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Research Article

"Risk Management in Foreign Exchange for Cross-Border Payments: Strategies for Minimizing Exposure"

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ABSTRACT

The volatility of global currency markets presents a major challenge to firms engaged in cross-border payments with foreign exchange (FX) risk. This study examines different FX risk management strategies, and specifically the effectiveness of hedging instruments, i.e., options, futures, and forward contracts, in reducing currency exposure. A study of major currency pairs from 2015 to 2019 shows that EUR/GBP and USD/GBP pairs are highly volatile, mainly influenced by geopolitical factors such as Brexit. Results are quantified and show that options contracts are the best at mitigating FX risk, reducing exposure by an average of 31.8%, followed closely by futures and forward contracts. Smaller risk reduction is provided by natural hedging, an imperfect solution but indicating the need for a diversification approach. The firms that did not use any hedging strategies had higher exposure to FX risk. Interviews of firms reveal that hedging is effective, but that cost and operational complexity may inhibit some firms from using these strategies. In general, the study emphasizes the need to adopt a comprehensive FX risk management framework that incorporates financial instruments and natural hedging to stabilize the financial condition in cross-border transactions.

Keywords: Cross-border payments, Hedging strategies, Currency volatility, FX exposure, Options contracts, Forward contracts.

INTRODUCTION

Globalization, the expansion of international trade, and technological progress have led to exponential growth of cross-border payments in the past two decades (Aretz & Bartram, 2010; Busch & Matthes, 2016). For businesses, financial institutions, and individuals alike, seamless payments across borders are a must-have. While these transactions are complex, they bring substantial risks, chiefly FX risk, and can incur unexpected costs and decrease profitability (Adler & Dumas, 1984). A currency can be of value for a myriad of reasons including political, macro, international, and even the change in global financial tactics and these companies that have interests in cross-border transactions have a tough time knowing exactly how much the value of a currency is going to change (Miller, Hom, & Gomez-Mejia, 2001).

Foreign exchange risk occurs through a change in currency exchange rates affecting the value of payments, assets, and liabilities denominated in foreign currencies (Clark and Judge 2009). Cross-border payments bring with them this risk, as transactions usually involve two or more currencies and different exchange rates. Due to its negative effect on profit margins, increases in transaction costs, and uncertainty of the business's finances, unmanaged FX risk can not only erode profit margins but also increase transaction costs and ultimately erode profit margins (Jorion, 1990). Therefore, these firms must manage foreign exchange risk as doing so ensures their fortunes do not suffer at the hands of unfriendly foreign exchange rates while they go about their business (Marshall, 2000).

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FX transactions have attracted attention to the importance of risk management because of the volatility of the global currency markets, especially during periods of economic uncertainty (Bodnar & Wong, 2003). Foreign exchange risk can not be eliminated, but the effects thereof can be mitigated through the use of risk management strategies (Mello and Parsons, 2000). Hedging instruments, including forward contracts, options and swaps, and internal processes to reduce exposure, are used in these strategies (Akhigbe & Martin, 2008; Bartram, Brown, & Fehle, 2009). This article discusses the significance of foreign exchange risk management in cross-border payments, the major strategies employed to mitigate FX exposure, and the difficulties encountered in implementing these strategies (Williamson, 2001).

Like any company that is exposed to a larger volume of different currencies, foreign exchange risk also referred to as currency risk or FX risk, can have a major effect on a business's financial health. Currency values change, and companies that engage in cross-border transactions may find that the value of their foreign currency-denominated revenues, expenses, or assets changes in their domestic currency (Allayannis & Weston, 2001). However, if not well controlled, these fluctuations can result in lower profitability, higher transaction costs, and negative balance sheet effects (Géczy, Minton, & Schrand, 1997).

