IJSET
INTERNATIONAL JOURNAL OF SOCIAL SCIENCE, EDUCATIONAL, ECONOMICS, AGRICULTURE RESEARCH, AND TECHNOLOGY

INTEREST RATES IN INDONESIAN BANKS' ASYMMETRIC BEHAVIOR AND DEGREE OF PASSTHROUGH

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Abstract

Interest rate changes result in a trade-off between reducing inflation and capital inflows. Capital inflow will reduce money market interest rates as low as possible, followed by lower lending and deposit rates. On the other hand, it is difficult to lower the benchmark interest rate due to inflation pressure. The asymmetric movement of lending and deposit interest rates to the benchmark interest rate has caused disturbances to the monetary transmission mechanism. The results of the estimated error-correction model for variable lending rates found that the long-term passthrough of Indonesian banks was significant but could have been better on interest rates on working capital loans and investment loans. This study shows an asymmetrical behavior in banking interest rates in Indonesia. The passthrough degree is typically slow when there is a decrease in the benchmark interest rate.

Keywords : **Interest rate passthrough, Bank interest rate, Inflation**

1. INTRODUCTION

Capital flows are needed to cover a country's domestic payment needs. However, a large proportion of portfolio investment in foreign capital flows, especially in Emerging Market countries such as Indonesia, can cause price stability disruptions, leading to financial instability. The high capital flight due to external shocks can potentially increase systemic risks in line with the considerable foreign ownership in the Indonesian financial market, especially those that occur suddenly and quickly (Juda et al.2021). Capital outflow is one of the risks in the financial market and can result in a decrease in third-party funds in the banking industry, thereby tightening economic liquidity. The capital inflows will push interbank money market interest rates very low (PUAB). Meanwhile, lowering the policy rate is challenging, given the high pressures on domestic inflation and the current account deficit. It caused the policy's deviation and interbank rates to widen, resulting in suboptimal monetary policy signals and transmissions (Haryo, 2020). The realization of price stability (inflation) and financial stability depends on the effectiveness of monetary policy transmitted through the benchmark interest rate, thus affecting the money market and banking interest rates in the direction desired by the monetary authority. Meanwhile, whether monetary policy is effective depends on the bank's speed in passing through monetary policy to the amount of deposit and credit interest rates, where the money market is the platform for implementing its procedures. Interest rate passthrough behavior varies between countries. Some research shows that the interest rate passthrough is imperfect, and the interest rate adjustment needs to be symmetrical between the deposit and lending rates (Gigineishvili,2011). The existence of different frictions causes the passthrough interest rate to also vary between countries.

In 2005, Bank Indonesia adopted the Inflation Targeting Framework (ITF) to achieve the monetary stability target in Indonesia. The operational instrument used is the BI rate policy rate, which is evaluated periodically against the achievement of the inflation target announced in that period. The policy rate is expected to affect money market, deposit, and lending rates through monetary policy transmission mechanisms. Perfect and symmetrical passthrough behavior guarantees the working of the monetary policy transmission mechanism. If the passthrough degree

is not perfect, the deadline between the change in the benchmark interest rate and the adjustment of the banking interest rate becomes more extended, so the impact cannot be felt.

This asymmetrical behavior of interest rates gives rise to disruptions to the transmission of monetary policy. The speed of adjustment of the bank's interest rate to changes in the benchmark interest rate can be estimated through the value of MAL (Mean Adjusted Lag) (Wibowo & Eduardo, 2016). The test results note that the adjustment of interest rates in Indonesia takes a long time. The degree of passthrough measures banks' responsiveness in setting their interest rates. In the case of a perfect passthrough degree, a reduction in the BI rate is offset by a decrease in the bank's interest rate with a proportional decline. The persistence of interest rates brings further consequences to the speed of adjustment. This aspect of the speed of adjustment further characterizes symmetrical or asymmetric banking behavior. The behavior of banks in setting their interest rates in response to an increase in the benchmark interest rate is often different when dealing with cases of lowering the benchmark interest rate. Market interest rates with longer tenors significantly affect banks' interest rates in the Euro. The presence of market interest rates with longer tenors, such as government bonds, can influence banking interest rate decisions and is one of the reasons for the slow interest rate passthrough in Europe (De Bondt, 2005). This study measures the degree of passthrough and asymmetric behavior of banking interest rates on changes in monetary policy in the form of changes in the BI rate reference rate by the influence of investment portfolios and money market interest rates. The rate adjustment speed is measured in short-term and long-term interest rate passthrough measures using Vector Error Correct Model (VECM). This study focuses on the behavior of lending rates (investment loans, working capital loans, consumption loans) and deposits (periods of 1 month, three months, and 12 months) toward changes in the benchmark interest rate.

