

Foreign Debt - DSR and Its Impact on The Rupiah Exchange Rate (Case Study of Rupiah Exchange Rate Dynamics, 2010-2025)

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ABSTRACT: Foreign debt plays a crucial role as a complementary instrument for financing development in Indonesia. These funds are used to cover budget deficits, finance infrastructure projects, and support productive sectors such as education and health, all of which are intended to stimulate economic growth. However, Indonesia faces various challenges in using foreign debt. The main challenges include the risk of exchange rate fluctuations, which can make repayment more difficult; the threat of a debt trap due to uncontrolled borrowing; and the heavy burden on the state budget and spending caused by exchange rate fluctuations. The study shown that increasing foreign debt and the Debt Service Ratio (DSR) tend to exert pressure on the rupiah exchange rate through increased foreign exchange requirements to meet debt service obligations. However, this relationship is not absolute, as rupiah exchange rate movements are also influenced by other factors, such as monetary policy, inflation, international trade conditions, and global economic dynamics. Therefore, sustainable foreign debt management and strengthening foreign exchange reserves are crucial factors in maintaining rupiah exchange rate stability and national economic resilience.

KEY WORD: Foreign debt, DSR, exchange rate

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I. INTRODUCTION AND LITERATURE REVIEW

In the era of economic globalization, foreign debt remains a crucial instrument used by developing countries to finance development and accelerate economic growth. Utilizing foreign debt has been proven to help debtor countries bridge the gap between investment needs and domestic financing capacity, particularly in infrastructure development and productive sectors [1]. However, increasing foreign debt also poses risks to macroeconomic stability if not matched by adequate repayment capacity. The World Bank (2025) explains that increasing debt repayment burdens are one of the main challenges facing developing countries because they reduce government fiscal capacity and increase vulnerability to external economic shocks [2].

One of the many indicators used to assess a country's ability to meet its foreign debt obligations is the Debt Service Ratio (DSR). The DSR indicates the proportion of foreign exchange revenues used to pay principal and interest on foreign debt. The higher the DSR, the greater the pressure on a country's foreign exchange reserves and foreign exchange needs [3]. According to the International Monetary Fund (IMF, 2024), a high debt service burden will increase external sector risks and impact exchange rate stability [4]. This is often experienced by countries that remain dependent on foreign financing. In the Indonesian context, data released by Bank Indonesia for 2010–2025 shows that fluctuations in the DSR tend to be followed by changes in the rupiah exchange rate against foreign currencies, particularly the US dollar. This study aims to analyze the relationship between these two variables and their potential to cause macroeconomic shocks in Indonesia.

Various studies have examined the relationship between external debt and macroeconomic performance. Nazamuddin et al. (2024) found a long-term relationship between external debt and the exchange rate in Indonesia using linear and nonlinear ARDL approaches [5]. Meanwhile, Utama and Chalid (2024) focused more on the dynamics of Indonesia's external debt, which are influenced by changes in fiscal and political policies [6]. Harsono et al. (2024) examined the macroeconomic and institutional factors influencing external debt in ASEAN countries [7]. However, these studies have not specifically considered the Debt Service Ratio (DSR) as an indicator of debt repayment capacity, analyzed alongside the rupiah exchange rate within a single framework. Thus, there remains a gap in research on the relationship between external debt, DSR, and the rupiah exchange rate.

Based on this gap, this study aims to comprehensively discuss the relationship between changes in foreign debt and the Debt Service Ratio (DSR) over the past 15 years, in relation to the rupiah exchange rate against the US dollar. This analysis is conducted by observing the development of the DSR and the rupiah exchange rate during the period 2010–2025 as a basis for analyzing the relationship between foreign debt and the rupiah exchange rate. This approach is expected to illustrate how the ability to repay foreign debt will affect foreign exchange needs and, consequently, the rupiah exchange rate.

This analysis relies on the use of Debt Service Ratio (DSR) data as a variable explaining the relationship between foreign debt and the rupiah exchange rate. While previous research has focused more on the relationship between foreign debt and economic growth, the determinants of foreign debt, or the direct relationship between debt and the exchange rate [5], [6], this study uses the DSR variable as an indicator of debt repayment capacity, which has the potential to influence exchange rate stability. Furthermore, the use of data from 2010–2025 allows for the observation of long-term trends encompassing various economic conditions, including the COVID-19 pandemic and post-pandemic economic recovery.

The relationship between foreign debt, the Debt Service Ratio (DSR), and the rupiah exchange rate against the US dollar is examined in this study because these three variables are important indicators in assessing a country's economic resilience. Exchange rate stability is influenced not only by financial market conditions and international trade, but also by a country's ability to meet its foreign debt obligations. Therefore, analyzing the relationship between foreign debt, the DSR, and the rupiah exchange rate is crucial for a more comprehensive understanding of Indonesia's economic dynamics. This is the main issue addressed in this study.

