

Optimizing Currency Hedging: Evaluating the Efficiency of Selective Strategies for Protecting the Indonesian Rupiah

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Optimizing Currency Hedging: Evaluating the Efficiency of Selective Strategies for Protecting the Indonesian Rupiah

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Abstract: This study aims to identify efficient strategies for protecting the Indonesian Rupiah (IDR) against depreciation relative to several foreign currencies (USD, JPY, EUR, CNY, SGD). The research evaluates two primary hedging strategies: passive (always hedge and unhedged) and selective (random walk, large premia, and PPP down). Data spanning 60 months from December 2014 to November 2019 is analyzed using an investment horizon of three months. The findings indicate that the random walk strategy proves most effective in minimizing IDR depreciation, supported by superior return-per-risk metrics and efficient frontier analysis.

Keywords: Strategy foreign currency, Passive strategy, Selective strategy, Hedge, Unhedge, Large premia, PPP.

I. INTRODUCTION

In the realm of managing foreign exchange risk, particularly concerning the Indonesian Rupiah, it is essential for businesspeople, especially those engaged in transactions using foreign currencies, to mitigate potential risks. One effective method to achieve this is through the utilization of foreign-denominated debt as well as currency derivatives contracts to protect the value of their assets (Hagelin & Pramborg, 2004). These contracts lock in exchange rates for future transactions, thus shielding businesses from unfavorable currency fluctuations.

Previous research has extensively explored various methodologies for assessing the effectiveness of currency hedging strategies. One notable study by Chang et al. (2013) examined the application of dynamic multivariate GARCH models, including CCC, VARMA-AGARCH, DCC, and BEKK, in estimating conditional variances and covariances for currency hedging purposes. Their findings underscored the significance of model selection in optimizing hedge ratios and portfolio weights across different currency pairs and futures contract maturities (Chang et al., 2013). This research contributes to understanding how different volatility models can impact hedging effectiveness, offering insights that are crucial for mitigating currency risk in volatile markets.

In this study, we adopt a practical approach aimed at simplifying hedging strategies for enhanced accessibility and usability. The strategy for preserving value can be approached through both passive and selective strategies. Passive strategies involve straightforward methods such as constant hedging or remaining unhedged, providing a consistent approach to risk management. In contrast, selective strategies, such as those based on random walk, large premia, and purchasing power parity (PPP), require more dynamic decision-making, adapting to market conditions and economic forecasts.

By focusing on simpler strategies, our research aims to facilitate a clearer understanding and practical application of currency hedging techniques. This approach not only aims to improve accessibility to hedging methods but also to provide actionable insights that market participants can readily implement. Through empirical analysis and practical examples, we seek to elucidate the effectiveness of these strategies in real-world scenarios, offering valuable guidance for navigating currency risk in dynamic and uncertain financial environments.

Previous research has presented varying results regarding the effectiveness of different hedging strategies. Eaker (1990) found that investments without hedging or remaining unhedged yielded the best performance. This suggests that for some businesses, the costs associated with hedging may outweigh the benefits. Conversely, Eun (1997) suggested that selective hedging based on the random walk method was more effective, highlighting the potential benefits of more active management.

Morey (2001) highlighted the efficiency of the Large Premier Strategy, which focuses on taking advantage of significant market premiums. This approach can be beneficial in certain market conditions where premiums are predictably large. Simpson (2004) favored the PPP strategy for hedging, which relies on the economic theory that exchange rates should adjust to equalize the price of identical goods in different countries (Papaioannou, 2006). These discrepancies in findings indicate the need for further research to determine the most suitable hedging strategy for the Indonesian Rupiah against various



foreign currencies.

The study of foreign exchange risk management is crucial for firms to control volatility and limit losses in the foreign exchange market before and during a financial crisis (Caporin et al., 2014). Effective risk management can enhance a firm's financial stability and profitability. The selection of currencies for examination, such as the US dollar, Japanese Yen, Euros, Renminbi, and Singapore dollars, is based on active trading data with Indonesia, emphasizing the importance of understanding and implementing effective hedging strategies (Papaioannou, 2006).

