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The Relationship Between Macroeconomic Variables, LPS Guarantee Interest Rate, and Time Deposit Collection In Conventional Banks In Indonesia From 2005 To 2024

Teofilus Yoka[1*], Ricky Dwi Budi Harsono[2]
[1]Soegijapranata Catholic University, Semarang, Indonesia, 21d10109@student.unika.ac.id
[2]Soegijapranata Catholic University, Semarang, Indonesia, 21d10109@student.unika.ac.id

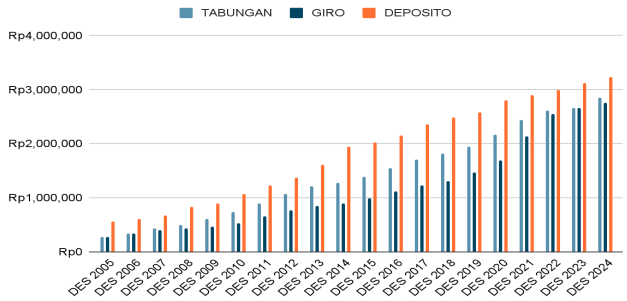
[*]Corresponding Author: 21d10109@student.unika.ac.id

Abstract: This study presents empirical evidence of the relationship between macroeconomic indicators - gross domestic product, inflation, and the rupiah exchange rate against the US dollar - and the LPS guarantee interest rate with time deposit funds collected by conventional banks - commercial banks and rural banks - in Indonesia during 2005–2024. The ordinary linear regression (OLS) model with secondary data documented from the Financial Services Authority and the Central Statistics Agency significantly explains the variation in time deposit funds. Partially, the exchange rate has a significant positive relationship, while the LPS guarantee interest rate has a significant negative relationship, with time deposit funds. It is concluded that customers of commercial banks and rural banks in Indonesia consider exchange rate stability and security of savings in depositing their funds.

Keyword: Commercial Banks, Exchange Rate, Lps Deposit Insurance Rate, Macroeconomic Factors, Time Deposit.

INTRODUCTION

As a financial intermediary, banking plays a strategic role in the economy, particularly in efficiently and effectively mobilizing and distributing public funds (Rolianah, 2018). The funds collected not only support banking activities but also serve as the primary source for credit distribution (Rosawati & Pinem, 2017). Along with economic stability, public trust in depositing funds in banks has increased (Rosvitasari & Ismail, 2016), and time deposits have become a more effective tool for collecting public funds compared to savings and current accounts (see Figure 1). The willingness of the public to place their funds in time deposits is influenced by various macroeconomic factors. Previous studies (Jatnika, 2020), for instance, have shown that factors such as Gross Domestic Product (GDP), inflation, and the exchange rate of the rupiah against foreign currencies influence the public's decision to invest in time deposits in Islamic banks. Additionally, from a security standpoint, the guarantee interest rate set by the Deposit Insurance Corporation (LPS) is expected to guide banks in determining deposit interest rates for commercial banks and profit-sharing rates for Islamic banks (Fitri et al., 2022), as stipulated in Article 10 of Law No. 24 of 2004.



Source: Indonesian Banking Statistics Dec 2005 - Dec 2024, OJK (Badan Pusat Statistik Indonesia, 2025)
Figure 1. Composition of Third-Party Funds in Conventional Banks (IDR Billion)

The objective of this study is to provide empirical evidence regarding the connection between macroeconomic factors such as GDP, inflation, the exchange rate of the rupiah (limited to USD), and the LPS guarantee interest rate with the public's willingness to invest in time deposits in conventional banks in Indonesia, including commercial banks and rural banks (BPR). Empirical evidence will be collected from the period 2005-2024. The findings of this study are expected to be beneficial not only for banking and regulators in formulating more adaptive policies but also to help depositors understand the economic dynamics that influence their investment decisions. By understanding this relationship, it is hoped that fund collection strategies can be optimized, and the stability of the banking sector can be maintained.

Relationship Between GDP and Time Deposits

GDP is a method for calculating national income (Prawoto, 2020), making it a key indicator to assess whether a country's economy is growing or contracting. If GDP continues to grow for several consecutive quarters, the economy is considered to be developing, and GDP also serves as an indicator of public welfare and prosperity. GDP influences economic behavior because an increase in national income raises consumption and savings (Rosvitasari & Ismail, 2016; Sandro Tp, 2019), part of which can be in the form of deposits (Purba et al., 2021). This shows that economic growth, represented by GDP, contributes to the increase in time deposit funds in the public. [Hypothesis 1: GDP is positively correlated with time deposit funds].