Based on the problems raised, the objectives of this study are: (1) to describe the development of Indonesia's Debt Service Ratio (DSR) during the 2010–2025 period; (2) to describe the development of the rupiah exchange rate against the United States dollar during the 2010–2025 period; (3) to analyze the impact of foreign debt and the Debt Service Ratio (DSR) on the movement of the rupiah exchange rate; and (4) to explain the relationship between the ability to pay foreign debt and the stability of the rupiah exchange rate against the United States dollar.

II. RESEARCH METHOD

This study uses a descriptive analysis approach to explain the relationship between the Debt Service Ratio (DSR) variable and the rupiah exchange rate against the US dollar. The primary goal of descriptive analysis is to transform raw data sets into a more concise, structured, and easily understood form. This method provides an overview of the basic characteristics of macroeconomic data, such as the average and median exchange rate, the debt-to-service ratio, and overall economic trends [8]. Data on the debt service ratio for the last 15 years (2010–2025) illustrates the development of foreign debt over the same period [9]. Similarly, data on the rupiah exchange rate against the US dollar over the same period illustrates Indonesia's macroeconomic resilience. The primary data in this study were obtained from reports from the Central Bureau of Statistics and Bank Indonesia for 2010–2025 [10] (see appendix).

III. RESULTS AND DISCUSSION

3.1. Indonesia's Foreign Debt 2010–2025

Foreign debt is a source of financing used by the government to support national development, cover budget deficits, and meet the financing needs of strategic projects. For developing countries like Indonesia, foreign debt is often used to accelerate infrastructure development, improve the quality of public services, and stimulate economic growth. However, increasing foreign debt can also pose risks if not matched by adequate repayment capacity [2].

During the 2010–2025 period, Indonesia's foreign debt position showed an increasing trend. This increase was influenced by the increasing need for development financing, particularly in the infrastructure, education, health, and economic recovery sectors following the COVID-19 pandemic [9]. According to Utama and Chalid (2024), the dynamics of Indonesia's foreign debt are influenced not only by the government's fiscal needs but also by changes in global economic conditions, political policies, and national financing strategies [6].

Increasing foreign debt can essentially benefit the economy if used productively to increase production capacity and economic growth. However, the greater a country's debt, the greater the future principal and interest payments it will have to make. This situation has the potential to increase the external debt service burden, as reflected in the Debt Service Ratio (DSR). Therefore, external debt developments need to be analyzed in conjunction with debt repayment capacity and exchange rate stability to understand their impact on the national economy

Thus, Indonesia's rising foreign debt during the 2010–2025 period indicates a significant need for financing economic development [9]. However, this increase must be balanced with prudent debt management to avoid putting pressure on debt repayment capacity or macroeconomic stability.

3.2. Indonesia's Debt Service Ratio (DSR) 2010–2025

The Debt Service Ratio (DSR) is an indicator used to measure a country's ability to meet its principal and interest payments on foreign debt. The higher the DSR, the greater the proportion of foreign exchange that must be allocated to servicing foreign debt, thereby reducing the government's flexibility in managing the economy [4].

Based on available data, Indonesia's DSR fluctuated significantly during the 2010–2025 period. In 2010, the DSR was recorded at 27.87%, then decreased to 21.7% in 2011 and rose again to 23.7% in 2012. A significant increase occurred in 2013–2015, from 42.7% in 2013 to 56.08% in 2015. This was the highest DSR during the observation period. After declining in 2016–2018, the DSR increased again in 2019, reaching 47.3% in 2020. It then declined to a low of 17.1% in 2023 before rising again to 47.46% in 2025.

These fluctuations in the DSR indicate that Indonesia's ability to meet its foreign debt repayment obligations is not always stable. According to the World Bank (2025), an increase in the DSR reflects a country's increasing debt repayment burden [2]. Therefore, a high DSR can signal increasing pressure on foreign exchange reserves and external sector stability.

3.3. Rupiah Exchange Rate against the US Dollar 2010–2025

The exchange rate, or rate, is the price of one country's currency expressed in another country's currency. The exchange rate plays a crucial role in international trade, foreign investment, and national economic stability. Under Indonesia's managed floating exchange rate system, exchange rate movements are influenced by the supply and demand of foreign currency in the market.

Data shows that the average rupiah exchange rate against the US dollar has tended to weaken during the 2010–2025 period [10]. In 2010, the average exchange rate was Rp9,081 per US dollar, then increased to Rp10,445 in 2013 and Rp13,388 in 2015. In 2020, during the COVID-19 pandemic, the average rupiah exchange rate reached Rp14,572 per US dollar, with a peak of Rp16,600 per US dollar. Furthermore, the average exchange rate will continue to rise, reaching Rp16,500 per US dollar in 2025.