The Rupiah's performance over the past two decades has been notably poor compared to other foreign currencies. Since the end of the 1990s, the Rupiah has depreciated significantly, with its value fluctuating from around 7,000 per US dollar in 1999 to approximately 14,000 per US dollar in 2019 (fxssi.com, 2019). This depreciation highlights the volatility and risks associated with the Rupiah, making effective hedging strategies even more critical for businesses operating in Indonesia.

This depreciation underscores the importance for businesspeople, particularly those with cash flows in foreign currencies, such as importers, to implement effective risk mitigation strategies. Forward contracts offer a viable method for value protection. However, choosing the right strategy is crucial to ensure efficiency and avoid over-hedging. This research aims to identify the most effective times for value protection by testing both passive and selective strategies.

In conclusion, research on hedging strategies for managing foreign exchange risk, especially concerning the Indonesian Rupiah, is vital for businesses to safeguard their assets and cash flows. By considering various passive and selective hedging strategies and analyzing the performance of different approaches, businesses can make informed decisions to protect their value effectively in the face of currency fluctuations.

II. LITERATURE REVIEW

The study focuses on an investor holding the Indonesian Rupiah and facing the risk of potential depreciation against foreign currencies upon exchange in the future. To safeguard against this depreciation risk, the investor must consider employing hedging strategies to protect the value of the Rupiah. The first strategy under scrutiny is the unhedged approach, where the investor opts not to hedge their Rupiah exposure, leaving it vulnerable to fluctuations in exchange rates. Research by McCarthy (2003) indicated that the unhedged strategy proved advantageous for exporters from countries like Japan and Singapore, selling goods to the US, where the US dollar was strengthening against the Singapore Dollar and Japanese Yen. This strategy is deemed suitable when dealing with cash flows in stronger currency units; however, it may yield unfavorable outcomes for investors primarily receiving cash inflows in Rupiah units.

The unhedged strategy essentially involves taking on currency risk without any form of mitigation. This approach can be beneficial in certain scenarios, particularly when the domestic currency is expected to appreciate or remain stable. However, it carries significant risks, especially for currencies with a history of volatility, like the Rupiah. McCarthy's (2003) study underscores the importance of context when choosing this strategy. For exporters dealing in strong foreign currencies, remaining unhedged can sometimes result in favorable outcomes due to the strengthening of the foreign currency against the domestic one. However, this is not universally applicable, particularly for investors whose primary inflows are in a weaker or more volatile currency such as the Rupiah.

Conversely, the always hedge strategy involves consistently utilizing forward contracts to mitigate exchange rate risks. Glen (1993) discovered that always hedging was more beneficial than selective hedging, suggesting its superiority in risk management. This strategy is particularly useful when the Rupiah's value is consistently under pressure, providing a steady shield against adverse currency movements. By locking in exchange rates through forward contracts, investors can protect themselves from unexpected depreciation, ensuring more predictable financial outcomes.

The always hedge strategy provides a form of insurance against adverse currency movements. This approach is generally considered more conservative, offering protection against volatility but potentially limiting gains if the domestic currency unexpectedly appreciates. Glen's (1993) research highlights the practical benefits of this strategy in managing foreign exchange risks, especially for businesses with consistent exposure to volatile currency movements. The predictability offered by always hedging can be particularly valuable for financial planning and stability despite the potential costs associated with maintaining forward contracts.

Selective hedging, the subsequent strategy, involves taking hedging positions under specific conditions and remaining unhedged under contrasting circumstances. This approach will be tested based on theories such as random walk, large premia, and purchasing power parity (PPP). The selective hedging strategy requires a more dynamic approach, adjusting the hedging positions based on market signals and economic indicators. This strategy aims to optimize the timing and conditions for hedging, thereby balancing the trade-offs between risk and cost.