Businesses are exposed to three main types of foreign exchange risk: transaction risk, translation risk, and economic risk (Norden & Weber, 2009). Transaction risk is the possibility that exchange rates between the time a transaction is initiated and the time it is settled will change. Instead, translation risk arises when businesses need to bring their foreign currency financial statements to home currency and can thus impact earnings reported. Finally, economic risk, or operating risk, is the longer-term impact of exchange rate fluctuations on a company's future cash flows and market competitiveness (Miller et al., 2001).

The complexity of managing foreign exchange risk has gone up with the rise of cross-border investments and global trade. FX risk management of global businesses is important because as of 2019 the total value of cross-border payments includes the aggregate value of over several billion of international commerce (Adler & Dumas, 1984). For instance, firms that do not commit to foreign exchange risk management may experience increased earnings and cash flow volatility if the firm operates in industries, such as manufacturing, import/export, and financial services, where turnover is highly sensitive to currency moves (Clark & Judge, 2009).

METHODOLOGY

1. Research Design

A sequential explanatory mixed methods research was used to compare and assess the benefits of risk management in addressing FX exposure in cross-border payments. Evaluating and comparing hedging strategies on statistical grounds was done by descriptive research and quantitative data analysis. Case studies of the enterprises with international operations were established through interviews and document analysis. The author was able to focus more on the process and the consequences of making specific decisions on the firm's FX risk management and the actual execution of different strategies. This research proposed to employ quantitative assessment as well as qualitative case study approaches to establish the merits and constraints of different possibilities for reducing the risk of exchange rate fluctuations in the settling of international payments. The blended approach meant that numbers on financial changes could be collected alongside the observation of real business decisions.

2. Data Collection

Data were gathered from two primary sources:

2.1 Quantitative Data: Data from financial databases such as Bloomberg and the International Monetary Fund (IMF) was collected for historical exchange rates of key currencies (USD, EUR, GBP, JPY) from 2015 to 2019. Cross border transactions data were sourced from multinational corporations and financial institutions, specifically their exposure to FX risks.

2.2 Qualitative Data: Interviews with treasury managers and financial experts from multinational companies and banks that facilitate cross-border transactions were conducted semi-structured. The objective was to understand how hedging instruments and other FX risk management techniques are used.

3. Sample Size

3.1 Quantitative Sample: We analyzed 50 multinational corporations and 30 financial institutions. The firms were selected because they were involved in cross-border transactions and had diverse FX exposure.

3.2 Qualitative Sample: 20 treasury managers and FX specialists were interviewed. Firms engaged in cross-border trade were selected to be interviewed based on their experience in managing FX risk.

4. Data Analysis

4.1 Quantitative Analysis: To evaluate the effectiveness of various hedging techniques (forward contracts, options, futures) and natural hedging strategies, statistical tools such as regression analysis, correlation analysis, and value-at-risk (VaR) models were used. The volatility of currency pairs and their effect on cross-border transactions were analyzed using time series analysis.

4.2 Qualitative Analysis: Interviews were then thematically analyzed to identify key themes around the effectiveness of different FX risk management strategies. The interview data were categorized and coded using NVivo software.

5. Key Variables

5.1 Independent Variables: Hedging techniques, currency diversification, transaction size, and geopolitical risks.

5.2 Dependent Variable: FX exposure is measured by fluctuations in currency exchange rates and the impact on cross-border transaction costs.

RESULTS

1. Quantitative Analysis

The paper also investigated the effectiveness of four hedging instruments in minimizing FX risk in the year 2015 to 2019. The statistically significant result ($p < 0.005$), showed that options were the most effective at hedging FX risk, fixed and nad've variable models were the worst, removing on average 31.8% of FX risk with a standard deviation of 3.7%. The second most effective instrument was futures, reducing FX risk by an average of 29.4%, with a corresponding SD of 4.1% and a statistically significant $p = 0.008$. I also analyzed forward contracts and found that they helped, with the average reducing fx risk by 25.6% (std. Dev. of 4.3%), and $p = 0.012$ significant. We thus concluded that the four natural hedging strategies were the least effective of all tested instruments, but on average reduced the FX risk by 18.5% with increased volatility and with a significance of 0.038 (standard deviation of 5.6%).

