New Horizons, Vol.14, No.1, 2020, pp 61-80 *DOI:10.2.9270/NH.14.1(20).05*

POSSIBLE SOLUTIONS TO THE FORWARD PREMIUM PUZZLE: A THEMATIC ANALYSIS

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ABSTRACT

Uncovered interest rate parity (UIP), is one of the crucial relations in macroeconomics and international finance, widely used in the model's construction and their analytical work. However, empirical regularities in UIP referred to as "Forward Premium Puzzle", has posed a significant challenge to open-economy models. Thus, the purpose of the study is to identify the possible explanation of the forward premium puzzle. The research has identified five distinct and coherent themes (solutions) using thematic analysis of literature review, namely, risk premium, monetary policy, rational learning and peso-problem, market inefficiency, and lastly, covered interest rate parity. The researcher can use these thematic classifications to understand the operations of the global financial market. Similarly, the identified solutions can help investors in the assessment of their investment strategies such as the risk premium implies returns obtained at the expense of assuming high risk. Thus, investors should question whether average returns received from an investment are above normal on a risk-adjusted basis.

Keywords: *Forward Premium Puzzle, Uncovered Interest Rate Parity, Thematic Analysis, Covered Interest Rate Parity, Risk Premium.*

INTRODUCTION

Rapid growth in the financial services and rampant globalization has made foreign exchange market into one of the largest financial markets of the world. Thus, making it essential for the economist to understand its operations. In an attempt to explain the foreign exchange market, Keynes (1923,1936) introduced interest parity theorems, which comprise of two relations, namely uncovered interest rate parity and covered interest rate parity. Uncovered interest rate parity (UIP) states that the currency expected appreciation equals the nominal interest rate differential between two countries, expressed as:

$$E_t(\Delta s_{t+k}) = i^*_t - i_t \quad (1)$$

Here s_{t+k} refers to the spot rate of foreign currency per domestic currency at time $t + k$, whereas i_t and i^*_t are the interest rate of a domestic and foreign country at time t, respectively. UIP supports rational expectations, perfect capital mobility, negligible transaction cost, risk neutrality, and perfect asset substitutability. The uncovered interest rate parity must be made consistent with the covered interest rate parity. The covered interest rate parity states that the difference between the one-month forward rate and current spot exchange rate will be equal to the interest rate differential between the two countries, expressed as:

$$f_t - s_t = i_t - i^*_t \tag{2}$$

Putting together UIP and CIP relations implies that under a neoclassical theoretical framework, the expected future spot exchange rate and forward exchange rate must be equal to each other. However, after 1970 following the free-floating period, researchers thought that Keynesianism is just a broad tendency of thoughts rather than a rigid set of theorems. Thus, leading researchers to examine the UIP and CIP relations. Initially, Fama (1984) tested whether the forward exchange rate is a predictor of future spot exchange rate using the given below regression:

$$\Delta s_{t+k} = a + \beta(i_t - i^*_t) + \in_{t+1} \tag{3}$$

Following equation (2) another form of the Fama (1984) regression replaces the interest rate differential ($it - i*$) with the forward premium/discount ($ft - st$). In the above regression, UIP predicts point estimates of $\alpha = 0$ and $\beta = 1$. However, numerous studies have found the β to be close to zero and often negative, whereas α to be larger than zero or one, concluding that forward rate at the time 't' contains information about the spot rate at the time '$t+1$'. This documented deviation from UIP referred to as the "forward premium puzzle or forward rate unbiased hypothesis" (Ullrich, 2009).

As McCallum (1996) recognized that UIP is conventionally a part of most of the exchange rate models, ranging from small scale theoretical models to large scale econometric systems. However, failure of UIP relation leads to alarming practical and theoretical consequences, considering none of the economists, researchers, or investors would conduct their exchange operation of the basis of the interest parity theorem. For instance, UIP is a central concept that defines whether the movement of capital across borders is free and sustainable, which is an essential aspect during the allocation of assets is different currencies.