Relationship Between BI Benchmark Interest Rate and Time Deposits

The benchmark interest rate set by Bank Indonesia (BI) is followed by financial institutions in Indonesia when setting their own interest rates for customers. When BI's benchmark interest rate increases, the deposit interest rate tends to rise as well, and vice versa (Anggi Risnaini, 2023). BI's benchmark interest rate plays a crucial role in determining the attractiveness of various investment instruments (Rosvitasari & Ismail, 2016). When BI's benchmark interest rate increases, time deposits with higher returns become more attractive than other investment instruments that are riskier, encouraging the public to deposit their money in banks (Sandro Tp, 2019). [Hypothesis 2: The BI benchmark interest rate is positively correlated with time deposit funds].

Relationship Between Inflation and Time Deposits

Inflation refers to the overall and sustained rise in the prices of products and services over a specific period (Roziah et al., 2023). Inflation higher than interest rates causes the real value of money to decrease, making the public reluctant to save funds in banks (Syarifa Nasution et al., 2023). On the other hand, the precautionary motive can lead to high inflation encouraging the public to hold money as a reserve. Additionally, inflation affects expectations of real asset returns (Mishkin, 2008). Inflation reduces real interest rates on deposits, which

may influence public interest in saving funds in banks. [Hypothesis 3: Inflation is correlated with time deposit funds].

Relationship Between Exchange Rate of Rupiah to USD and Time Deposits

The US Dollar (USD) is often referred to as a hard currency because it is a stable currency and widely used in international financial transactions (Suriyanti et al., 2023). Depreciation of the Rupiah against USD may trigger capital outflow as expected returns on domestic investments become lower compared to those in other countries. A rise in the USD exchange rate increases demand for USD, while demand for domestic currency decreases (Muttaqiena, 2013). According to Khair et al. (2024), changes in the exchange rate can affect the growth of funds in the banking sector, including deposits. [Hypothesis 4: The exchange rate of Rupiah to USD is correlated with time deposit funds].

Relationship Between LPS Guarantee Interest Rate and Time Deposits

The LPS, established under Law No. 24 of 2004 and updated through Law No. 4 of 2023 on the Development and Strengthening of the Financial Sector (P2SK), is tasked with guaranteeing customer deposits, including time deposits. The guarantee interest rate set by LPS assures depositors that their deposits remain secure within the insured limits (Atallah et al., 2024). When the deposit interest rates offered by banks fall within the LPS guarantee interest rate limits, those deposits are guaranteed to be secure (Fitri et al., 2022). With this protection, time deposits become more attractive to the public compared to other savings instruments, offering competitive returns with higher security (Suhardiono et al., 2025). [Hypothesis 5: The LPS guarantee interest rate is positively correlated with time deposit funds].

METHOD

This article presents a report on a descriptive quantitative research, using statistical processing. The data on GDP, BI's benchmark interest rate, inflation, exchange rate of the rupiah against the US$, LPS guarantee interest rate, and time deposit funds of conventional banks, including both commercial banks and rural banks (BPR), in Indonesia from 2005 to 2024 have been documented. Secondary data was obtained by accessing and downloading it from the official websites of the Financial Services Authority (www.ojk.go.id) and the Central Statistics Agency (www.bps.go.id) (Badan Pusat Statistik Indonesia, 2025; Otoritas Jasa Keuangan, 2025). The data collection technique used was a census, which involved taking the entire available population data during the research period without any sample selection. The data was processed using an ordinary least square (OLS) linear regression approach with the help of SPSS version 27 statistical software. Time deposit funds became the dependent variable, explained by GDP, BI's benchmark interest rate, inflation, exchange rate of the rupiah against the US$, and LPS guarantee interest rate as independent variables. Classical assumption testing, such as normality of errors, multicollinearity, and heteroscedasticity, will be performed to ensure that the OLS test results are unbiased, consistent, and accurate (Gunawan, 2020). The conceptual framework and basic research model are as follows:

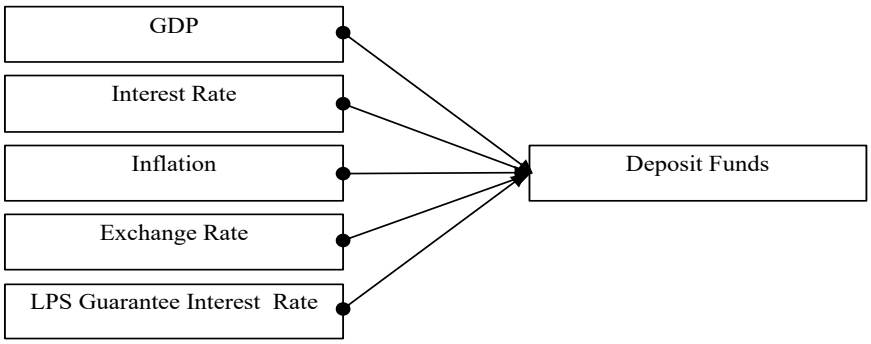


Figure 2. Research Model

$$DEP_t = \alpha + \beta_1 PDB_t + \beta_2 SBI_t + \beta_3 INF_t + \beta_4 NT_t + \beta_5 TBPLPS_t + \varepsilon$$

