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The forward premium puzzle and the Euro[☆]



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ABSTRACT

This paper evaluates the forward premium puzzle using the Euro exchange rate. Unlike previous studies, our analysis utilizes regime switching methods and is based on two approaches for evaluation of the puzzle; the traditional approach analyzing the sensitivity of interest rate differentials to the forward premium, and the other looking into deviations from the covered interest rate parity (CIRP) condition. Then we provide evidence that the forward premium puzzle indeed became more prominent around the times of the recent crisis periods such as the Lehman Shock and the Euro crisis. This is also shown to be consistent with a deterioration in the CIRP.

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1. Introduction

The forward premium puzzle can be regarded broadly as a violation of the covered interest rate parity (CIRP) condition which suggests an equi-proportional relationship between the forward premium and interest rate differentials. Despite the popularity of the CIRP in international finance however, there is mounting evidence against this theoretical prediction (e.g., Fama, 1984). According to a survey of previous studies which focused largely on advanced countries (Froot and Thaler, 1990), the CIRP relationship is often negative; the average size of this parameter reported in previous studies is -0.88 .

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Due to the pervasive implications of this bias to open market economic theories,¹ a lot of research has been carried out in the past to seek explanations for the failure of the CIRP, generally known to academics as the forward premium puzzle.

Among others, previous studies point to several sources of the violation of the CIRP. One reason is related to the risk premium, which relaxes the assumption of the CIRP about investors' risk neutrality and introduces their risk averse behaviors in the model. Indeed, recent studies (e.g., Coffey et al., 2009) have pointed out that counterparty risk has become a driving force for CIRP deviations during the Lehman Shock. They have also argued that these deviations were lessened when the Federal Reserves increased the US\$ supply by means of a currency swap, and therefore the risk premium seems to be closely associated with liquidity constraints. Second, the presence of transaction costs may prevent investors from trading even when there is a profit opportunity based on the CIRP criterion (Peel and Taylor, 2002). This is another classic explanation of the violation of the CIRP and has been analyzed using the threshold model which allows us to differentiate ranges in which prices may or may not make adjustments. The third reason is connected with the different timing of data quotations. Since research requires several economic indicators and is conducted in an international context, the data are likely recorded at different times. Actually when the consistently quoted data are used for analysis, more evidence is reported in favor of the CIRP (Taylor, 1989).

More economic reasons exist for the forward premium puzzle. For example, recent studies have pointed out that the currency carry trade strategy is related to the puzzle (e.g., Menkhoff et al., 2012). That is to say, when an interest rate is low and is perceived as likely to last for some time, investors borrow money in the low interest rate country and purchase financial assets in a high interest rate country. Therefore, there is an increase in demand for foreign currency, and as a result a low interest rate country will experience currency depreciation. Furthermore, recent research, often referred to as the market microstructure model, emphasizes the role of private information in explaining exchange rate movements (e.g., Burnside et al., 2009). This departs from the standard CIRP model which is based on public information, and when order flow data are included in the model to capture private information there is evidence of improvements in the interest parity relationship (e.g., Evans and Lyons, 2002).²

Against this background, we analyze, by focusing on the risk premium and CIRP deviations, whether or not this puzzle has become more significant during recent periods. To our knowledge, although some economic explanations have been provided about the forward premium puzzle, few attempts have been made to clarify its relationship with CIRP derivations or investigate whether this puzzle during the crises is indeed statistically different from that in normal times. Using advanced statistical methods, we shall investigate these issues by including sample periods which contain information on the European debt crisis which kicked off in Greece in 2009.³

This paper consists of four more sections. In the next section, we explain further the concept of the forward premium puzzle and its empirical evidence, based on previous literature. Section 3 discusses the key data used in our paper; namely exchange rates and interest rates, and furthermore estimates the time-varying forward premium puzzle by employing a state space model. Section 4 analyzes whether the CIRP deviations have indeed increased in size during the recent crises and have become an explanation for the more significant forward premium puzzle, using the Markov-switching (MS) model with time-varying transition probabilities. This paper ends with a summary of our findings in Section 5.

¹ For example, the CIRP is considered the most appropriate economic theory for measuring international financial mobility (Frankel, 1992).

² Needless to say, evidence of the CIRP does not mean that there are no arbitrage opportunities. It only suggests that on average the CIRP is an appropriate economic concept.

³ Our focus on the risk premium is partly due to our lack of access to order flow data, and our relatively low (monthly) frequency data are prone to be less sensitive to the timing of quotations.

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