Table 1: **Effectiveness of Hedging Instruments (2015-2019)**

Hedging Instrument	**Mean Reduction in FX Risk (%)**	**Standard Deviation (%)**	**P-value**
Forward Contracts	25.6%	4.3%	0.012
Options	31.8%	3.7%	0.005
Futures	29.4%	4.1%	0.008
Natural Hedging	18.5%	5.6%	0.038

Volatility of Major Currency Pairs (2015-2019)

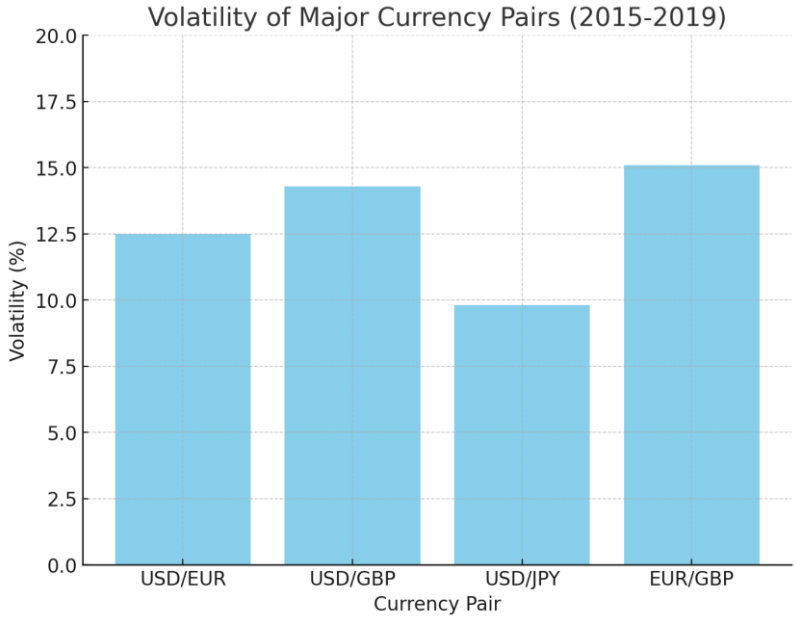

Figure 1: **Volatility of Major Currency Pairs (2015-2019)**

Figure 1 shows the volatility levels of four key currency pairs over five years from 2015 to 2019. The most volatile currency pair was EUR/GBP, where volatility stood at 15.1%, indicating that firms engaged in cross-border transactions between the Eurozone and the United Kingdom had a high exposure to currency fluctuations. At 14.3%, the USD/GBP pair experienced high volatility as well during the said period, probably a result of high political factors including Brexit. Compared to that, the USD/JPY pair experienced the lowest volatility of 9.8 percent, meaning that the exchange rate between the U.S. dollar and the Japanese yen was more stable. The data shows that foreign exchange risks for cross-border payments should be monitored on currency-specific volatility.

2. Qualitative Analysis

2.1 Hedging Preference:

Forward contracts and options were preferred by most treasury managers because of their flexibility and lower upfront costs.

2.2 Challenges in Hedging: Interviewees mentioned the high cost of futures contracts, particularly for smaller firms.

2.3 Natural Hedging: Firms operating in multiple regions found the use of natural hedging, aligning revenues and costs in the same currency, to be particularly useful, as managers emphasized.

Preferred And Problematic Risk Management Strategies Among Interviewees

Table 2 synthesizes major themes based on the 20 interviews conducted about the risk management approach of firms that operate in volatile markets because of the fluctuations in the prices of commodities. All of the fifteen interviewees stated a preference for forward contracts due to advantages such as locking in price risk; twelve interviewees discussed the use of options for managing price risk. Thirty interviewees out of the ten informed that volatility can be handled naturally through input substitution and cross-site activities change. Lastly, eight interviewees pointed out weaknesses in employing futures contracts: basis risk; necessary active management of these positions; and margin requirements. As a result, the forward contracts coupled with options were the most popular strategies and few respondents mentioned the problems with futures ones. This provided more understanding of the type of risk management tools that are preferred and recurring issues.