The random walk theory, as elucidated by Meese (1983), posits that exchange rates move randomly and are unpredictable, advocating for hedging when the exchange rate is discounted to protect against depreciation. Eun (1997) and Simpson (2006) found that hedging based on the random walk theory always outperformed hedge and passive hedge strategies. This theory supports the idea that short-term fluctuations are inherently unpredictable, thus necessitating a flexible hedging approach. By hedging when the exchange rate is favorable, investors can potentially secure better outcomes compared to static strategies.

The random walk theory suggests that market movements are random and do not follow a predictable path. This makes forecasting difficult and often unreliable, hence advocating for opportunistic hedging when rates are advantageous. Eun (1997) and Simpson (2006) provide empirical support for this approach, demonstrating that selective hedging based on the random walk theory can yield superior results. This strategy requires continuous monitoring of exchange rates and a willingness to act swiftly when conditions are favorable.

The large premia strategy, derived from Morey's (2001) research, suggests hedging decisions should be made when the forward exchange rate exceeds its moving average to shield against currency appreciation. This strategy aims to take advantage of significant market premiums, making it effective during periods of high volatility. Morey's findings emphasize the importance of monitoring forward rates and adjusting hedging strategies accordingly. By acting when the forward rate is above its historical average, investors can potentially avoid adverse currency movements and lock in favorable rates.

The large premia strategy is based on the observation that when forward rates are significantly higher than the moving average, it indicates a premium that can be exploited. This approach requires a solid understanding of historical exchange rate trends and the ability to act when market conditions indicate a significant premium. Morey's (2001) research underscores the effectiveness of this strategy in volatile markets, where currency movements can be abrupt and significant.

On the other hand, the PPP strategy, as endorsed by Hakkio (1992) and further supported by Simpson (2004, 2010), determines the fair value of a currency and recommends hedging when the PPP value surpasses the spot rate for effective risk management. This approach is grounded in economic fundamentals, suggesting that exchange rates should eventually converge to the level implied by price level differentials between countries. Simpson's research consistently shows the efficacy of the PPP strategy in various market conditions.

The purchasing power parity (PPP) strategy is based on the economic theory that exchange rates should adjust to equalize the price of identical goods in different countries. Hakkio (1992) and Simpson (2004, 2010) argue that by comparing the PPP value to the spot rate, investors can determine when a currency is overvalued or undervalued. Hedging when the PPP value exceeds the spot rate can protect against depreciation, as the spot rate is expected to adjust towards the PPP value over time.

The point of view used in this study is as an investor who has Rupiah and will exchange it in the future. This means that investors will lose money if the value of the Rupiah falls or depreciates against foreign currencies. Thus, the strategy or decision to hedge is intended to protect Rupiah from depreciation against other currencies. The unhedged strategy leaves the Rupiah exposed to exchange rate risks, potentially leading to significant losses if the currency weakens. However, as highlighted by Eaker (1990), this approach can sometimes be beneficial, particularly for investors dealing with strong foreign currencies.

By using forward contracts in the always-hedge strategy, investors can lock in exchange rates and reduce the uncertainty associated with future cash flows. Glen (1993) found that this strategy is generally superior to selective hedging, particularly in volatile markets. The always hedge strategy provides a consistent and predictable method of managing currency risk, although it may not always capture potential gains from favorable currency movements.

Selective hedging strategies such as random walk, large premia, and PPP provide a more nuanced approach to currency risk management. These strategies allow investors to adapt their hedging positions based on specific market conditions and economic theories. By employing a selective approach, investors can potentially achieve better outcomes by timing their hedging activities to coincide with favorable market conditions.

In conclusion, the study of various hedging strategies, including unhedged, always hedge, and selective hedging based on different theories, is crucial for investors to protect the value of the Indonesian Rupiah against foreign currency fluctuations. By analyzing the effectiveness of these strategies, investors can make informed decisions to mitigate exchange rate risks and secure their investments. Each strategy offers distinct advantages and challenges, highlighting the importance of context and market conditions in determining the optimal approach.