Where:
DEP = Time deposit funds
PDB = Gross Domestic Product (GDP)
SBI = BI's benchmark interest rate
INF = Inflation
NT = Exchange rate of the rupiah against the US$
TBPLPS = LPS guarantee interest rate
α = Constant
β_1, β_2, β_3, β_4, β_5 = Regression coefficients
ε = Estimation error

RESULTS AND DISCUSSION

Table 1. Statistik Tren Pertumbuhan 2005-2024

	(*constant*)	*Year*
DPS Conventional Bank	-309161288	154398
DPS BPR	-9971741	4973
GDP	179.6692	-0.08655
BI Rate	557.9368	-0.2737
Inflation	578.0088	-0.2846
Exchange Rate	-786827.4	396.7
LPS Guarantee Interest Rate	850.2372	-0.4173

Source: Data, diolah (2025)

Over the 20 years of observation (2005-2024), macroeconomic indicators and deposit trends in conventional banks in Indonesia were observed as follows: Deposits collected by commercial banks tend to increase, with this growth over 30 times larger than the deposits collected by BPR. The GDP shows a downward trend, but with a near-zero rate of decline. The BI rate also shows a decreasing trend, which is almost equivalent to the inflation decline. The exchange rate of the Rupiah tends to depreciate against the US$. The LPS guarantee interest rate shows a decreasing trend, which can be explained by the LPS's reliance on the BI rate that continues to decrease.

Table 2. Regression Results & Classical Assumption Testing

	Model 1 (N=40)			Model 2 (N=20)			Model 3 (N=20)		
	Coeff.	Prob.	VIF	Coeff.	Prob.	VIF	Coeff.	Prob.	VIF
(constant)	-2.63E+05	0.83469		-63232.5	0.911052		-30994.248	0.2828	
GDP	5.19E+04	0.63496	1.90304	-33203.45	0.498939	1.779021	1102.337	0.6353	1.769119
BI Rate	-1.34E+05	0.17506	7.54623						
Inflation	-1.70E+04	0.68311	1.953151	-26353.83	0.176156	1.899401	-1782.686	0.0521	1.733027
Exchange Rate	1.80E+02	0.00217	3.100838	249.61	1.46E-08	2.611192	8.476	1.60E-06	2.75705
LPS Guarantee Interest Rate	8.90E+04	0.32795	11.965982	-125379.2	0.000111	2.515917	-2510.022	0.0158	2.446514
dummy BPR	-2.08E+06	5.37E-08	3.870695						
Adj. R^2	0.8192	4.16E-12		0.9715	3.61E-12		0.9383	1.16E-09	

Shapiro-Wilk	0.93412	0.022	0.97524	0.8592	0.96775	0.7067
Breusch-Pagan	7.7631	0.256	2.7523	0.6001	5.9468	0.2032

Source: Data, processed (2025)

Model 1 is the basic model testing the time series of deposit funds gathered by conventional banks, both commercial banks and BPR, from depositors in Indonesia during the 20-year observation period from 2005-2024, using macroeconomic variables and LPS guarantee interest rate as explanatory variables. A dummy BPR variable, coded as zero (0) and one (1), was added to differentiate between commercial banks and BPR. At a 95% confidence level, Model 1 can explain significantly 81.92% of the variation in deposit funds, with a smaller percentage for BPR compared to commercial banks. However, multicollinearity assumptions were violated between BI rate and LPS guarantee interest rate, as indicated by their variance inflation factors (VIF), which approached or even exceeded ten (10). This was deemed acceptable because the LPS guarantee rate is based on the BI rate. As a result, further processing removed the BI rate from the original model (Model 1) and separated the deposits for commercial banks (Model 2) and BPR (Model 3).

The separation of the regression from Model 1 into two models for commercial banks and BPR corrected the non-normality errors, as evidenced by the insignificant Shapiro-Wilk statistic for Models 2 and 3. Separating the models also increased the coefficient of determination to 97.15% and 93.83%, respectively. Furthermore, both regression models were free from heteroscedasticity violations, as indicated by the insignificant Breusch-Pagan statistics. Therefore, inferences using F and t statistics could proceed. However, partial inferences were supported by diverse empirical evidence.

