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The price of freedom: Idiosyncratic currency devaluations

Marshall L. Stocker[a,b]

[a] Universidad Francisco Marroquin, Facultad de Ciencias Económicas, Guatemala City, Guatemala
[b] Eaton Vance Managers, Two International Place, Boston, MA, 02110, USA

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ABSTRACT

Differences in economic institutions, as measured by an index of economic freedom, have been correlated to differences in cross-country investment levels, capital market development, and country-level equity index returns. Here, a country's level of economic freedom is demonstrated to be a proxy measure for the likelihood of an idiosyncratic currency devaluation during periods of low global foreign exchange volatility. This observation makes economic freedom determinant of whether carry traders may be facing a 'peso problem,' giving currency speculators insights into a risk factor which the foreign exchange market may not be pricing or for which there is no historical evidence.

1. Introduction

The "carry trade" is a simple strategy of buying high-yielding currencies financed by short positions in low-yielding currencies. The speculator expects to earn a positive return differential when the higher-yielding currency depreciates less than the interest received. Theoretically, the uncovered interest parity (UIP) condition suggests the higher-yielding currency should depreciate in an amount equal to the interest rate differential. Accordingly, carry trades should not result in excess profits, though they almost universally yield profits over the short and intermediate term (Froot and Thaler, 1990; Wagner, 2008). Thus, 'carry-trade' strategies appear to exploit a bias in the pricing of currency forwards. This presents observers with a paradox, one that Fama (1984) has designated as the "forward premium puzzle." Froot and Thaler (1990) labelled the carry trade as an "anomaly" for the reason that empirical observations of the carry trade are difficult to rationalize or require implausible assumptions to explain. In this paper, economic institutions, as characterized by an index of economic freedom, are related to the frequency of currency devaluations which periodically reverse carry trade profits. An observed relationship between a country's level of economic freedom and frequency of currency devaluation may explain which countries could be subject to the 'peso problem,' a problem of insufficient historical data to accurately predict the likelihood of a currency devaluation.

E-mail address: mstocker@eatonvance.com

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Most all examinations of the carry trade begin with a regression which tests the UIP (Fama regression, 1984):

$$\Delta s_{t+1} = \alpha + \beta p_t^1 + \varepsilon_{t+1} \quad (1)$$

Where:

s_t = the spot exchange rate (domestic price of foreign currency) at time t,

p_t^1 = the one-period exchange rate forward premium,

Δ = a one-period change.

The Fama-regression (Eq. (1)) assesses market efficiency as a joint test of rational expectations and risk-neutrality. Rational expectations imply that $\beta = 1$ and that the forecast error (ε_{t+1}) is uncorrelated with information at t. Risk-neutrality suggests that $\alpha = 0$, else a non-zero α would represent a constant risk-premium. The repeated finding of previous empirical research is that β is typically lower than unity and often negative. This indicates that the higher interest rate currency tends to not depreciate as much as predicted by UIP or even appreciates, apparently allowing for predictable excess returns. The constant, α, rarely receives attention from empiricists (Wagner, 2008).

Wle exchange rate datasets evidence positive mean carry trade returns, the returns are not normally distributed over time. Particularly noteworthy is that large loses are more likely than large gains as carry trade returns exhibit negative skewness. Thus, although the carry trade very often demonstrates a net profit over the short and intermediate term, a single bad month can still wipe out the return obtained over a whole year. As evidence, Clarida et al. (2009) observe that carry trades are strongly, systemically, and inversely related to both realized and implied exchange rate volatility. Using data from only the top quartile of volatility, Clarida et al. find the Fama regression produces a β well in excess of 1 as compared to often negative β's found over a complete data period, concluding that the carry trade reverses in periods of high volatility. Later, Menkhoff et al. (2012) find evidence that high interest rate currencies deliver low returns in times of high exchange rate volatility. Copeland and Lu (2013) confirm this result by showing that most all of the excess return to the carry trade is generated in months when the volatility is low, below its 25th percentile which suggests that in quiet periods, the non-stationary risk factor is absent. The juxtaposition of high, full-period Sharpe ratios (Burnside et al., 2010) of carry trades, often higher than equity market Sharpe ratios, and dramatic performance reversals in volatile environments (Bhansali, 2007) has made the carry trade anomaly a rich problem for empiricists.

1.1. Attempts to Explain the Carry Trade

Hodrick (1987), Froot and Thaler (1990), Engel (1996), and Sarno (2005) offer surveys of proposed explanations of the carry trade anomaly. All recognize that UIP is statistically rejected and many attempt to identify an unaccounted risk premia in the UIP relationship of Eq. (1). Using empirical data and an Appendix of four mathematical proofs, Sercu and Vandebroek (2005) suggest this missing variable likely has a U-shaped distribution meaning the unaccounted risk premia reflects a binary condition-state variable. Wagner (2008) then notes that attempts to explain the carry trade using risk premia "have met with limited success" as have more novel explanations including 'learning,' a period in which the carry trade exists while market participants learn of changes to the fundamentals associated with a currency. The declaration of Wagner is hardly inflammatory. Twenty years after Fama (1984) recorded bias in the currency forward market, Sarno et al. (2006) too asserted that "the forward bias puzzle has not been convincingly explained and continues to baffle the international finance profession."

In spite of Wagner's dour assessment of the academy's insights, efforts to explain the carry trade anomaly largely fall into one or both of two categories: the existence of a time-varying premium to risk on foreign exchange and erred expectations on the part of investors. Far from repeating the exhaustive aforementioned surveys, what follows are key characteristics of the carry trade which consistently appear in contemporary work and which I have chosen to explore.

1.2. Time-varying premium to risk

Menkhoff et al. (2012) showed that the return to the carry trade could be explained by two factors: a "dollar factor," the simple mean return of the return on all currencies against the dollar (a global risk factor), and the standard deviation of a currency's previous month's returns. This coincides with the observation by Kim (2014) that "in general, carry trades are reversed during various episodes of financial market turmoil such as the period surrounding 9/11 in 2001, the Global Financial Crisis of 2008–09, and the Eurozone crisis of 2010–11."

In an earlier approach to time-variance, Sarno et al. (2006) utilize a smooth transition model to evidence that exchange rates are linked in a non-linear manner to forward premia and that the apparent forward bias puzzle may be explained by the incorrect assumption of risk linearity. Kozlova (2013) claims the forward discount puzzle stems from the practice among researchers of ignoring the problem of temporal instability. They attribute instability to new information about a country's fundamentals due to a change in policies, institutions, exchange rate arrangements, and social context.

In this paper, I evaluate whether devaluation of a currency is related to the country's level of economic freedom. In the absence of high global foreign exchange rate volatility, a country-level factor such as economic freedom may be a more prominent variable relating to the probability that a country experiences an idiosyncratic currency devaluation during a period of otherwise low global foreign exchange rate volatility.