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The impact of exchange rate deviations from relative PPP equilibrium on the U.S. demand for foreign equities

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ABSTRACT

Applying fixed-effects panel data, this study investigates the impact of U.S. dollar exchange rate movements during different exchange rate states (overvaluation and undervaluation) on the monthly real gross and real net purchases of foreign equities by U.S. residents over the post-Plaza Accord period. The foreign equities come from 22 developed and 25 developing countries. Previous research has posited two alternative hypotheses regarding the relationship between exchange rates and foreign investment. These are the wealth effect and the profit-oriented effect. The evidence herein suggests that these two hypotheses coexist. We find robust evidence for a negative relationship between the exchange rate movements of an undervalued U.S. dollar and the demand for foreign equities. For developed countries, the wealth effect dominates the profit-oriented effect when the U.S. dollar is overvalued, while, for developing countries, the profit-oriented effect dominates the wealth effect. The results emphasize the importance of considering exchange rate states derived from a relative PPP equilibrium when analyzing U.S. allocations to foreign equities. The findings with respect to the macroeconomic control variables are mainly in agreement with the predictions of international financial theory. Some of the results, however, disappear or become inconclusive for the period after the bankruptcy of Lehman Brothers. This may be explained by the increased uncertainty in international financial markets following this unprecedented event. The findings are robust with respect to different constructed equilibrium exchange rates.

1. Introduction

The literature provides evidence for a relationship between capital flows and changes in exchange rates. With respect to foreign direct investment (FDI), it has been demonstrated that a currency depreciation leads to an increase in capital inflows (e.g., Blonigen, 1997; Cushman, 1985; Dewenter, 1995; Froot and Stein, 1991; Klein and Rosengren, 1994; and Swenson, 1994). This finding is commonly referred to as the wealth effect (Froot and Stein, 1991), which postulates that a weakening domestic currency makes domestic assets cheaper for foreign investors creating an incentive for them to buy domestic financial assets. However, a more complete model of capital flows should incorporate expectations about exchange rate

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movements. This theory posits a profit-oriented effect in which the expectation of a continually strengthening (weakening) domestic currency discourages (encourages) capital outflows as repatriated returns are converted at a less (more) advantageous exchange rate. Evidence for this relationship is presented by Campa (1993) and Grossmann et al. (2009), who found an increase in FDI with an appreciating U.S. dollar.

Generally, the literature treats the wealth effect and the profit-oriented effect as two alternative theoretical arguments; however, they are not mutually exclusive. Specifically, we suggest that the net effect of exchange rate movements on international investment flows depends on movements in the exchange rate and whether the currency is overvalued or undervalued. The combination of the two relationships results in four exchange rate states. The currency can be (1) overvalued/strengthening, (2) overvalued/weakening, (3) undervalued/strengthening, or (4) undervalued/weakening. Accordingly, this study extends the previous model's focus on changes in spot exchange rates by incorporating exchange rate movements relative to a constructed purchasing power parity (PPP) equilibrium to study the impact on the U.S. purchases of foreign equity.[1] This allows for the measurement of changes in the exchange rate net of the changes based solely on PPP adjustments and for the determination of the state of the currency relative to PPP equilibrium.

Considering deviations from PPP equilibrium as well as their adjustments when modeling international capital flows is discussed by Dewenter (1995, p. 407), who states:

> Short-run PPP adjustments may alter the relative strength of different buyers (Froot and Stein, 1991), or they may capture expectations about future PPP adjustments. . . .
>
> . . . Modeling a link between FDI and exchange rates, therefore, reflects some belief about the impact of short- or long-run deviations from PPP on the cross-border investment process.

In the context of Dewenter's statement, including deviations from PPP equilibrium in the model allows international investment decisions to be linked simultaneously to the wealth and the profit-oriented effects. For example, the U.S. dollar can strengthen but still be undervalued. While a strengthening U.S. dollar makes foreign securities cheaper for U.S. investors, it may not encourage U.S. investors to allocate funds toward foreign securities when the U.S. dollar is undervalued. Moreover, the state of the currency is expected to influence investors' expectations about future exchange rate movements. If the adjustment process is not instantaneous, the initial strengthening may begin an appreciation cycle. In this framework, an undervalued U.S. dollar is expected to strengthen further as it moves back toward equilibrium, causing returns from foreign investments to be converted at a less advantageous exchange rate. Hence, the undervalued and strengthening dollar may dissuade U.S. investors from buying foreign securities.

In the case of a weakening but overvalued dollar, U.S. investors may still perceive foreign financial assets as underpriced. Demand for relatively cheap foreign assets would be buttressed by the expected higher returns from holding the foreign asset denominated in the strengthening foreign currency. As the U.S. dollar weakens, higher returns accrue from expatriated dividends and capital gains. The process may be self-reinforcing, as the demand for the foreign currency to purchase foreign equity securities may lead to a further weakening of the U.S. dollar.

Consequently, in this study, the wealth effect is related to the overvaluation and undervaluation of the U.S. dollar, while exchange rate movements are linked to the profit-oriented effect. Following Hakkio (1992), the overvaluation and undervaluation are measured as the difference between the actual spot exchange rate and a constructed relative PPP-based equilibrium exchange rate (EERs).

We employ fixed-effects panel data to estimate the impact of exchange rate movements on monthly U.S. real gross and net purchases of foreign equities over the entire post-Plaza Accord period from 1986 to 2013, as well as two sub-periods from 1999 to 2013 and 2009 to 2013, while considering states of exchange rates and controlling for macroeconomic variables. Depending on data availability, the results are based on a sample of 47 (31) countries including 22 (20) developed and 25 (11) developing countries.[2]

The results support the importance of exchange rate states as a determinant of U.S. allocation of funds to foreign equities. Considering two states of exchange rates, we find a negative relationship between the movements of an undervalued U.S. dollar and the U.S. purchases of U.S. foreign equities. The lower demand for foreign equities brought about by an undervalued U.S. dollar (wealth effect) may be reinforced by the strengthening of the U.S. dollar causing lower repatriated returns (profit-oriented effect). For an overvalued U.S. dollar the results suggest that the wealth effect dominates the profit-oriented effect in the case of developed countries, while for developing countries the profit-oriented effect dominates the wealth effect.

Focusing on the finer distinction offered by four exchange rate states, we find evidence for declining demand of foreign equities when an undervalued U.S. dollar strengthens. The finding supports the hypothesis that foreign securities are relatively more expensive due to the undervalued dollar (wealth effect), while the expected continuation of the strengthening of the U.S. dollar would cause lower repatriated returns (profit-oriented effect). In the case of a weakening but overvalued U.S. dollar, we find some evidence for an increase in the demand for foreign equities. The finding supports the hypothesis that foreign securities are relatively less expensive due to the overvalued dollar (wealth effect), while the expected continuation

[1] Grossmann et al. (2009) found empirical evidence that the overvaluation and undervaluation of the U.S. dollar impacts flows of FDI; however, the relationship between the state of the U.S. dollar and the transaction of foreign bonds and stocks has yet to be empirically demonstrated.

[2] The effect of exchange rate movements on developing countries is important given the current criticism by policymakers in these countries that the accommodative monetary policies and accompanying low interest rates of developed countries have caused disruptive capital flows to their financial markets (see for example, Fratzscher et al., 2013).