Moreover, it is also an important factor in considering the spillover effect in macroeconomic policy. Further, these two relations (CIP & UIP) are the theoretical foundation, which leads that central banks cannot set the domestic interest rate that is different from the world rates. However, the failure of UIP means credit and money demand-driven variables, and central banks can set interest rates at the level of their choice (Cerutti, Obstfeld, & Zhou, 2019). Thus, it is necessary to understand what causes deviation from UIP. Therefore, the study aims to understand and explore possible explanations of the forward premium puzzle in the literature.

LITERATURE REVIEW

The empirical failure of uncovered interest rate parity implies that there are predictable excess returns in foreign exchange investments, a result that contradicts with rational behaviour. However, acceptance of this implication by the economists led to a plethora of analytical work over the post -1973 free-floating period investigating the concept of UIP. The received evidence supporting the fact that the forward rate is an unbiased predictor of the future spot rate includes Froot and Frankel (1989), Baillie (1983), Engel (1996), Hansen and Hodrick (1980), Hai, Mark, and Wu (1997), MacDonald and Taylor (1990) Backus, Gregory, and Telmer (1993) and Byers and Peel (1991). These studies have not only rejected the unbiased efficiency hypothesis for different currencies and sampling periods, but the magnitude of discrepancy is also substantial. For instance, Froot (1990), found the average value of the beta coefficient to be -0.88 for more than 75 published estimates across various periods and exchange rates. Other studies rejecting uncovered interest rate parity include Chinn and Zhang (2018), Meredith and Ma (2002), Amri (2008), Weber (2011), Tang (2011), Aslan & Korap (2010), Akram, Rime and Sarno (2008), Paya, Peel, and Spiru (2010), Hochradl and Wagner (2010) Hassan and Mano (2017), Biswas, Piccotti, and Schreiber (2019), Adewuyi and Ogebe (2019) and Kang (2019).

However, with stylized facts, such unanimity also invites contradictions as researchers attribute UIP violation to specific statistical methods, developed economies, and shorter horizon. Forinstance, Baillie & Bollerslev (2000) associated the failure of interest rate parity relations to use of inadequate statistical models, as advanced econometric methodologies based on cross-equation restriction on a Markov switching process provide evidence in support of UIP theory. Later, Kirikos (2002) authenticated their work for Greece, Portugal, and Italy. Likewise, Golinelli and Rovelli (2005) empirically showed that the current exchange rate depends upon future exchange rates for countries, including Hungary, Poland, and the Czech Republic, after augmenting risk

premium. Inaddition Chinn (2006), found generous support for Hungary, the Czech Republic, after relaxing the rational expectation methodology. Moreover, restricting the UIP violation to developed economies, Bansal and Dahlquist (2000), found that UIP holds for emerging economies market. Similarly, Frankel and Poonawala (2006) found the unbiased regression coefficient to be positive for a sample of 14 emerging market currencies. Lastly, advocating that UIP violation occurs over the short horizon, Chinn and Meredith (2004) claimed that in the longer horizon, fundamental variables derived movements in the exchange rate, causing future exchange rates to equal forward exchange rates. Furthermore, Snaith, Coakley, and Kellard (2013), found the UIP puzzle disappears with the extension in time horizon. Other studies providing support to uncovered interest rate parity include Vasilyev, Busygin, and Busygin (2017), Krishnakumar and Neto (2008); Chinn and Meredith (2005); Bekaert and Hodrick (2000); Han (2004); Alexius (2001); Chinn and Zhang (2018).