2. LITERATURE REVIEW

The monetary policy transmission mechanism describes how the monetary policy pursued by the central bank affects various economic and financial activities to achieve the final goal set ultimately (Warjiyo, 2004). (Taylor (1995) states that the mechanism of monetary policy transmission is "The process through which monetary policy decisions are transmitted into changes in real GDP and inflation." Monetary policy transmission mechanisms are the channels through which monetary policy passes to influence the final target of monetary policy, namely real national income, and inflation, through the direct monetary channel, interest rate channel, exchange rate channel, asset price channel, credit channel, and expectation channel (Taylor, 1995). Monetary policy transmission requires a time lag to feel its effect in the real sector perfectly. The time it takes for a monetary policy transmission mechanism to run entirely and perfectly through one transmission channel may be different from another. The state of the financial and banking sectors affects the speed of monetary policy transmission. The level of competition between banks is low and tends to be oligopolistic, making lending rates rigid and determined by each bank's internal pricing strategy. Low-interest rates on bank loans and a downward trend are only sometimes followed by increased demand for loans. The intensity of passthrough and the speed of retail interest rate adjustments when there was a change in the benchmark market interest rate in the period 1994 - 2004 in New Zealand. It is noted that New Zealand was the first country to adopt a fledged inflation-targeting regime with specific and relatively transparent accountability. These findings confirm the presence of friction in the interest rate channel, which is indicated by the difference in the speed of interest rate adjustments of various financial products. In addition, the study found that monetary policy has a faster influence on short-term interest rates than long-term interest rates (Liu et al., 2008). Monetary policy in Portugal has a stronger effect on the cost of finance than the return on savings, which is indicated by a higher long-term passthrough rate for lending rates than deposit rates (Rocha, 2012). In general, short-term pass-throughs could be better

but will be close to perfect pass-throughs in the long run.

Rousseas defined banks' pricing behavior (interest rates) in the marginal cost pricing model as follows (Rousseas, 1985).

$$\text{Bank Rate}_t = \gamma_0 + \gamma_1 \text{Policy Rate}_{t+} \varepsilon_t$$

The increasing integration of financial markets that can pose a crisis risk in a country and quickly spread worldwide becomes a challenge for the domestic economy and monetary policy. Significant portfolio investment (PI) in foreign capital inflows makes interest rates of the money market decrease, which of course, will be followed by banking interest rates so that equation (1) is formed into:

$$\text{Bank Rate}_t = \alpha_0 + \alpha_1 \text{BI rate}_{t+} \alpha_2 \text{PUAB}_t + \alpha_3 \text{PI}_t + \mu_t$$

Model specification VECM from equation (2) is :

$$\text{DBank Rate}_t = \theta_0 + \theta_1 \text{DBI rate}_{t+} \theta_2 \text{DPUAB}_t + \theta_3 \text{DPI}_t + \text{ECT} + \nu_t$$

$$\text{and ECT} = \text{DBI rate}_{t-1+} \text{DPUAB}_{t-1} + \text{DPI}_{t-1}$$