A) Research Methodology

This study employs an ex post facto approach to compare the performance of five hedging strategies: unhedged, always hedge, random walk hedging, large premia, and PPP down. Monthly decisions are made based on each strategy's criteria, with a three-month investment horizon. Exchange rate data spanning December 2014 to November 2019 is utilized for analysis. The research evaluates each strategy's efficiency using return-per-risk metrics and constructs efficient frontiers to visualize their comparative performance.

The decision of Value Protection or when the value protection is to be conducted can be seen in the table below:

Table 1: Value Protection Decision

Strategy	Hedging Decision
<i>Always hedge</i>	Every transaction
<i>Unhedge</i>	Not doing <i>hedging</i> at all
<i>Random walk hedging</i>	$F < S$
<i>Large premia</i>	$F < S$ and $[F-S] < \text{its moving average}$
<i>PPP down</i>	When the Rupiah is <i>overvalued</i> or the $S < PPP$ rate

III. RESULTS AND DISCUSSION

Based on the results of the efficient frontier for the random walk, unhedged, and PPP down strategies, several key insights emerge regarding their performance in hedging the Indonesian Rupiah against foreign currency fluctuations.

Overall, all strategies exhibit a negative return-per-risk ratio. However, the random walk and large premia strategies demonstrate the ability to minimize losses more effectively. The random walk strategy, in particular, stands out as the most efficient approach to protecting the value of the Rupiah, with a return-per-risk of -0.0153. In comparison, the unhedged strategy has a return-per-risk of -0.1041, and the PPP down strategy has a return-per-risk of -0.2310. The always hedge strategy performs the worst, with a return-per-risk of -2.9355. These findings align with those of Eun (1997) and Simpson (2006), who also identified the random walk strategy as the best simple method for currency value protection.

The always hedge strategy, with its significantly poor return-per-risk value of -2.9355, is notably inferior to the other strategies, particularly the random walk strategy, which is almost 200 times better in terms of return-per-risk. This discrepancy highlights the drawbacks of always hedging, especially in the context of the Rupiah, which tends to depreciate against foreign currencies. The high costs associated with hedging premiums and the risk of overhedging make this strategy less effective and potentially harmful to Rupiah holders. Further investigation is warranted to determine if the premium costs for the Rupiah are excessively high compared to other currencies, as this could be a contributing factor to the poor performance of the always-hedge strategy.

The unhedged strategy, which leaves the Rupiah exposed to exchange rate risks, surprisingly offers a relatively good return-per-risk ratio, only surpassed by the random walk strategy. Notably, its application to the Chinese Yuan (CNY) even generates profits for Rupiah holders. This research suggests that a passive unhedged strategy is preferable to the always hedge strategy across all currencies studied, though it still falls short of the selective random walk strategy in terms of effectiveness.

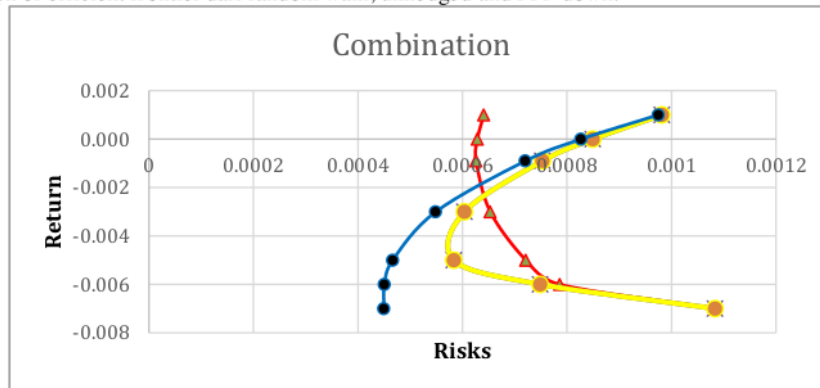
The implementation of the random walk and large premia strategies yields identical performance results across all currencies. This is because, except for the Singapore Dollar (SGD), the Rupiah consistently shows a positive premium, rendering the second criterion for the large premia strategy inapplicable. In the case of SGD, both strategies converge, as the forward value falls below the average when the premium is negative. Consequently, this study concludes that the large premia strategy is unnecessary for protecting the value of the Rupiah; businesspeople can simply rely on the random walk strategy. The random walk strategy achieves the best return-per-risk value of -0.0153. While it remains in a loss position on average, it effectively minimizes losses due to currency value fluctuations. Furthermore, its application to each currency shows that it can even generate profits in CNY and SGD. However, it is important to note that the random walk strategy behaves similarly to the unhedged strategy across all studied currencies, except for SGD, due to the consistent positive premium in the others.