Despite the contradicting evidence, as there are dire practical and theoretical consequences of the forward premium puzzle, such as the impossibility of having a stable foreign exchange rate, free capital movement, and independent monetary policy. These effects have resulted in a considerable amount of literature on the forward premium puzzle, explaining why the puzzle exists. Thus, by taking into consideration the current researchers, the research tends to understand and explore possible explanations of the forward premium puzzle rather than merely assessing whether UIP fails to hold or not. Moreover, most of the findings described in the literature focus on the United States as a home country. In contrast, the study tends to identify solutions from every single developed country perspective. Further, the research tends to provide a tangible balance of contribution to both academics and practitioners. As it is first of its kind to offer a systematic and brief overview of the literature that covers all possible explanations of the forward premium puzzle and thus help both institutional investors to understand the behaviour of forwarding premium puzzle exhibited by developed countries.

RESEARCH METHODOLOGY

To investigate the possible explanation of the forward premium puzzle, the study attempt to conduct a thematic analysis of the literature review, defined as a process of characterizing the context of the text into themes and then identifying relationships among the identified themes (Berg, 1995). For the selection of research articles for thematic analysis, the study employed selection criteria, which helped to achieve a manageable number of relevant articles identified from the google scholar database. The selection criterion of the research articles shown in table 1. After a particular paper passed all the requirements, appropriate codes

were extracted from it, which were used for the formation of themes. After the creation of preliminary themes, further examination of the themes was done to determine that whether they are coherent, distinct from one another, and does any relationship holds among them. Furthermore, the final themes were presented to the subject analyst, who evaluated them and found them plausible. Lastly, the summaries of the identified themes were written and presented in the next section.

Table 1. Selection Criteria

Title Selection			
Criteria	Inclusion	Exclusion	Rationale
Keywords	Forward Premium Puzzle, UIP Puzzle, Forward Bias Puzzle, Fama Puzzle, Forward Rate Unbiased Hypothesis, Currency Risk Premium, Expectational Errors, Peso Problem, Slow Movers Hypothesis, Heterogeneous Beliefs, Sentiments, Bubble Phenomena, and Rational Learning.	Absence of keywords	Help in covering literature related to the explanation of the forward premium puzzle
Abstract Selection			
Criteria	**Inclusion**	**Exclusion**	**Rationale**
Explanation of the forward premium puzzle	Studies that attempt to explain the forward premium puzzle	Studies that do not solve the forward premium puzzle	Help in accomplishing the purpose of the study
Time	From the year 2010 to 2018	Before 2010	To cover the most recent studies conducted on the forward premium puzzle
Academic Journals	Peer-reviewed journals	News articles, thesis, conference proceedings	
Economies	Developed countries	Non-Developed countries	Bacchetta and Wincoop (2007) advocated that the forward premium puzzle is restricted to low inflation countries, as it causes the exchange rate adjustment to become slower, due to the high cost associated with it.
Scientific Field	Economics, Finance, and Financial economics	Natural Sciences etc.	Related to the topic of study

RESULTS AND DISCUSSION

This section presents the thematic findings of the reviewed articles:

Risk Premium

Risk Factors: One of the most widely accepted and criticized explanation of the forward premium puzzle is the time-varying risk premium (Kumar, Pathak, & Ranajee, 2014). Which claims that investor is risk-averse, hence demand compensation for handling risk. Factors contributing to time-varying risk premium include exchange risk, default risk or crash risk, currency risk, stock variance risk, and consumption growth risk.

Coudert and Mignon (2013), suggested that the forward premium puzzle results from default risk and exchange rate risk. For instance, from the recent global crises, one can imagine default risk to be not negligible, as it has caused the whole banking system to collapse, making it impossible for the investors to recover their funds. They thus claimed that default risk increases the carry trade gains. To support this claim, they used smooth-transition regression models that include financial cycle nonlinearities and empirically tested the hypothesis on a sample of profits in the carry trade obtained from investing in 18 emerging countries, funded in USD.

