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Testing and interpreting uncovered interest parity in Russia

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Abstract

The failure of uncovered interest rate parity (UIP) is a well-known phenomenon of the last thirty years. UIP failure is more prominent in advanced economies than in emerging market economies. Typically, UIP estimation for an advanced economy generates a negative coefficient, meaning that a higher interest rate in advanced economy A will result in the appreciation of economy A's exchange rate. For emerging market economies, higher interest rates usually correspond to future depreciation, although this depreciation is not sufficient for UIP to hold. This paper shows that UIP holds in Russia better than in other emerging market economies when the UIP equation accounts for a constant risk premium. Consequently, there is no forward premium puzzle for Russian data for 2001–2014. To determine the results for Russia and to compare them with the results for other countries, we estimate UIP first for Russia and then for advanced and emerging market economies using seemingly unrelated regressions and panel data analysis. By comparing the profitability of static and dynamic carry trade strategies, we also confirm that in emerging market economies, risk premiums are often constant, whereas in advanced economies, risk premiums are almost always volatile. This may explain why UIP holds better in emerging market economies. It also enables us to formulate a hypothesis that macroeconomic policies of emerging market economies (e.g., the accumulation of large foreign exchange reserves) stabilize risk premiums.

JEL classification: F31, F32, G15.
Keywords: interest parity, forward premium puzzle, carry trade, risk premium, foreign exchange reserves.

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1. Introduction

1.1. What is the uncovered parity puzzle and how is it related to carry trade and to the forward premium puzzle?

Uncovered interest parity (UIP) has been widely used as an exchange rate prediction tool over the past forty years. Dynamic stochastic general equilibrium (DSGE) models used by central banks also use the uncovered parity of interest rates to simulate exchange rates. UIP failure challenged such models and motivated economists to make ad-hoc amendments to account for deviations from UIP (Adolfson et al., 2007; Kollmann, 2004; Wang, 2010).

UIP is no-arbitrage condition in equilibrium:

$$\frac{1+i}{1+i^s} = \frac{E_t(S_{t+k})}{S_t}, \tag{1}$$

where i is the nominal interest rate and where s is the inverse exchange rate (the value of USD in RUB in our example).

When UIP holds, a higher risk-free interest rate, e.g., in Russia compared to the U.S., denotes expectations for Russian ruble depreciation. A persistent failure of UIP means that investments made in a currency with higher interest rates will earn stable profits due to the interest rate spread between the two countries and due to an increase or insufficient decline in the rate of that currency. The failure of UIP is reflected by the use of carry trade strategies and by the forward premium puzzle.

A forward premium puzzle occurs when UIP is tested using a time series. Bilson (1981), and Hansen and Hodrick (1980) use a time series analysis to show UIP failure. The β factor is negative in the regressions: a higher interest rate is followed by appreciation.

At the same time, several studies have demonstrated that the forward premium puzzle can be shown to be non-existent in some cases. For example, the forward premium puzzle is not confirmed over long time periods of five to ten years (Chinn and Meredith, 2004; Chinn, 2006; Chinn and Quayyum, 2012). The forward premium puzzle is much less common in emerging market economies (EMEs) than in advanced economies (AEs) (Bansal and Dahlquist, 2000; Frankel and Poonawala, 2010).

The carry trade approach is an investment strategy through which an investor borrows in a currency with a low interest rate while at the same time making investments in a currency with a high interest rate. High and sustainable returns ensured by the carry trade strategy have been demonstrated, for example, in Burnside et al. (2012), and Menkhoff et al. (2012). Galati et al. (2007) presents a measure for the volume of carry trade transactions. The profitability of such currency strategies appears to spur highly volatile international capital flows (Burnside et al., 2012).

A number of works on exchange rate trends have attempted to explain why interest parity may be not realized while carry trade may earn income. Engel (2015) presents a survey of literature dedicated to possible explanations for why the λ of equation (2) can deviate from zero.

$$\lambda_t = i_t - E_t s_{t+1} + s_t - i_t^*, \tag{2}$$