The PPP down strategy, while theoretically robust, proves to be the most complex among the simple strategies. It requires attention to inflation rates across multiple years and determination of the baseline value for fair Rupiah conditions. Despite its complexity, the PPP down strategy underperforms compared to the relatively simpler strategies. With a return-per-risk of -0.2310, it falls significantly short of the random walk strategy. Based on this study, the use of the PPP down strategy is not recommended, as its performance is only positive for the CNY.

To further support these results, the efficient frontier graph compares the unhedged, random walk, and PPP down strategies within the same return range. The always hedge strategy is excluded from this comparison due to its substantially lower return range, making it incomparable with the other three strategies. The large premia strategy is also excluded as it

mirrors the efficient frontier of the random walk strategy.

This is the graph of efficient frontier dari random walk, unhedged and PPP down:



Remark:

- Blue** : PPP down
- Yellow** : Unhedge
- Red** : Random walk

The always hedge strategy, which consistently utilizes forward contracts to mitigate exchange rate risks, is found to be the least effective. This strategy, while seemingly prudent by providing a steady shield against adverse currency movements, ends up incurring high costs due to premiums. These costs accumulate and outweigh the benefits, leading to a significant negative return-per-risk. The significant discrepancy in return-per-risk values, especially when compared to the random walk strategy, underscores the inefficiencies of always hedging. This approach is particularly disadvantageous for currencies like the Rupiah, which often depreciate, making the cost of hedging excessively high.

In contrast, the unhedged strategy, which leaves the currency exposure open to market fluctuations, surprisingly yields a relatively better return-per-risk ratio. This strategy is advantageous when the domestic currency is expected to appreciate or remain stable. However, it is not without risks, especially for volatile currencies. The research highlights that for the Rupiah, a passive unhedged approach is superior to always hedging, though still not as effective as a more dynamic strategy like the random walk.

The selective hedging strategies, particularly the random walk and large premia, are shown to be the most effective. These strategies involve adjusting the hedging positions based on specific market conditions and economic indicators, thereby optimizing the timing and conditions for hedging. The random walk strategy, grounded in the idea that short-term currency movements are unpredictable, proves to be highly effective in minimizing losses. Similarly, the large premia strategy, which focuses on significant market premiums, aligns closely with the random walk in terms of performance. Both strategies demonstrate that a dynamic approach tailored to market conditions can significantly improve hedging outcomes.

The PPP down strategy, although complex and theoretically sound, falls short in practical application. This strategy requires a detailed analysis of inflation rates and fair value determinations, which adds to its complexity. Despite its theoretical appeal, the PPP down strategy does not deliver comparable results to simpler, more effective strategies like the random walk. Its return-per-risk ratio is notably lower, making it a less attractive option for managing currency risk.

The graph of the efficient frontier for the random walk, unhedge, and PPP down strategies provides a visual representation of their performance. It clearly illustrates that the random walk strategy offers the best balance of risk and return, followed by the unhedged strategy. The PPP down strategy, while included, shows a less favorable position. The always hedge strategy is excluded from this efficient frontier comparison due to its significantly poor performance, which is not comparable within the same return range.