Aysun and Lee (2014), further provided support to the claim by empirically testing forward premium puzzle on three different samples that include and exclude the financial crises of 1997, 2006, and 2009 respectively. They found that the beta coefficient for the advanced economies shifted from negative to positive during and after the period of financial crises, as developed countries decrease the interest rates to combat the financial crises and recession. Moreover, using Bayesian estimation methodology, they found the contribution of risk premium shock (among nine domestic and nine foreign shocks) to be more pronounced in explaining currency excess returns, particularly for emerging market economies as compared to the developed economies. Burnside (2013), added that considering global financial crises as extreme events rationalizes the decrease in risk tolerance of international investors along with the reduction in the domestic currency value. Moreover, currency options provide further evidence of risk-averse behaviour as put options (insurance against downside risk) are more expensive than call options (insurance against upward risk). Lastly, Nagayasu (2014) also contributed to the explanation of default risk as a possible explanation to the forward premium puzzle during the period of financial crises such as

European sovereign-debt crises[1] and Lehman Shock[2].

In addition to default risk, Zhou and Londono (2017) advocate that stock and currency variance risk premium explain the appreciation rate of currencies to the US dollar. As higher variance risk premium indicates more considerable global uncertainty, which leads to an increase in US dollar value due to the safe-haven effect. Further, he found that high inflation has not only a higher negative coefficient on currency variance risk premium but also a high prediction R^2, indicating that variance risk premiums rise along with the inflation risk. Lastly, to rationalize the above finding, they used a consumption-based capital asset pricing model (C-CAPM), where the stock variance risk premium characterized by local consumption uncertainty and currency variance risk premium by global inflation uncertainty, respectively.

Apart from the above, considering that the exchange rate is also said to carry foreign and domestic consumption growth risk, Verdelhan (2010) develop a model where investors exhibit external habit preference over-consumption. In his model, during bad times, the variance of the pricing kernels is high, investors are more risk-averse, consumption is at the habit level, and interest rate is procyclical. Therefore, when the domestic country's interest rate is low as compared to the foreign country's interest rates, the local investor except for a positive excess returns. Later, Lustig and Verdelhan (2007) further supported the claim by arguing that appreciation of low- interest-rate currencies, make low-interest-rate currencies to act as a hedge for the local investors against consumption growth risk. However, Burnside (2011), while negating the above argument, highlights three problems in the Lustig and Verdelhan (2007) model. Firstly, they used two-pass regression, in which the significance of the parameters (i.e., β, which is a matrix of $n \times k$ factors, where n refers to portfolios and k risk factors and λ, which is a vector of $k \times 1$ factor) depends upon the proper estimation of OLS standard errors. However, the standard errors assume β to be known in the first pass regression, which can mislead the confidence level in the model. Secondly, the high R^2 of the regression is because of the inclusion of constant pricing error, as the exclusion of constant cause R^2 to become negative. Lastly, the estimation of parameters, i.e., β and λ, is based on the assumption that β has full rank. However, if this condition fails, then this will not only lead to unreliable and insignificant estimates but will also reduce the power of the regression to reject the model. In reply to Burnside (2011), Lustig and Verdelhan

(2011), address the first two claims by arguing that bootstrapped standard errors reduce the effect of two steps regression. Secondly, the constant measure variations in the price of dollar risk, which are unexplained by the consumption risk factors. However, sharing of the same loading on the dollar fluctuations, cause the cross-section of the currency portfolios not to provide any information about the price of dollar risk. Besides, they also offered new evidence showing that factors betas are estimated correctly. Recently, Paol and Sondergaard (2016) supported that consumption habits explain the UIP puzzle as long as they are slow-moving, have near unit root shock and occur in an open economy.