To capture the relationship pattern between non-stationary variables and the speed of returning to the long-term equilibrium state, an error correction model shows the rate of change to reach the long-term equilibrium position again after a disequilibrium occurs in the short term. In measuring the speed of adjustment toward long-term equilibrium, Hendry's formula is used to build a measure referred to as Mean Adjusted Lag (MAL) with the following formula (Hendry, 1995) :

$$MAL = \frac{\beta_0 - 1}{\alpha_1 \ \delta}$$

The β0 parameter is the short-term passthrough interest rate, which is the instantaneous change rate (t) of banking interest rates caused by changes in 1 unit of the benchmark interest rate; α1 is the long-term interest rate passthrough rate, which is the rate of change in the banking interest rate caused by a change of 1 unit of the benchmark interest rate at the time the equilibrium is reached; and δ is the error-correction term coefficient of the error correction model used.

3. IMPLEMENTATION METHOD

The model used is the Error Correction Model (ECM), which is based on the cointegration between the variables to be tested. First, The stage is the unit root/stationarity test against free and bound variables. Second, cointegration tests against free and bound variables that have been tested stationary at the same derivation level. Third, based on the estimation of the error-correction process model with free and bound variables that have been tested, there will be a cointegration relationship. The VECM equation contains short-term and long-term parameters that allow us to know the short- and long-term response. The bound variables used are (1) the interest rate on investment loans, (2) the interest rate on working capital loans, (3) the interest rate on consumer loans, (4) the interest rate on rupiah 1-month time deposits, (5) the interest rate on rupiah 3-month time deposits, (6) the interest rate on rupiah 12-month time deposits.

The free time series variables are the bi-rate reference rate, money market interest rate, and investment portfolio. The optimal time lag is selected using the VAR Lag Order Selection Criteria in the statistical software version of Eviews 12. Then the measurement of the degree of interest rate passthrough to measure the speed of adjustment of interest rates on loans and deposits is calculated by the MAL equation in equation (5). The research period began after the launch of the ITF in

Indonesia from 2005 to 2021 with semi-annual data, so there were 34 months of observation. The period also covered essential periods such as the 2005 rise in world oil prices, the 2007 rate cut, and the global crisis (GFC) 2008.

4. RESULTS AND DISCUSSION

National banking data in Indonesia shows an imperfect passthrough degree in a few years. It is due to changes in the BI rate needing to be responded to in proportion to changes in bank interest rates. It means there is still rigidity of interest rates in the national banking industry. The economic crisis of 1997/1998 in Indonesia is also clear evidence of the asymmetrical behavior of interest rates. It is indicated that the interbank money market interest rate (rPUAB) is 80.47%, the lending rate is much lower at 34.95%, and the deposit rate is 55.43%. When the benchmark interest rate increases, the lending rate rises faster than the deposit rate, and when the benchmark interest rate falls, the lending rate falls more slowly than the deposit rate. The movement of the interbank rate also does not follow the policy stance of the benchmark interest rate, causing the monetary transmission to be disrupted (see Figure 1).