This condition indicates a long-term trend of rupiah depreciation. Rupiah depreciation can be caused by various factors, such as increased demand for US dollars, the current account deficit, changes in global interest rates, global economic uncertainty, and the need to repay foreign debt. According to Nazamuddin et al. (2024), there is a long-term relationship between foreign debt development and exchange rate movements in Indonesia, so changes in debt position and repayment obligations can affect exchange rate stability [5].

3.4. The Impact of Foreign Debt and the Debt Service Ratio (DSR) on the Rupiah Exchange Rate

Theoretically, foreign debt is closely linked to fluctuations in a country's exchange rate. The greater the amount of foreign debt, the greater the obligation to repay principal and interest in foreign currencies, particularly the US dollar. This situation increases the demand for foreign currency, which can put pressure on the rupiah exchange rate. According to Nazamuddin et al. (2024), there is a long-term relationship between foreign debt development and the exchange rate in Indonesia, indicating that changes in foreign debt can affect exchange rate stability [5].

In addition to the amount of foreign debt, a country's ability to meet its debt repayment obligations is also reflected in the Debt Service Ratio (DSR). The higher the DSR, the greater the proportion of foreign exchange used to repay principal and interest on foreign debt. Consequently, the availability of foreign exchange for other economic needs decreases, potentially increasing pressure on the rupiah exchange rate. The IMF (2024) explains that a high debt repayment burden can increase external sector vulnerabilities and increase the risk of domestic currency depreciation [4].

This relationship can be observed in the 2013–2015 period. In 2013, the DSR reached 42.7% and increased to 56.08% in 2015. During the same period, the average rupiah exchange rate weakened from Rp10,445 to Rp13,388 per US dollar. This condition indicates that the increasing burden of foreign debt payments was accompanied by a weakening rupiah exchange rate.

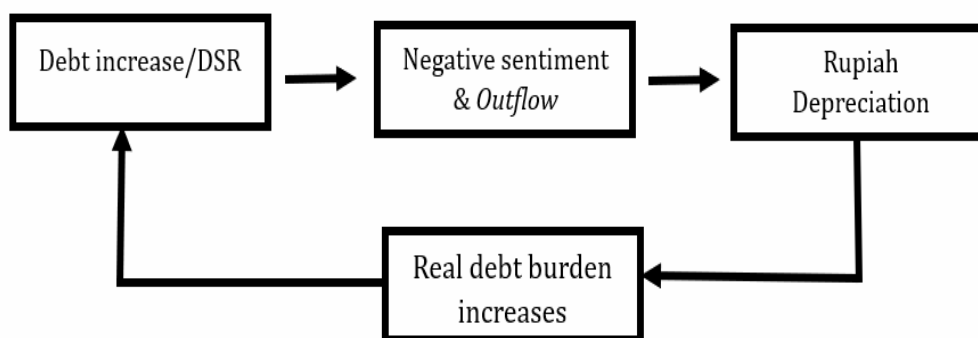
A similar phenomenon was also seen in 2020, when the DSR reached 47.3% and the rupiah exchange rate experienced pressure, reaching Rp16,600 per US dollar. In addition to being affected by the COVID-19 pandemic and global economic uncertainty, the high need for foreign exchange to meet debt repayment obligations also put pressure on the rupiah exchange rate.

However, the relationship between foreign debt, DSR, and the rupiah exchange rate is not always linear. In 2023, the Debt-Source Ratio (DSR) reached its lowest level at 17.1%, but the average rupiah exchange rate remained at around Rp 15,265 per US dollar. This condition indicates that the exchange rate is influenced

not only by debt repayment capacity but also by other factors such as Bank Indonesia's monetary policy, the inflation rate, international trade conditions, and the US Federal Reserve's interest rate policy.

Based on this analysis, it can be concluded that increasing foreign debt and the Debt Service Ratio (DSR) tend to exert pressure on the rupiah exchange rate by increasing the need for foreign exchange for debt servicing. However, these influences are not independent, as rupiah exchange rate movements are also influenced by various other domestic and global factors. Therefore, sustainable foreign debt management, increasing foreign exchange earnings from exports, and strengthening foreign exchange reserves are crucial steps in maintaining rupiah exchange rate stability.

The causal relationship that describes fiscal vulnerability and monetary instability triggered by DSR holds each other hostage in a vicious economic circle as follows:



IV. CONCLUSION AND SUGENSTION

Based on the analysis, it can be concluded that Indonesia's foreign debt during the 2010–2025 period shows an increasing trend as a consequence of the need for development financing and national fiscal management. Increasing foreign debt provides benefits in supporting economic development, but on the other hand, it also creates greater principal and interest payments in the future.

The development of Indonesia's Debt Service Ratio (DSR) during the 2010–2025 period shows significant fluctuations. The highest DSR occurred in 2015 at 56.08%, while the lowest DSR occurred in 2023 at 17.1%. This fluctuation indicates that Indonesia's ability to meet its foreign debt repayment obligations changes over time in accordance with national and global economic conditions.

