of firms and the competitiveness of industries which, in turn, should be reflected in stock returns. For this reason, much research has been done to analyze whether exchange rate movements help to explain stock returns. The link between exchange rate movements and stock returns can depend on numerous factors like a firm's or an industry's dependence on net foreign revenues, risk management practices, the competitive makeup of an industry, the location and flexibility of production, and the degree of

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exchange rate pass-through. Theoretical research on the factors that may affect the link between exchange rate movements and a firm's value has been done by, for example, Adler and Dumas (1984), Booth (1996), and Bartram et al. (2005).

Empirical results on the link between exchange rate movements and stock returns are available for the link between exchange rate movements and (i) returns of aggregate stock market indexes (Roll, 1992), (ii) returns of industry-specific stock market indexes (Griffin and Stulz, 2001), and (iii) returns of stocks of individual firms (Jorion, 1990). There is evidence that the link between exchange rate movements and stock returns (i) is stronger when measured over longer horizons (Chow et al., 1997), (ii) has changed over time (Williamson, 2001), (iii) is nonlinear (Kanas, 1997), and (iv) can be used to set up profitable trading rules (Bartov and Bodnar, 1994). An often reported finding, however, is that this link is small and hardly significant (Griffin and Stulz, 2001).

Our results indicate that the link between exchange rate movements and stock returns significantly changes in months when central banks intervene in foreign exchange markets. A common finding in the literature is that interventions occur in times of large movements of exchange rates, where "large" exchange rate movements reflect significant exchange rate misalignments. This finding is important because the link between stock returns and large movements of exchange rates can be different from the one between stock returns and small movements of exchange rates. The use of hedging instruments with nonlinear payoffs may imply a nonlinear link between cash flows and exchange rate movements (Bartram, 2004; Di Iorio and Faff, 2000). Moreover, due to transaction costs, only large movements of exchange rates may affect market structure (Dixit, 1989; Booth, 1996).

When one studies the link between large exchange rate movements and stock returns, the problem arises that measuring "large" exchange rate movements is difficult. The foreign exchange market interventions of central banks, however, can serve as an instrument for "large" movements of exchange rates and significant exchange rate misalignments. Results documented in the literature suggest that interventions are triggered by large deviations of exchange rates from central banks' exchange rate targets, longer-term moving averages of exchange rates, and purchasing power parity (Frenkel et al., 2005). While every single one of these deviations itself may indicate a significant exchange rate misalignment, interventions can be viewed as an easy-to-measure single summary statistic of all these deviations.

We used Japanese data to study the link between exchange rate movements and stock returns in intervention months. The Japanese monetary authorities heavily intervened in foreign exchange markets since the early 1990s. Many results on the interventions of the Japanese monetary authorities have been reported in the literature (Ito, 2002; Frenkel et al., 2005). Evidence of a link between exchange rate movements and stock returns in intervention months is not yet available. We found that neither contemporaneous nor lagged exchange rate movements per se help to predict stock returns. Yet, there is evidence of in-sample predictability of 1-month-ahead stock returns if one accounts for interventions. The in-sample predictability of stock returns does not necessarily indicate market inefficiency. Investors cannot use information on interventions to improve the performance of simple trading rules based on out-of-sample forecasts of stock returns.

Our hypothesis is not that interventions per se are useful for predicting stock returns. We simply interpreted interventions as a summary statistic of large exchange rate movements or, for that matter, significant exchange rate misalignments. Moreover, rather than focusing on the effectiveness of interventions, we focused on the informational content of interventions with regard to large exchange rate movements. Our empirical analysis should not be interpreted as a test of the effectiveness of interventions.

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