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Corporate Foreign Exchange Risk Management: The Effectiveness of Forward Contracts in Mitigating USD/IDR Volatility

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Abstract

This study analyzes the use of forward contracts as a hedging strategy against USD/IDR exchange rate risk at PT Astra International Tbk during 2024–2025. Exchange rate risk is a major concern for firms holding US dollar-denominated obligations, since rupiah depreciation increases payment burdens. This study uses a quantitative descriptive approach with scenario simulation, comparing unhedged and hedged positions using forward contracts. The forward rate is computed using the Interest Rate Parity (IRP) approach based on the BI Rate and the Fed Funds Rate, while the exposure value is derived from the company's short-term borrowings. The results show that when the rupiah weakens, forward contracts save import payment costs by tens of billions of rupiah, whereas when the rupiah strengthens, hedging generates an opportunity cost. The findings suggest that the main function of hedging is not to generate profit, but to provide cost certainty and reduce uncertainty in line with risk management principles.

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INTRODUCTION

Economic globalization has increased the interconnection between domestic and international economies, including transactions involving foreign currencies. Companies in Indonesia, particularly those engaged in import and export activities, face exchange rate risk that can significantly affect their financial performance. When a company holds obligations in a foreign currency while most of its revenue is in Rupiah, every movement in the exchange rate directly affects the amount to be paid. This phenomenon makes the management of exchange rate risk a strategic aspect of modern corporate financial management.

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During the 2024–2025 period, the Rupiah exchange rate against the United States Dollar (USD) showed a clear weakening trend. The USD/IDR exchange rate moved from around Rp15,600 in early 2024 to above Rp16,600 by the end of 2025. This depreciation was influenced by various factors, including the divergence in monetary policy between Bank Indonesia and the Federal Reserve, global commodity price dynamics, and market sentiment toward emerging market assets. For companies holding USD-denominated obligations, this condition means an increase in payment burdens in Rupiah, which ultimately can pressure profitability and cash flow.

One company with exposure to foreign currency is PT Astra International Tbk. As one of the largest conglomerates in Indonesia, Astra operates across sectors including automotive, heavy equipment and mining, agribusiness, financial services, infrastructure, and information technology. In the automotive segment, which is the company's backbone, Astra imports components, spare parts, and some vehicle units generally transacted in foreign currencies, while its sales are dominated by Rupiah transactions. This mismatch between the currency of obligations and the currency of revenue creates exchange rate risk that must be managed carefully.

Evidence that Astra faces and manages exchange rate risk can be seen in its consolidated financial statements. In the statement of profit or loss and other comprehensive income, there is a "Cash flow hedges" item indicating that the company actively uses derivative instruments to protect its position. In addition, there is a "Foreign exchange gain/(loss)" item reflecting the direct impact of exchange rate movements on the company's financial performance. This confirms that the study of hedging strategies at Astra is relevant to the company's actual practice rather than merely hypothetical.

To manage exchange rate risk, companies can use various hedging instruments, one of which is the forward contract. A forward contract is an agreement to buy or sell an asset at a predetermined price on a specified future date (Hull, 2012). Through a forward contract, a company can lock in the payment exchange rate so that future costs become certain and unaffected by spot rate fluctuations at maturity. This instrument is relatively simple, flexible, and widely used by companies in Indonesia because it can be tailored to the nominal amount and time frame of the transaction.

Several previous studies have highlighted the importance of hedging strategies. Risman *et al.* (2021) explains that currency movements are closely related to firm value. Risman (2021) conducted a comparative analysis of exchange rate hedging strategies in local and multinational companies and found that firm characteristics influence the choice of the most suitable strategy. However, studies specifically examining the use of forward contracts with an Interest Rate Parity-based calculation approach in automotive companies such as Astra remain relatively limited, leaving a research gap that can be addressed.

Based on the above, this study aims to: (1) explain the mechanism of using forward contracts to protect the value of USD-denominated obligations at PT Astra International Tbk; and (2) measure the amount of cost savings obtained from applying forward contracts compared to an unhedged position under various exchange rate scenarios during 2024–2025. The results are expected to provide practical contributions for companies in hedging decision-making, while enriching academic studies on exchange rate risk management in Indonesia.

