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# Can time-varying risk premiums explain the excess returns in the interest rate parity condition?☆

Uluc Aysun [a,1], Sanglim Lee [b,*]

[a] Department of Economics, University of Central Florida, College of Business Administration, 4000 Central Florida Blvd., Orlando, FL 32816-1991, United States
[b] Energy Policy Research Group, Korea Energy Economics Institute, 132 Naesonsunhwan-ro, Uiwang-si, Gyeonggi-do 437-713, Republic of Korea

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ABSTRACT

This paper shows that the deviations from the UIP condition are equally large in advanced and emerging market economies. Using monthly data, and a GARCH-M model we find that a large share of these deviations in both country groups are explained by time-varying risk premium. To more clearly identify risk premium shocks, we then estimate a two-country, New Keynesian, DSGE model using a Bayesian methodology and quarterly data. The results suggest that at the quarterly frequency, the large deviations from the UIP condition and the high explanatory power of risk premium are only observed for emerging market economies.



## 1. Introduction

According to the uncovered interest rate parity (UIP) condition a currency with a higher interest rate (i.e., a higher interest rate on the bond that is denominated in this currency) is expected to depreciate relative to a currency with a lower interest rate. There are, however, a large number of studies in the literature showing that this parity condition tends not to hold. Moreover, several empirical results deliver contrary evidence that a currency with a higher interest rate tends to appreciate rather than depreciate during a short-term horizon. A survey on this topic is well documented in Engel (1996) and Sarno (2005).

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* Corresponding author. Tel.: +82 31 420 2107; fax: +82 31 420 2161.
*E-mail addresses:* uaysun@bus.ucf.edu (U. Aysun), sllee@keei.re.kr (S. Lee).
[1] Tel.: +1 530 574 3951; fax: +1 407 823 3269.

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Various explanations have been proposed for this anomaly in the literature, including the peso problem, missed expectations regarding regime or policy switches, and inefficient forward currency markets. In this paper, we instead focus on the risk premium argument and investigate whether deviations from the UIP condition, measured as the excess returns on the domestic currency denominated assets, are due to a time-varying risk premium that compensates for exchange rate and default risk. Our focus is motivated by the disparities in the deviations from the UIP condition in emerging market and advanced economies. Although one would expect the deviations from the UIP condition and the risk premiums to be more pronounced in inherently more risky emerging markets, the empirical evidence is mixed.

Specifically, Bansal and Dahlquist (2000) and Flood and Rose (2002) use a pooled regression model to test a difference of UIP condition between developed and emerging market economies. Bansal and Dahlquist (2000) reveal that deviations from the UIP condition are less severe in emerging market economies than in advanced economies. In addition, they use a single factor latent factor model to find that country-specific attributes such as per capita GNP, average inflation, and credit ratings are important in explaining currency excess returns caused by the violation of the UIP condition in advanced economies. However, Flood and Rose (2002) find no significant differences between developed and emerging market economies. The main reason for these different results would mainly come from different time periods of the data used in their studies. In contrast to Bansal and Dahlquist (2000), Francis et al. (2002) show that deviations from the UIP condition in emerging market economies are larger and more persistent than in advanced economies. Their methodology is different from previous studies in that they use a multi-factor conditional asset pricing model to explain currency excess returns. They note that a significant part of currency excess returns in emerging market economies is systematic in nature and attributable to a time-varying risk premium. These conflicting findings are also present in more current research. For example, studies such as Chinn (2006), Frankel and Poonawala (2010), and Gilmore and Hayashi (2011) find that the UIP deviations are less prevalent for emerging market economies while studies such as Ferreira and León-Ledesma (2007), Mehl and Cappiello (2009), and Ahmad et al. (2012) find the opposite evidence.

In this paper, we re-examine the UIP condition in both economic areas and attempt to analyze whether the time-varying risk premium is significant in explaining the deviations from the UIP condition. Here, we deviate from the literature by identifying the time-varying risk premium and comparing its explanatory power across a group of emerging market and advanced economies. In doing so, we use a generalized autoregressive conditional heteroskedasticity in mean (GARCH-M) approach to identify the time-varying risk premium.[2] Our monthly dataset includes 10 advanced and 18 emerging market economies and spans the time period January 1996 to March 2012.

There are two main empirical results. First, the UIP condition does not hold in most of the countries and the UIP deviations do not seem to be more severe in emerging market economies. Second, time-varying risk premium can explain a substantial share of the UIP deviations in both advanced and emerging market economies. This share, however, is higher in emerging market economies.

So far, by using our reduced form approach, we are able to identify the risk premium shocks that are orthogonal to exchange rate and interest rate shocks. This, however, does not rule out the possibility that risk premium shocks may be correlated with other macroeconomic shocks in both the domestic and the foreign country. To more accurately identify risk premium shocks and assess their significance for the deviations from the UIP condition, we simulate a two-country/region DSGE model that is characterized by nominal and real rigidities. The model is a simplified version of the dynamic New Keynesian framework in Alpanda and Aysun (2012). We estimate this two-country/region model two times by using quarterly data from the U.S., the Euro area and Brazil. In the first estimation, Euro area is the domestic economy and the U.S. is the foreign economy. In the second estimation, Brazil is the domestic economy and the U.S. is the foreign economy. To estimate this model we use a Bayesian methodology and various variables besides exchange rates and interest rates (output, consumption, investment, government expenditures, employment, wages, bond yields, consumer price index). In the model, there are 9 shocks for each region and a risk premium shock that is common to both regions. The latter shock is the main focus of this part of our paper.

Model generated artificial data demonstrate that the deviations from the UIP condition are small when the Euro area is the domestic economy and that there are significant deviations from this condition when Brazil is

[2] See Poghosyan et al. (2008), Melander (2009), and Li et al. (2012) for similar applications of GARCH models.