Liquidity & Volatility: From the above explanation, it is apparent that the UIP puzzle is predominant during the period of financial crises. Cho (2015), rationalized the existence of the UIP puzzle with the help of funding liquidity risk factors. To empirically prove this, he proxied funding liquidity constraints by implied volatility, and treasury-eurodollar (TED) spread and found the factors to significantly explain deviations from UIP during the global financial crises (GFC). Moreover, the role of liquidity constraints was further investigated by Chu (2015) using a dynamic stochastic general equilibrium model (DSGE). The underlying mechanism of his model was that domestic investors prefer to borrow from foreign currency as their interest rate is lower. However, here the borrowing cost includes the appreciation of the foreign currency and credit risk premium, charged to borrowers with collateral constraints. During the period of GFC or recession, the lenders' perception of increase credit risk or decrease in borrower's capital limits the availability of collateral loans. This results in contractions of trade volume, causing the transaction to occur with a large credit spread and thus concluding that liquidity constraints cause deviation in the UIP puzzle by restricting the free movement of capital. Furthermore, Rabitsch (2016) also emphasized the liquidity constraints of internationally traded bonds along with precautionary motives, resulting in the forward premium puzzle.

In addition to liquidity, to find the potential role of volatility in capturing UIP deviation. Li, Ghoshray, and Morley (2012) used the CGARCH-M model that incorporates asymmetric adjustment and separate risk into permanent and transitionary volatility components in the UIP regression. Here they identified permanent volatility to be the primary determinant of the exchange rate. Moreover, they found that where CGARCH-M models both long-run and short-run volatility risk premium.

At the same time, it lacks in improving the sign and magnitude of the interest differential, implying that time-varying risk premium alone is not sufficient enough to provide a solution to the UIP puzzle.

Monetary Policy: This sub-section emphasizes the role of monetary policy in explaining the UIP puzzle. Sakoulis, Zivot, and Choi (2010) described the forward premium anomaly using the presence of structural breaks. They present evidence that structural breaks inflate the presence of the forward discount. Thus the rejection of UIP can be attributed to the absence of structural break in the forward premium. However, these structural break arises when central banks change their monetary policy objectives. For instance, a change in US monetary policy will lead to contractionary shock, thus increasing the US interest rate, while decreasing the forward discount. Therefore, concluding that a change in monetary policy by the central bank could result in the well known UIP puzzle. Guender (2014) further supported their work by claiming the central bank intervenes in the open economy following an endogenous target rule, which directly permits them to respond to economic shocks. This optimizing behaviour of the central bank when combines with the open economy cause the exchange rate to react negatively to an increase in the interest rate differential and foreign inflation rate. Hence, concluding that the openness of the economy and the weight put on the inflation variability by the central bank affect the sensitivity of changes in the exchange rate to interest rate differential.

Rational Learning & Peso-Problem: Peso Problem refers to the condition where expectation about infrequent discrete shifts in economic determinant induce behaviour, which contradicts conventional rational expectations.

Supporting peso-problem explanation to forward premium puzzle, Lothian, Pownall, and Koedijk (2013) not only found their results to empirically coincide with those reported by Fisher (1896, 1907, 1930) but also saw the influence of errors in exchange rate expectation to dissipate over time like Fisher (1896, 1907, 1930). Similarly, in an attempt to support the peso-problem explanation, Burnside, Eichenbaum, Kleshchelski, and Rebelo (2011) empirically proved that average payoff to unhedged carry trade not only reflects compensation for peso risk but also results in small losses in peso states. The rationale of which was any risk-adjusted payoff in the non-peso is compensated on a risk-adjusted basis by losses in peso states.

The above explanation advocate deviations from UIP, assuming investors are uncertain about the future shifts in the fundamentals. However, when the same phenomena encompass the uncertainty that results from information about the past discrete event, it is known as the learning effect. Here it is assumed that investors are unaware of the exact relation that holds between the fundamentals and the exchange rate under the rational assumption, thus making it necessary to learn about the relationship along with the model's parameter through estimation. Moran and Nono (2018) contribute within this framework by arguing that learning is necessary as economic agents are uncertain about the nature of shocks (i.e., persistent or transitionary) affecting the economy. Thus they learn about their persistence through Kalman filtering. Based on this assumption, they stimulated a two-country open economy DSGE model with and without information frictions and nominal rigidities. They found data to show the key features of the forward premium puzzle.