This study offers novelty in several aspects. First, it focuses on PT Astra International Tbk as an automotive company with significant import exposure, differing from prior studies that generally compare local and multinational firms in general terms. Second, it uses a forward rate calculation approach based on Interest Rate Parity with the latest benchmark interest rate data from Bank Indonesia and the Federal Reserve, giving the forward rate a strong theoretical

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basis. Third, it presents a two-year analysis (2024 and 2025), allowing comparison of hedging impacts under different interest rate and exchange rate conditions.

LITERATURE REVIEW

Financial Risk Management

Financial risk management is a series of processes to identify, measure, and manage risks that can affect a company's financial condition (Sartono, 2017). Financial risk can arise from various sources, including market risk, credit risk, liquidity risk, and operational risk. Exchange rate risk falls under market risk, namely risk arising from changes in market variables such as exchange rates, interest rates, and commodity prices (Risman et al., 2017). Good risk management aims not to eliminate risk entirely, but to control it at a level tolerable to the company (Madura, 2018).

Exchange Rate Risk

Exchange rate risk (currency risk) is the potential loss caused by the effect of currency exchange rate changes on the value of assets, the size of obligations and receipts, or a company's cash flow. This risk arises from the weakening (depreciation) or strengthening (appreciation) of the local currency against a foreign currency. According to (Tandelilin, 2022), exchange rate risk is the risk related to fluctuations in the exchange rate of the domestic currency against the currency of another country. Risman (2021) explains that currency movements are closely linked to firm value, making their management an important part of strategic financial decisions.

Exchange rate risk is generally divided into three types: transaction exposure, translation exposure, and economic exposure (Madura, 2018). Transaction exposure relates to the impact of exchange rates on agreed but unsettled transactions, such as import obligations to be paid in the future. Translation exposure relates to the impact of exchange rates when converting the financial statements of foreign subsidiaries into the parent currency. Economic exposure relates to the long-term impact of exchange rate changes on firm value and competitiveness. This study focuses on transaction exposure to USD-denominated obligations.

Hedging and Its Types

Hedging is a risk transfer technique aimed at protecting a company from losses due to price or exchange rate fluctuations (Risman, 2021). In the context of exchange rate risk, several hedging techniques can be used, namely money market hedging, forward contract hedging, swap contract hedging, futures contract hedging, and option contract hedging (Hull, 2012). Money market hedging uses money market instruments to lock in the exchange rate. Swap hedging involves exchanging cash flows in different currencies. Futures hedging is similar to forwards but traded on an exchange with standardized contracts. Option hedging provides the right but not the obligation to transact at a certain rate.

Forward Contracts

A forward contract is an agreement between two parties to buy or sell an asset at a predetermined price on a future date (Hull, 2012). A forward contract is a financial instrument used to protect against future price fluctuations by fixing the price of the traded asset on a future date. In the foreign exchange context, a party holding an obligation in a foreign currency can buy that currency forward to lock in the payment rate.

The main advantage of a forward contract is its ability to provide cost certainty (Hull, 2012). By locking in the exchange rate, a company can prepare budgets and cash flow projections without worrying about exchange rate volatility. However, forward contracts also

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have limitations, namely their binding nature, so the company must still execute the contract even if the exchange rate moves favorably. This can create an opportunity cost if the spot rate at maturity turns out to be more favorable than the forward rate (Madura, 2018).

Interest Rate Parity (IRP)

The determination of the forward rate is theoretically explained through the concept of Interest Rate Parity (IRP) (Madura, 2018). This theory states that the difference between the forward rate and the spot rate is determined by the interest rate differential between two countries. If the domestic interest rate is higher than the foreign interest rate, the domestic currency will trade at a discount in the forward market, meaning the USD/IDR forward rate will be above the spot rate. This relationship maintains equilibrium so that no risk-free arbitrage opportunity exists between the two markets.

Exchange Rate Determinants and the Automotive Industry

Exchange rate movements are influenced by various fundamental and technical factors (Madura, 2018). Fundamental factors include inflation differentials, interest rate differentials, trade balance, government debt levels, and economic and political stability. The purchasing power parity theory states that in the long run the exchange rate adjusts to price-level differences between countries, while the interest rate parity theory explains the short-run relationship among spot rates, forward rates, and interest rate differentials (Hull, 2012). The automotive industry is highly exposed to exchange rate risk due to its dependence on imported components. Risman, Subhani, and Risman, Subhani, *et al*. (2021) show a link between financial fundamentals and the performance of the automotive industry.