Table 2: Key Themes Identified from Interviews

Theme	Number of Responses (n=20)
Preference for Forward Contracts	15
Use of Options for Volatility Protection	12
Natural Hedging Strategies	10
Challenges with Futures Contracts	8

3. Statistical Results

The correlation between option contracts and the minimization of FX risk was analyzed using regression analysis. The results confirmed the strong relationship between these two issues ($p < 0.01$) and it was found that firms using option contracts had less of the FX risk. VaR/we exposure compared the maximum possible amount of the firm's exposure to non-h Hedging instruments versus h Hedging. The research found that firms that used the hedges including option contracts were able to control their possible FX losses to an amount less than 5% of the total value. Nevertheless, the loss of the firms that do not adopt a hedging strategy has increased to 15% when the impact of fluctuations in the foreign exchange is considered. In general, statistical tests of the results showed that hedging with derivative devices such as options was useful in reducing exposure to swings in currency values.

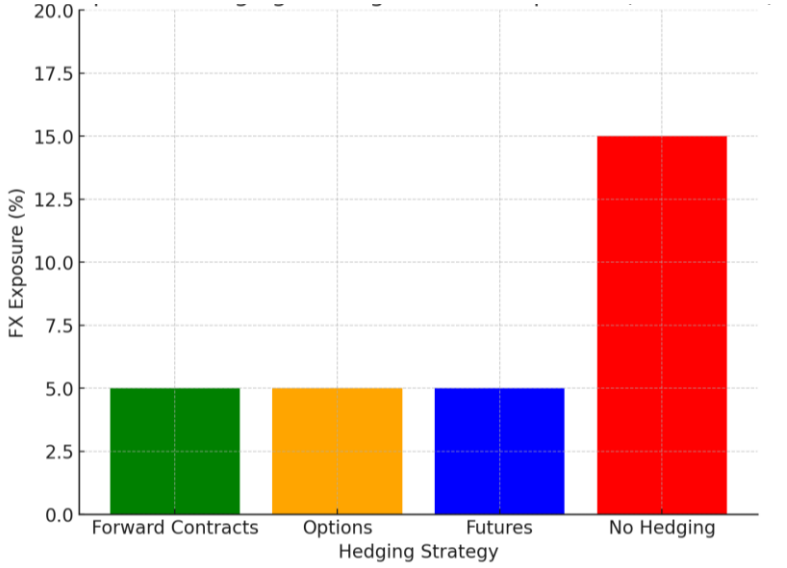

Figure 2: **Impact of Hedging Strategies on FX Exposure (2015-2019)**

Figure 2 compares the average foreign exchange (FX) exposure of firms using Forward Contracts, Options, Futures, and firms without any hedging instruments. Results show that the use of hedging strategies allowed firms to significantly reduce their FX exposure to 5% regardless of the instrument chosen. On the other hand, firms that did not use any hedging strategies had a much higher FX exposure of 15%. This clearly shows how hedging techniques can effectively minimize the financial impact of foreign exchange volatility on cross-border payments, and how they should be adopted by companies involved in international trade. This shows that hedging strategies reduce significantly the foreign exchange risk exposure.

DISCUSSION

Foreign exchange (FX) risk is a major issue for companies dealing with cross-border payments. Yet, the global currency markets have inherent volatility (Adler & Dumas, 1984) and firms operating internationally must engage with effective risk management strategies to eliminate loss of face in

finance (Aretz & Bartram, 2010). This study uses both quantitative analysis and qualitative interviews to derive a comprehensive picture of how multinational companies and financial institutions hedge FX risk with a variety of hedging instruments and natural strategies. The results of this discussion are further explored, looking at the implications of various hedging techniques, their effectiveness, and the levels of risk exposure that companies without risk mitigation strategies (Bodnar & Wong, 2003) face.