Meanwhile, the rupiah exchange rate against the US dollar showed a weakening trend during the observation period. The average rupiah exchange rate, which hovered around Rp9,081 per US dollar in 2010, will increase to around Rp16,500 per US dollar in 2025. This situation indicates pressure on the rupiah exchange rate influenced by various domestic and international economic factors.

Empirical analysis of external debt, the debt service ratio (DSR), and the rupiah exchange rate for the 2010–2025 period has confirmed that Indonesia's fiscal architecture remains trapped in a cycle of structural vulnerability. Data over the past fifteen years has shown that external debt issues are also highly dependent on the volatility of external factors (external shocks). When exports are supported by primary commodities, fiscal space appears secure. However, when global monetary policy reverses or commodity price normalization occurs, extreme increases in the DSR, such as in 2015 (56.08%) and 2025 (47.46%), become inevitable consequences.

The rupiah exchange rate plays a dual dilemmatic role. On the one hand, it functions as a shock absorber, dampening macroeconomic pressures through market adjustment mechanisms. However, on the other hand, when depreciation reaches new psychological levels, as occurred in 2020 and 2025, the exchange rate acts as an amplifier, multiplying the real burden of foreign currency-denominated debt servicing. This proves that the exchange rate's determination of the DSR has massive destructive power against the flexibility of the state budget if not mitigated with prudent risk management.

The study shown that increasing foreign debt and the Debt Service Ratio (DSR) tend to exert pressure on the rupiah exchange rate through increased foreign exchange requirements to meet debt service obligations. However, this relationship is not absolute, as rupiah exchange rate movements are also influenced by other factors, such as monetary policy, inflation, international trade conditions, and global economic dynamics. Therefore, sustainable foreign debt management and strengthening foreign exchange reserves are crucial factors in maintaining rupiah exchange rate stability and national economic resilience.

1. Based on the conclusions, this study recommends accelerate structural transformation. Maintaining the DSR below the international safe limit on a sustainable basis cannot be achieved solely by limiting the nominal debt but should be achieved through strengthening the denominator (export revenues). Strengthening the industry is an absolute prerequisite for freeing the national economic structure from dependence on the commodity cycle.

2. Debt Portfolio Restructuring (Domestic Market Deepening): The government should more aggressively shift the portion of financing from foreign currency-denominated foreign debt to domestic currency-denominated Government Securities (popularly known as SBN). This step is crucial to breaking the negative transmission of global exchange rate volatility to domestic fiscal resilience. For this reason, public trust in government policies in optimizing the use of foreign debt, fiscal and monetary policies is crucial.

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APPENDIX

Indonesia's DSR (%) and the Rupiah Exchange Rate against the US Dollar 2010-2025

2010 DSR = 27.87; Lowest exchange rate = 8,917; Highest rate = 8,855; Average = 9,081
2011 DSR = 21.7; Lowest exchangerate = 8,300; Highest rate = 9,100; Average = 8,800
2012 DSR = 23.7; Lowest exchangerate = 9,538; Highest rate = 9,445; Average = 9,538
2013 DSR = 42.7; Lowest exchangerate = 9,627; Highest rate = 12,100; Average = 10,445
2014 DSR = 41.3; Lowest exchangerate = 11,358; Highest rate = 12,410; Average = 11,865
2015 DSR = 56.08; Lowest exchangerate = 12,423; Highest rate = 14,617; Average = 13,388
2016 DSR = 37.5; Lowest exchangerate = 12,907; Highest rate = 13,863; Average = 13,303
2017 DSR = 25.54; Lowest exchangerate = 13,183; Highest rate = 13,578; Average = 13,378
2018 DSR = 25.1; Lowest exchangerate = 13,308; Highest rate = 15,305; Average = 14,481
2019 DSR = 39.4; Lowest exchangerate = 13,690; Highest rate = 14,510; Average = 14,136
2020 DSR = 47.3; Lowest exchangerate = 13,609; Highest rate = 16,600; Average = 14,572
2021 DSR = 26.69; Lowest exchangerate = 14,100; Highest rate = 14,600; Average = 14,269
2022 DSR = 34.3; Lowest exchangerate = 14,241; Highest rate = 15,592; Average = 14,848
2023 DSR = 17.1; Lowest exchangerate = 14,663; Highest rate = 15,900; Average = 15,265
2024 DSR = 32.8; Lowest exchangerate = 15,420; Highest rate = 16,470; Average = 16,162
2025 DSR = 47.46; Lowest exchange rate = 14,700; Highest rate = 17.070; Average = 16,500

Source: Bank Indonesia, <https://www.bi.go.id/id/statistik/ekonomi-keuangan/uln>