Previous Studies and Proposition Development

Several previous studies have examined risk management and firm financial performance. Risman *et al.* (2017) examined the relationship among commodity prices, exchange rates, and investment on firm value mediated by business risk. Risman, *et al.* (2021) analyzed the effect of digital finance on financial stability. Risman (2021) conducted a comparative analysis of exchange rate hedging strategies in local and multinational companies. This study complements those works by focusing on the use of forward contracts at PT Astra International Tbk with an Interest Rate Parity-based calculation approach.

Because this study is a descriptive case-based simulation rather than a statistical hypothesis test, the argument developed is stated as a proposition rather than a hypothesis. Based on the theoretical review and previous studies, the proposition proposed is as follows: Proposition: The use of forward contracts generates cost savings on the payment of USD-denominated obligations compared to an unhedged position when the Rupiah weakens.

METHOD

This study uses a quantitative descriptive approach with a scenario analysis method (Sugiyono, 2018). The quantitative approach was chosen because the study focuses on the calculation and comparison of numerical values between the unhedged and hedged positions. The study is descriptive because it aims to describe the impact of using forward contracts on the payment cost of foreign currency obligations. The simulation method is used because internal forward contract transaction data are not publicly disclosed, so the analysis is conducted through a simulation grounded in real data available from official sources.

The research object is PT Astra International Tbk, focusing on USD-denominated obligation exposure arising from operational and short-term funding activities. The research

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period covers 2024 and 2025. To maintain data consistency, the contract reference dates are set at March 2024 for the 2024 simulation and March 2025 for the 2025 simulation, so that the spot rate and interest rates come from the same period.

The data used are secondary data from official institutions. USD/IDR spot rate data are obtained from Bank Indonesia (middle rate/JISDOR). Benchmark interest rate data are obtained from Bank Indonesia for the BI Rate and the Federal Reserve for the Fed Funds Rate. Company exposure data in the form of short-term borrowings are obtained from the Consolidated Financial Statements of PT Astra International Tbk for 2024 and 2025.

The variables used include the spot rate, forward rate, exposure value (nominal USD-denominated obligation), unhedged cost, hedged cost, and the savings difference. Several assumptions are used. First, the USD-denominated obligation to be hedged is assumed to be USD 100 million in 2024 and USD 130 million in 2025, estimated as the USD portion of the company's short-term borrowings (about 15% of total short-term borrowings). Second, the forward contract term is assumed to be three months (t = 0.25 years). Third, the realized exchange rate scenarios are set within a reasonable range, covering stable, slightly weakening, moderately weakening, sharply weakening, and strengthening conditions.

Table 1. Research Reference Data by Year

Parameter	2024 (March)	2025 (March)
Spot rate (IDR/USD)	15,800	16,200
BI Rate (% p.a.)	6.00	5.75
Fed Funds Rate (% p.a., midpoint)	5.375	4.375
Term (years)	0.25	0.25
Hedged nominal (USD)	100,000,000	130,000,000

Source: Bank Indonesia, Federal Reserve, and PT Astra International Tbk Financial Statements

The analysis is carried out in several stages. First, calculating the forward rate using the Interest Rate Parity approach. Second, calculating the payment cost in the unhedged position. Third, calculating the payment cost in the hedged position. Fourth, calculating the savings as the difference between the unhedged and hedged costs. Fifth, comparing the results across exchange rate scenarios for both years. All calculations are performed using Microsoft Excel with traceable formulas. The formulas used are as follows:

$$Forward = Spot \times (1 + i_IDR \times t) / (1 + i_USD \times t) \quad (1)$$

$$Unhedged\ Cost = USD\ Nominal \times Realized\ Spot\ Rate \quad (2)$$

$$Hedged\ Cost = USD\ Nominal \times Forward\ Rate \quad (3)$$

$$Savings = Unhedged\ Cost - Hedged\ Cost \quad (4)$$

RESULTS AND DISCUSSION

Results

Overview of Astra's Foreign Currency Exposure

Based on the Consolidated Financial Statements of PT Astra International Tbk, the company's short-term borrowings showed an upward trend during the research period. Short-

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term borrowings were recorded at Rp10,727 billion as of March 31, 2024, Rp11,824 billion as of December 31, 2024, Rp13,917 billion as of June 30, 2025, and Rp17,477 billion as of September 30, 2025. This increase in short-term funding exposure aligns with the company's working capital needs and serves as the basis for determining the simulated foreign currency exposure.