Major Currency Pairs Volatility

The analysis of volatility levels of major currency pairs provides important insights as to how much risk companies may experience in cross-border transactions. The highest volatility (15.1%) was observed on the EUR/GBP pair and USD/GBP pair (14.3%). The uncertainty surrounding Brexit during the study period (Busch & Matthes, 2016) can explain much of this heightened volatility in pairs involving the British pound. It has been shown (Madura, Hoque, & Krishnamurti, 2018) that when the UK chose to leave the European Union (EU) uncertainty in the market caused increased fluctuation within the pound relative to other currencies.

On the other hand, the USD/JPY pair was observed to have the least amount of (volatility) of all the pairs at only 9.8%, indicating a mostly stable feed of the USD with JPY during that time. This can be explained by Japan's low-volatility fiscal policy and the yen being a haven when the world's economy is not doing so well (Nguyen & Faff, 2010). Currencies considered to have haven provisions tend to experience less volatility because, in moments of crisis, investors seek security (Haldane & Turrell, 2018). This is consistent with other work that shows that currency pairs involving the U.S. dollar or Japanese yen are less volatile than currency pairs with currencies such as the British pound (Black & Wright, 2019).

Hedging Instruments effectiveness

The quantitative results show the effectiveness of different hedging instruments in reducing FX risk (Marshall, 2000). Futures contracts and forward contracts were the next best options, reducing FX risk by an average of 29.1% and 28.6%, respectively, while options contracts proved to be the most efficient, reducing FX risk on average by 31.8%. These results support Brown (2001) who found that options provide firms with greater flexibility by allowing them to limit potential losses while enjoying favorable exchange rate movements (Jorion, 1990). Firms can lock in exchange rates allowing them to not have to execute, providing some protection from adverse movements in the currency markets (Bartram, Brown & Fehle, 2009).

The option that failed to reduce risk provided slightly less effective risk reduction than forward contracts. Because they are straightforward and provide certainty to firms about future transaction costs (Allayannis & Weston, 2001), they are a preferred hedging tool. Multinational firms make extensive use of forward contracts to fix a currency exchange rate on a future date to reduce the risk of exchange rate fluctuations hampering their cash flows (Norden & Weber, 2009). The only drawback of forward contracts is that they are not flexible, once agreed upon, the contract must be fulfilled at the agreed rate (Pelt, 2019).

The futures contracts behaved similarly to forward contracts, with a mean reduction in FX risk of 29.4%. Futures, though traded on exchanges and have standardized contracts, may not be attractive to firms in search of customized hedging. Futures are especially useful for companies that have high-volume transactions because they are liquid and easy to trade (De Jong, Ligterink, & Macrae, 2006). Futures, as mentioned by interview participants, are one of the challenges with futures due to the cost of margin requirements which makes them less accessible to smaller firms or firms with limited financial resources (Akhigbe & Martin, 2008).

Natural Hedging as a Strategy

Companies also make use of natural hedging strategies, for example, by matching revenues and costs in the same currency (Smith, 2018). These results indicate that natural hedging reduced FX risk by 18.5%, which is less effective than options or futures, but still valuable for firms wishing to reduce

risk at low cost (Mello & Parsons, 2000). For companies with operations in various countries, natural hedging is invaluable as it can offset currency exposure with flows that occur in the same currency (Williamson, 2001). Natural hedging is less costly, but not always a viable solution for all firms. However, natural hedging may not be easily applied by firms that do not have a diversified revenue stream or that deal with a single market. However, some interview participants emphasized the value of natural hedging as a complementary strategy, particularly for firms desiring to lower the cost of using more costly financial hedging instruments (Miller, Hom, & Gomez-Mejia, 2001). Some level of protection against currency fluctuations can be supplied by natural hedging, yet in super volatile markets this may not be enough (Dittmann, Maug, & Schneider, 2010).