Empirical evidence does not support H1. The coefficient for GDP as an explanatory variable for the deposit funds collected by conventional banks (Model 1), both commercial banks (Model 2), and BPR (Model 3) was not statistically significant. While the sign of the regression coefficient for GDP, representing the relationship between the two variables, became irrelevant due to the non-significant statistical inference, the negative coefficient for GDP in Model 2 and the positive coefficient in Model 3 may indicate certain signals. The separation of consumption from savings, part of which may be in the form of deposits (Purba et al., 2021; Rosvitasari & Ismail, 2016; Sandro Tp, 2019), indicates different economic behaviors in Model 2 and Model 3 in responding to GDP. Deposits in commercial banks (Model 2) may contain a larger proportion of funds awaiting signals of positive economic growth to shift toward investments. Meanwhile, deposits in BPR (Model 3) may contain a higher proportion of savings or income intended for future consumption, following economic growth.

H2, which hypothesized a positive relationship between the BI reference rate and deposit funds, was not further concluded due to multicollinearity issues with the LPS guarantee interest rate as mentioned above.

H3, which hypothesized a relationship between inflation and deposit funds, is partially supported by empirical evidence. Between 2005 and 2024, deposit funds tended to increase, while inflation tended to decrease. The inflation variable's regression coefficient was negative in all three models, though only significant at a 90% confidence level for Model 3. As is known, BPR's focus (Model 3) is primarily on Micro, Small, and Medium Enterprises (Budiyantono, 2021). Depositors in BPR are more sensitive to inflation than commercial bank depositors, likely due to differences in financial literacy (Choerudin et al., 2023) regarding BI's success in managing inflation (Warkawani et al., 2020).

H4, which hypothesized a correlation between the Rupiah-USD currency value and deposit funds, is supported by empirical data. In contrast to the controlled inflation trend, the

Rupiah-USD exchange rate tends to depreciate. The regression coefficient for the Rupiah-USD exchange rate variable is positive and statistically significant across all three models. This is consistent with Khair et al. (2024), who found that changes in exchange rates can affect the growth of funds in banking, including deposits.

H5, which hypothesized a relationship between the LPS guarantee interest rate and deposit funds, is supported by empirical data. Similar to the declining SBI rate, the LPS guarantee rate, which is based on the SBI, also shows a declining trend. The regression coefficient for the LPS guarantee rate is negative and statistically significant in Models 2 and 3. Depositors in both commercial banks and BPR in Indonesia respond to a reduction in the LPS guarantee rate as an indication of better banking security (Atallah et al., 2024), which increases their deposits in term deposits. The faster-growing trend of deposits in commercial banks compared to BPR (see Figure 1) is followed by the higher sensitivity of commercial bank deposits compared to BPR deposits toward the LPS guarantee interest rate.

CONCLUSION

This article reports the results of research aimed at obtaining empirical evidence regarding the relationship between macroeconomic factors (GDP, BI rate, inflation, Rupiah-US$ exchange rate) and the LPS guarantee interest rate with the public's willingness to accumulate funds in term deposits in conventional banks in Indonesia, including both commercial banks and BPR. Data spanning 20 years, from 2005 to 2024, was documented from OJK and BPS. The empirical evidence concludes as follows:

1. The initial OLS regression model with a dummy variable that separates term deposits for commercial banks and BPR can significantly explain the variation in term deposits. However, multicollinearity issues with SBI and LPS guarantee interest rate (TBP-LPS) led to the exclusion of the SBI variable from the model, resulting in a regression model that explains term deposits for commercial banks and BPR separately, with better explanatory power and no classical assumption violations.
2. GDP is found to be insignificantly related to term deposits. A portion of the increase in public income is not directly placed in term deposits. The increase in current accounts in the last five years may be intended for real investments or securities.
3. The multicollinearity issue between the BI rate and LPS guarantee interest rate led to the exclusion of the BI rate from the analysis model.
4. Inflation is insignificantly related to term deposits, with different sensitivities between commercial banks and BPR.
5. The exchange rate is significantly positively related to term deposit funds in conventional banks in Indonesia. The trend of Rupiah depreciation against the US$ encourages customers to place their funds in term deposits to avoid losing value.
6. The LPS guarantee interest rate is significantly negatively related to term deposit funds in conventional banks in Indonesia. The increase in term deposit funds in conventional banks follows the trend of declining LPS guarantee interest rates due to the perceived security of funds.

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