In addition to borrowings, indications of exchange rate risk management by Astra are also reflected in the cash flow hedges item in the statement of profit or loss and other comprehensive income. The presence of this item shows that the company has actively used derivative instruments to protect its cash flow from exchange rate fluctuations. Thus, the simulation of forward contract use in this study is consistent with the company's actual risk management practice.

Table 2. Short-Term Borrowings of PT Astra International Tbk

Period	Short-Term Borrowings (Rp billion)
March 31, 2024	10,727
December 31, 2024	11,824
June 30, 2025	13,917
September 30, 2025	17,477

Source: Consolidated Financial Statements of PT Astra International Tbk (processed, 2026)

Forward Rate Calculation Based on Interest Rate Parity

Applying the Interest Rate Parity formula to the reference data yields the three-month forward rate for each year. For 2024, with a spot rate of Rp15,800, a BI Rate of 6.00%, and a Fed Funds Rate of 5.375%, the resulting forward rate is Rp15,824 per dollar, with a forward premium of about Rp24. For 2025, with a spot rate of Rp16,200, a BI Rate of 5.75%, and a Fed Funds Rate of 4.375%, the resulting forward rate is Rp16,255 per dollar, with a forward premium of about Rp55. The 2025 forward premium is larger due to the widening interest rate differential between the Rupiah and the dollar, driven by a faster decline in the Fed Funds Rate than the BI Rate.

Table 3. Forward Rate Calculation Results (Interest Rate Parity)

Description	2024	2025
Spot rate (IDR/USD)	15,800	16,200
Forward rate IRP (IDR/USD)	15,824	16,255
Forward premium (IDR)	24	55

Source: Processed data (2026)

Scenario Analysis for 2024

For 2024, with a nominal exposure of USD 100 million and a forward rate of Rp15,824, a simulation was conducted across five exchange rate scenarios, presented in Table 4. Under the slightly weakening scenario (Rp16,000), the unhedged position resulted in a cost of Rp1,600,000 million while the hedged position was Rp1,582,400 million, yielding savings of Rp17,600 million or Rp17.6 billion. Under the moderately weakening scenario (Rp16,300) savings reached Rp47.6 billion, and under the sharply weakening scenario (Rp16,600) savings reached Rp77.6 billion. Conversely, under the strengthening scenario (Rp15,500), the hedged position was more expensive, creating an opportunity cost of Rp32.4 billion.

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Table 4. Scenario Analysis for 2024 (USD 100 Million, in Rp million)

Scenario	Rate	Unhedged	Hedged	Savings
Stable	15,800	1,580,000	1,582,400	(2,400)
Slightly weakening	16,000	1,600,000	1,582,400	17,600
Moderately weakening	16,300	1,630,000	1,582,400	47,600
Sharply weakening	16,600	1,660,000	1,582,400	77,600
Strengthening	15,500	1,550,000	1,582,400	(32,400)

Source: Processed data (2026). Figures in parentheses indicate opportunity cost.

Scenario Analysis for 2025

For 2025, with a nominal exposure of USD 130 million and a forward rate of Rp16,255, a similar simulation was conducted as presented in Table 5. Under the slightly weakening scenario (Rp16,400) savings of Rp18.85 billion were obtained, under the moderately weakening scenario (Rp16,700) savings of Rp57.85 billion, and under the sharply weakening scenario (Rp17,000) savings reached Rp96.85 billion. Under the strengthening scenario (Rp15,900), hedging created an opportunity cost of Rp46.15 billion. The savings in 2025 are larger than in 2024 due to the greater nominal exposure.

Table 5. Scenario Analysis for 2025 (USD 130 Million, in Rp million)

Scenario	Rate	Unhedged	Hedged	Savings
Stable	16,200	2,106,000	2,113,150	(7,150)
Slightly weakening	16,400	2,132,000	2,113,150	18,850
Moderately weakening	16,700	2,171,000	2,113,150	57,850
Sharply weakening	17,000	2,210,000	2,113,150	96,850
Strengthening	15,900	2,067,000	2,113,150	(46,150)

Source: Processed data (2026). Figures in parentheses indicate opportunity cost.

Cross-Year Comparison

To provide a comprehensive picture, the simulation results for both years are summarized in Table 6. The comparison shows that the pattern of hedging benefits is consistent across both years, with greater savings in 2025 as the nominal exposure increases. This confirms that the effectiveness of forward contracts in saving costs depends on two main factors: the magnitude of Rupiah depreciation and the size of the hedged nominal exposure.