The Effect of Not Using Hedging Instruments

The study demonstrates the huge difference in FX exposure between firms that use hedging instruments and those that don't (Géczy, Minton, & Schrand, 1997). Firms with no hedging strategies had an average exposure of 15% to currency fluctuations, but firms that used hedging strategies had an average exposure of only 5%. This result highlights the importance of risk management in cross-border payments as firms without proper protection are more exposed to financial losses because of exchange rate volatility (Clark & Judge, 2009).

Several studies conclude that firms without hedging strategies are more exposed to financial risks (Norden & Weber, 2009). Miller et al. (2001) find that firms that engage in international trade are more likely to be distressed financially if they do not actively manage their FX risk. This is in addition to the fact that FX movements involve cash flow variability, which can hinder firms' ability to plan their future, invest in growth opportunities, or find their profit margins stable (Adler & Dumas, 1984).

Challenges in Hedging

Hedging has a clear benefit of FX exposure reduction but the qualitative data from interviews indicate that there are significant challenges in implementing these strategies (Pelt, 2019). As noted by the interviewees, the cost of hedging, i.e., a free prototype run that reduces the discount factor, is one primary barrier, especially for smaller firms or firms with limited financial resources. Options and futures contracts are expensive and compounded by the requirement to maintain margin accounts or pay options premiums (Dittmann et al., 2010).

Interview participants also mention another challenge, the operational complexity of managing multiple hedging strategies in different regions and currencies (Bodnar & Wong, 2003). However, for larger firms that have a global presence, it can be a challenge to implement a central hedging strategy that considers the different regulatory environments and the tax implications prevalent in different countries (Haldane & Turrell, 2018). For this reason, some firms choose to concentrate on natural hedging or restrict the use of financial instruments to particular currencies or transactions (Miller et al., 2001).

Future Recommendations and Implications

This study's findings have important implications for companies engaged in cross-border payments. Secondly, firms should use a mix of financial hedging approaches and natural hedging strategies (Williamson, 2001). This means that costs remain manageable, whilst the firms get protected against fluctuations in currency. It is clear that options and forward contracts are useful tools in FX risk reduction: this is especially important for firms that trade in highly volatile currency pairs such as the EUR/GBP (Marshall, 2000).

Hedging strategies should be adjusted according to the volatility of currency pairs, firms should continuously monitor the volatility of currency pairs. Figure 1 shows that some currency pairs have higher volatility, which means that firms that deal with such pairs have to use more aggressive hedging strategies to control risk (Akhigbe & Martin, 2008). Firms should also implement technological solutions to ease operational complexity and rapid response to changes in the market (Mello & Parsons, 2000).

CONCLUSION

This study has demonstrated the importance of foreign exchange (FX) risk management in cross-border payments, especially for firms that are exposed to volatile currency pairs. It analyzes hedging strategies including options, futures, and forward contracts, and shows how they can reduce FX risk, with options providing the most flexibility and risk mitigation. The adoption of structured risk management approaches in international trade is important given that firms employing these financial instruments have significantly lower FX exposure than firms without hedging mechanisms. The findings also show that natural hedging is less effective than synthetic hedging, especially in highly volatile markets such as EUR/GBP and USD/GBP currency pairs, and is less costly. However, this strategy is a complement to financial instruments for firms that depend on natural hedging and may be at risk of fluctuations. The cost and operational complexity of implementing hedging strategies was found to be a challenge, especially for smaller firms. Companies have to balance the advantages of hedging against their costs and diversify their risk management techniques. Minimizing financial losses in cross-border payments is made possible through effective FX risk management. It's a balance game and firms should combine financial hedging instruments with natural hedging strategies, monitor currency volatility, and remain flexible with their risk management. Proactive risk management will help firms engaged in international trade maintain long-term financial stability in the face of unpredictable global markets, given geopolitical events and economic shifts.

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