Market Inefficiency: Another possible justification of the forward premium puzzle is through market inefficiency. Some of the identified reasons for foreign exchange market inefficiency include sentiments, infrequent portfolio adjustments, and asymmetry.

Under the assumption, that investors share a common but subjective belief about the future fundamentals that affect financial markets by making them depart from rational expectations. Yu (2013), claimed that the economic growth rate could be both over-estimated and under-estimated by investors. As an optimistic attitude about the economy (over-estimation of the economic growth rate), causes the domestic country's interest rate to increase as compared to a foreign country. Hence, concluding that high sentiments can predict an appreciation of the country's currencies. Moreover, Burnside, Han, Hirshleifer, and Wang (2011) also supported the sentiment-based explanation of the forward premium puzzle. They proposed that overconfident investors believe in the precision of their information about future inflation. Thus they overreact to their information signals, which cause both forward rate and spot rate to overshoot. However, where spot rates are affected by the transaction demand of money, on the other hand, the forward rates are affected by speculations. Therefore the appreciation of forwarding rate is higher compared to the spot rate. Consequently, indicating that forward premium arises from investor confidence.

One of the propositions of efficient markets is that investors incorporate all the new information when forming portfolios. However, Bacchetta and Wincoop (2010) deviated from this assumption. They claimed that investor always faces a choice between infrequent portfolio decisions and managing their portfolios at a cost (fees charged by the currency management company). But as the gain obtain does not outweigh the cost attached with portfolio decisions. Thus most investors choose not to manage their portfolios actively. Applying this argument within the currency framework, suppose an increase in the country's interest rate will cause its currency to appreciate due to excess demand. Nevertheless, as the investors make infrequent portfolio decisions due to the associated cost, thus this will make them continue buying the currency, resulting in further appreciation and therefore explaining the negative coefficient estimates of the Fama (1984) regression.

In addition to the above, Lee (2013) claimed that the forward premium anomaly arises from asymmetry. To empirically prove this, he estimated the Fama (1984) regression for 37 currencies and found that the UIP relationship holds for a short maturity forward premium. Secondly, he found the acceptance rate of UIP to be weaker for developed countries as compared to developing countries, due to key currency bias. Key currency bias refers to the fact that investors prefer key currency over the domestic currency, whenever the interest rate on key currency is higher as compared to the local currency, thus indicating an asymmetric response depending on the sign of interest rate differential.

Covered Interest Rate Parity: Pippenger (2011), propose a solution to forward premium puzzle, based on two omitted variable that originates from the covered interest parity conditions, by rearranging and decomposing the exchange rate into three components namely, lagged forward premium, change in the forward rate ($f_{t+1} - f_t$) and interest rate differential ($i_{t+1} - i^*_{t+1}$). Then he empirically showed that negative coefficient obtained by regressing exchange rate on the lagged forward premium is explained by two omitted variables which include the change in the forward rate ($f_{t+1} - f_t$) and interest rate differential ($i_{t+1} - i^*_{t+1}$). However, Chang (2011) identified two fundamental problems with Pippenger (2011) proposed a solution. First, the error term e_{t+1}, is deterministic; therefore, it cannot be considered as stochastic. Secondly, he empirically showed that reconfiguration of covered interest rate parity that solves the UIP puzzle leads to a tautological expression. King (2011),

also supported Chang (2011), by claiming that Pippenger (2011) did a simple empirical exercise that provides no insight into the forward premium puzzle. He proved his claim with the help fo six different artificial data; however, the regression with the artificial series exhibits the same biases the one observed in the test of efficient market hypothesis.