Table 6. Summary Comparison of 2024 and 2025 Simulation Results (in Rp billion)

Description	2024	2025
Nominal exposure (USD million)	100	130
Forward rate (IDR/USD)	15,824	16,255
Savings – slightly weakening	17.60	18.85
Savings – moderately weakening	47.60	57.85
Savings – sharply weakening	77.60	96.85
Opportunity cost – strengthening	(32.40)	(46.15)

Source: Processed data (2026). Figures in parentheses indicate opportunity cost.

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Discussion

The analysis for both years shows a consistent pattern that supports the proposed proposition. When the Rupiah weakens, the forward contract successfully locks in the payment cost at a forward rate lower than the realized spot rate, so the company obtains savings. The magnitude of savings is directly proportional to the degree of Rupiah depreciation: the sharper the depreciation, the wider the difference between the unhedged and hedged costs. Under the sharply weakening scenario, savings reached Rp77.6 billion in 2024 and Rp96.85 billion in 2025. These findings answer the second research question regarding the amount of cost savings from applying forward contracts.

This savings mechanism answers the first research question regarding how forward contracts protect USD-denominated obligations. When the company locks in the payment rate at the forward level, it is no longer exposed to the risk of a rising spot rate. Whatever the spot rate at maturity, the company pays at the agreed forward rate. Thus, the previously open cost uncertainty becomes a certain and measurable cost.

Under the strengthening scenario, the hedged position results in a higher cost than the unhedged position, creating an opportunity cost. However, this cannot be interpreted as a failure of the hedging strategy (Madura, 2018). The main purpose of hedging is not to generate profit, but to provide cost certainty and eliminate uncertainty. A company that hedges essentially trades the potential gain from favorable exchange rate movements for protection against losses from unfavorable movements. This trade-off is the essence of the risk management concept.

These findings are consistent with the actual practice of PT Astra International Tbk, which has applied hedging instruments as reflected in the cash flow hedges item in its financial statements. This shows that the company's decision to hedge is not merely speculative, but aims to maintain cost stability and protect profitability from exchange rate fluctuations. The results are also in line with (Risman, 2021), who emphasizes the link between exchange rate movements and firm value, and with Risman *et al.* (2017), who highlight the importance of selecting hedging strategies according to firm characteristics.

Considering the Rupiah's weakening trend throughout 2024–2025, the use of forward contracts proves relevant and beneficial for companies with USD-denominated obligation exposure. Although a forward premium must be borne, this premium is relatively small compared to the potential loss from a sharp Rupiah depreciation. Therefore, the forward contract can be regarded as an efficient hedging instrument in the context of Indonesia's economy, which is vulnerable to exchange rate volatility.

Further analysis of the forward premium reinforces this conclusion. In 2024, the premium of Rp24 per dollar implied a total premium of about Rp2.4 billion for USD 100 million, while in 2025 the premium of Rp55 per dollar implied about Rp7.15 billion for USD 130 million. Compared with the potential additional cost of a sharp depreciation, these premiums are minor, functioning like a relatively inexpensive insurance premium against a much larger downside risk

CONCLUSION

Based on the analysis, it can be concluded that forward contracts are an effective instrument to protect PT Astra International Tbk from the risk of Rupiah depreciation against the United States Dollar during 2024–2025. The protection mechanism works by locking in the payment rate at the forward level, so the company is protected from uncertainty due to a rising spot rate at maturity. Under the weakening scenarios, the use of forward contracts generated

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significant cost savings, reaching Rp77.6 billion in 2024 and Rp96.85 billion in 2025 for the sharply weakening scenario.

The magnitude of savings is directly proportional to the degree of Rupiah depreciation and the size of the hedged nominal exposure. Although hedging creates an opportunity cost when the Rupiah strengthens, this is a reasonable consequence of the main function of hedging, namely providing cost certainty and reducing uncertainty in line with risk management principles. These findings are reinforced by the fact that Astra has actually used hedging instruments in its financial statements.

Companies are advised to use forward contracts selectively according to the projected direction of exchange rate movements and their level of foreign currency exposure, and to consider combining them with other hedging instruments such as swaps or natural hedging to optimize risk management. For future research, it is recommended to use more detailed foreign currency exposure data and to compare the effectiveness of various hedging instruments under different market conditions for a more comprehensive picture.

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