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Spillovers of currency carry trade returns, market risk sentiment, and U.S. market returns



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ABSTRACT

This paper examines the link between spillovers of currency carry trade returns and U.S. market returns. Following [Tse and Zhao \(2012\)](#), this paper hypothesizes that the magnitude of spillovers of currency carry trade returns is positively correlated with market risk sentiment and, therefore, has an impact on market returns. Using the G10 currencies and S&P 500 index futures, the empirical results present a high magnitude of spillover effects of currency carry trade markets. The empirical findings also show a significantly positive relationship between spillovers of currency carry trade returns and subsequent market returns. Furthermore, the results indicate that this relationship is stronger in bear markets than in bull markets. Finally, our findings show that spillovers of currency carry trade returns significantly affect the subsequent transition probabilities of market returns.

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1. Introduction

A large volume of research has focused on the critical issue of uncovered interest rate parity (UIP). Tests of the efficiency of a foreign exchange market are typically based on an assessment of the relevant UIP. The UIP hypothesis postulates that the interest rate differential between two currencies should be offset by the expected appreciation of the low-yielding currency. The empirical failure of the UIP occurs when the currencies of countries whose interest rates are higher tend to appreciate, which thereby demonstrates the rejection of the UIP hypothesis.¹

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¹ The violation of the UIP hypothesis is also referred to as the “forward premium puzzle”.

One strand of the literature has shown that the UIP hypothesis tends to hold over the long run or under fixed exchange-rate regimes. [Lothian and Wu \(2011\)](#) indicate that the UIP hypothesis holds much better over the long-run than suggested by the evidence over short-run samples. [Flood and Rose \(1996\)](#) and [Coleman \(2012\)](#) provide evidence that the UIP hypothesis holds much better under fixed than flexible exchange-rate regimes. Despite significant efforts to provide empirical support for the UIP hypothesis, its rejection has been documented in many studies. Previous literature suggests that the violation of the UIP hypothesis is precisely what makes currency carry trades profitable on average. [Brunnermeier, Nagel, and Pedersen \(2009\)](#), [Clarida, Davis, and Pedersen \(2009\)](#), [Darvas \(2009\)](#), [Baillie and Chang \(2011\)](#), and [Tse and Zhao \(2012\)](#), among others, show that the rejection of the UIP hypothesis is associated with currency carry trade returns.

[Tse and Zhao \(2012\)](#) explain that the failure of the UIP hypothesis that is associated with currency carry trade returns can be attributed to investor risk appetite sentiment (or so-called market risk sentiment).² More specifically, [Tse and Zhao \(2012\)](#) suggest that the returns of currency carry trades are positively correlated with investor risk appetite sentiment.³ In addition, [Diebold and Yilmaz \(2012\)](#) suggest that the degree of spillovers of asset returns might be associated with sentiment.⁴ Motivated by the argument of [Tse and Zhao \(2012\)](#), this paper employs the approach suggested by [Diebold and Yilmaz \(2012\)](#) to measure the magnitude of spillovers of currency carry trade returns, and hypothesizes that these spillovers are positively associated with market risk sentiment. As documented by [Frijns, Koellen, and Lehnert \(2008\)](#), when market risk sentiment is higher (lower), investors have a greater preference for investing in (selling) risky assets. Accordingly, if the spillovers of currency carry trade returns reflect market risk sentiment, it is likely that the total spillover index of currency carry trade returns is positively correlated with subsequent market returns.

The purpose of this study is to take a fresh look at the relationship between currency carry trade returns and the behavior of market returns. The contributions of this study are two-fold. First, this paper examines whether the impact of spillovers of currency carry trade returns on subsequent market returns is asymmetric during bull and bear markets. Prior research has explored the impact of currency carry trades on market returns ([Cheung, Cheung, & He, 2012](#); [Tse & Zhao, 2012](#)).⁵ Using the Japanese yen as the funding currency and the Australian dollar, British pound, Canadian dollar, New Zealand dollar, and Mexican peso as target currencies, [Cheung et al. \(2012\)](#) indicate that currency carry trades positively affect stock market returns in target currency countries. Utilizing data from the G10 (Group of ten countries) currencies, [Tse and Zhao \(2012\)](#) present that the returns of currency carry trades and futures returns are positively correlated with no Granger-causality in either direction. To the best of our knowledge, however, no study has been conducted on the influence of spillovers of currency carry trade returns on market returns under bull and bear market regimes. This paper attempts to fill this gap. Second, under the framework of nonlinear models, this study explores whether the increase in the extent of spillovers of currency carry trade returns leads to a bullish market regime. Overall, the empirical findings of this study complement the previous literature by providing an additional link between the spillovers of the currency carry trade markets and the behavior of market prices.

Following [Tse and Zhao \(2012\)](#), this paper uses the G10 currencies quoted against the U.S. dollar to examine the link between spillovers of currency carry trade returns and market returns. Because this study utilizes the U.S. as its domestic country, the S&P 500 futures index is employed as the proxy for market prices.⁶ Our sample period covers January 3, 1994 to March 28, 2012. The empirical results

² This paper uses “investor risk appetite sentiment” and “market risk sentiment” interchangeably to represent “investor sentiment regarding risk appetite”.

³ [Burnside, Han, Hirshleifer, & Wang \(2011\)](#) show that currency carry trade returns are indicative of investor overconfidence. More specifically, as indicated by [Burnside et al. \(2011\)](#), the failure of the UIP hypothesis can be attributed to investor overconfidence on monetary policy, which increases currency carry trade profits.

⁴ As indicated by [Diebold and Yilmaz \(2012\)](#), the total spillover index of asset returns might be associated with the existence of sentiment, e.g., contagion from panic selling or herd behavior.

⁵ [Christiansen et al. \(2011\)](#) show that a typical currency carry trade strategy is significantly and positively exposed to current and lagged stock returns. Additionally, the exposure to the current and lagged stock market returns is much greater in turbulent than in normal markets.

⁶ The empirical ability of U.S. financial indicators to predict excess foreign returns is well documented (see [Galsband, 2012](#)). Compared with stock indices, the information can be incorporated into futures prices fairly when the market experiences bullish

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