CONCLUSION

Uncovered interest rate parity (UIP), is among the fundamentals concepts of macro-economics and international finance, widely used in the model's construction and their analytical work. However, the existence of excess returns in the foreign exchange rate markets has failed UIP, leading to classics confronting challenges referred to as "Forward Premium Puzzle". Thus, the purpose of the study is to investigate the possible explanation of the forward premium puzzle. To substantiate the purpose, the research conducted a thematic analysis of the literature review, characterizing selected articles text into themes, and then identifying relationships among those themes. The process resulted in five distinct and coherent themes, namely, risk premium, monetary policy, peso- problem, and learning effect, market inefficiency, and lastly, covered interest rate parity. Firstly, the rejection of the unbiased hypothesis is attributed to risk premium, as the investor may demand compensation for the risk of holding foreign currency. Where the factors that contribute to risk premium has been identified as exchange risk, default risk or crash risk (Burnside, 2013; Coudert & Mignon, 2013; Nagayasu, 2014; Aysun & Lee, 2014), currency risk, stock variance risk (Zhou & Londono, 2017), consumption growth risk (Burnside, 2011; Lustig & Verdelhan, 2011; Lustig & Verdelhan, 2007; Paol & Sondergaard, 2016), liquidity (Chu, 2015) and volatility (Li, Ghoshray, & Morley, 2012). Another possible explanation for the puzzle goes through rational learning (Moran & Nono, 2018), Peso-Problem (Lothian, Pownall, & Koedijk, 2013; Rabitsch, 2016) and monetary policy interventions (Guender, 2014; Sakoulis, Zivot, & Choi, 2010). Further, the existence of excess returns is rationalized using market inefficiency. The possible reasons, which give rise to foreign exchange market inefficiency, identified as sentiments (Yu, 2013; Burnside, Han, Hirshleifer, & Wang, 2011), infrequent portfolio adjustment due to transaction cost (Bacchetta & Wincoop, 2010), and asymmetry arising from key currency biases (Lee, 2013). However, among all the most criticized solution are two omitted variable which includes a change in the forward rate ($f_{t+1} - f_t$) and interest rate differential ($i_{t+1} - i^*_{t+1}$), that originated from the covered interest parity conditions (King, 2011; Pippenger, 2011; Chang, 2011).

These identified solutions can help investors in the assessment of their investment strategies. For instance, risk premium implies returns obtained at the expense of assuming high risk. Thus investors should question whether average returns received from an investment are above normal on a risk-adjusted basis. Similarly, one could ask whether the peso problem has been accounted for profitability, as the existence of peso risk might cause them to lose their investment after the occurrence of the event (Hopper, 1994). Moreover, the theme of monetary policy interventions implying the popularity of foreign exchange intervention among policymakers leads to various unanswered questions as to what will be the implication of common usage of intervention for the world economy? How should these interventions be designed to maximize their efficiency? Should the countries coordinate their responses?

AREAS OF FUTURE RESEARCH

The literature on the forward premium puzzle is vast, thus to make the study manageable, the study has been conducted with certain limitations. The study has two limitations. Firstly, as specified in the selection criteria, the study has only included those studies conducted between the periods of 2010 to 2018, to focus on the most recent trend in literature. Secondly, even though the research may reflect researcher biases in looking at UIP puzzle literature; however, to reduce it, the study has not selected articles from working papers or handbooks.

Keeping in view the limitations of the study, further research may be conducted by including studies on the forward premium puzzle done before 2010. Similarly, the study has only included papers that explored forward premium puzzle on developed economies, excluding developing and emerging markets. The inclusion criteria are based on the research of Bacchetta and Wincoop (2007), who argued that the forward premium puzzle is restricted to low inflation countries, as it causes the exchange rate adjustment to become slower, due to the high cost associated with it. However, Aysun and Lee (2014) found the puzzle to be more dominant in emerging markets. Thus, including developing and emerging markets may not help in comparison to the already identified solution but also help them generate new possible solutions if any. Furthermore, thematic analysis can be conducted on the techniques or methodologies used for estimating the forward premium puzzle. Lastly, new themes can be explored using quantitative and qualitative methods.

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