Furthermore, the 'always hedge' strategy was excluded from the efficient frontier comparison due to its significantly lower range of returns compared to the other three strategies, making it incomparable within the same return range. The strategies compared using the efficient frontier were unhedged, random walk, and PPP down. Large premia were also excluded as they exhibited an efficient frontier identical to that of random walk.

The findings suggest that for investors seeking to hedge the Rupiah against foreign currency fluctuations, the random walk strategy is the most effective method. It not only minimizes losses but also has the potential to generate profits in certain currency scenarios. The unhedged strategy, while riskier, still performs better than the always hedge approach. The PPP down strategy, despite its complexity, does not offer a competitive advantage. These insights are critical for making informed decisions in foreign exchange risk management, highlighting the importance of selecting the right hedging strategy based on specific market conditions and economic theories.

In summary, the random walk strategy emerges as the most effective method for minimizing losses and protecting the value of the Rupiah against foreign currency fluctuations, followed by the unhedged strategy. The always hedge and PPP down strategies, due to their inherent drawbacks and complexity, are less favorable options for managing currency risk. The graph of the efficient frontier supports these findings, showcasing the relative performance of each strategy and providing a clear visual representation of their effectiveness in balancing risk and return. The results emphasize the need for a dynamic and informed approach to currency hedging tailored to the specific characteristics of the Rupiah and the broader market conditions.

IV. CONCLUSION

Based on the comprehensive analysis of various hedging strategies for protecting the value of the Indonesian Rupiah against foreign currencies, the random walk selective strategy emerges as the most efficient approach. This strategy offers the best return-per-risk ratio, demonstrating its superiority in minimizing losses and optimizing financial outcomes for businesses facing high expectations. The random walk strategy's effectiveness lies in its dynamic adjustment to market conditions, allowing for strategic hedging when the exchange rate is favorable. This adaptability makes it a robust choice for mitigating foreign exchange risk in a volatile market.

In contrast, the PPP down strategy, although theoretically sound, proves to be the most effective in scenarios where the expected return is low or in loss positions. The complexity of the PPP down strategy, which involves detailed analysis of inflation rates and fair value determinations, adds to its robustness in these situations. Despite its complexity, the strategy's ability to provide better results compared to other approaches in low-return scenarios highlights its potential utility in specific market conditions. However, its overall effectiveness is limited when compared to the more versatile random walk strategy.

The large premia strategy, which was also examined in this study, was found to be ineffective in protecting the value of the Rupiah. The criteria for implementing the large premia strategy were not met during the study period, resulting in its performance being indistinguishable from the random walk strategy. This finding underscores the importance of context and market conditions in determining the applicability of specific hedging strategies. In the absence of significant market premiums, the large premia strategy fails to provide additional benefits over the random walk approach.

One of the notable findings of this study is the positive return achieved by the random walk strategy when applied to the Chinese Yuan (CNY) and Singapore Dollar (SGD). This outcome suggests that businesses, particularly importers, could benefit from considering the origin of goods and the currency used in international payment transactions. Opting for transactions in CNY or SGD, where the random walk strategy has demonstrated positive returns, could provide a strategic advantage in managing foreign exchange risk. This insight is particularly valuable for businesses looking to optimize their currency exposure and enhance financial stability.

In conclusion, the random walk selective strategy is the most efficient method for protecting the Indonesian Rupiah against foreign currency fluctuations, offering the best return-per-risk ratio. While the PPP down strategy is effective in low-return scenarios, its complexity and limited overall effectiveness make it less attractive compared to the random walk approach. The large premia strategy, due to its ineffectiveness during the study period, further highlights the superiority of the random walk strategy. Businesses, especially importers, can strategically enhance their financial outcomes by opting for transactions in currencies like CNY and SGD, where the random walk strategy has shown positive returns. This comprehensive analysis underscores the importance of selecting the right hedging strategy based on market conditions and specific economic contexts to manage foreign exchange risk effectively.

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