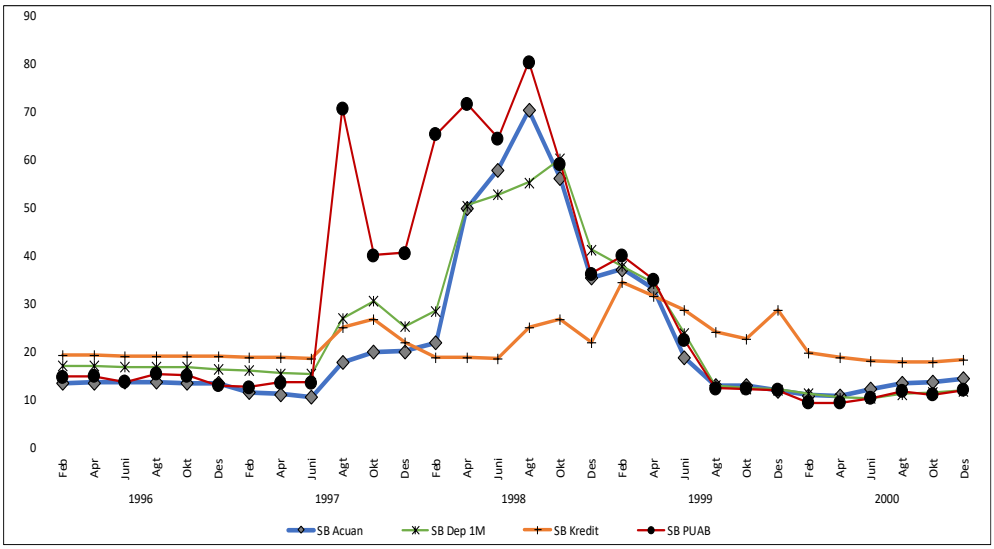

Figure 1. Benchmark interest rates and banking rates

In contrast to conditions from 2010 to 2018, the monetary policy stance through the interest rate was responded to well by the money market and banking industry, where the interbank rate policy spread did not widen (see Figure.2).

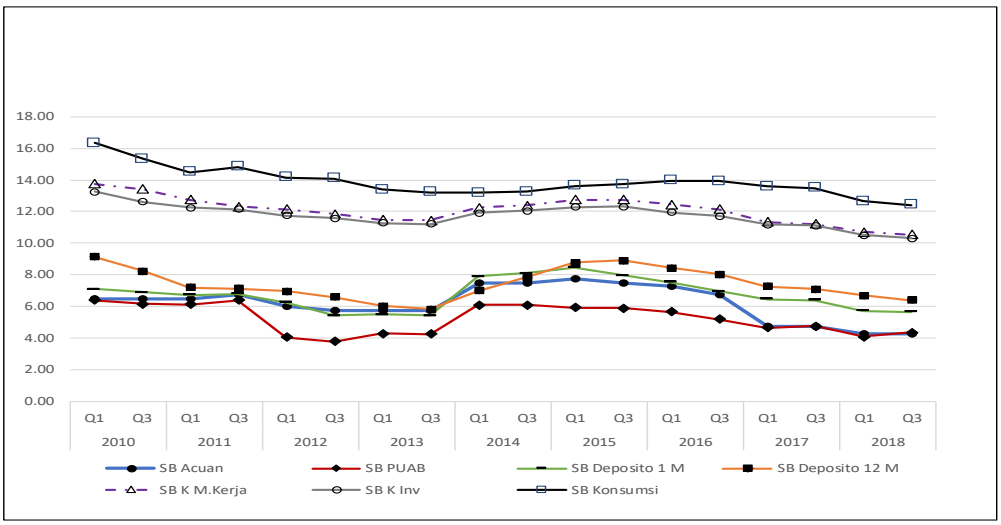

Figure.2. Benchmark interest rates and banking rates for the

The cointegration test is used for decision-making, whether there is a cointegration, which can be seen from the trace statistics and max-eigen statistic values. Both values are compared with critical values at a certain degree of significance. From the cointegration test with the Eviews software, it is indicated that there are five cointegrations.

Table 1. Trace Statistic Cointegration Test

Date: 09/15/22 Time: 20:25
Sample (adjusted): 2006S1 2021S2
Included observations: 32 after adjustments
Trend assumption: Linear deterministic trend
Series: BIRATE DEP12M DEP3M DEP1M KCON KINV KMK PI PUAB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.979731	440.9241	197.3709	0.0000
At most 1 *	0.954049	316.1668	159.5297	0.0000
At most 2 *	0.912234	217.6007	125.6154	0.0000
At most 3 *	0.816535	139.7419	95.75366	0.0000
At most 4 *	0.702883	85.47858	69.81889	0.0017
At most 5	0.554077	46.64246	47.85613	0.0647
At most 6	0.339411	20.79896	29.79707	0.3703
At most 7	0.173961	7.531006	15.49471	0.5168
At most 8	0.043266	1.415372	3.841465	0.2342

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 2. Maximum Eigenvalue

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.979731	124.7573	58.43354	0.0000
At most 1 *	0.954049	98.56609	52.36261	0.0000
At most 2 *	0.912234	77.85876	46.23142	0.0000
At most 3 *	0.816535	54.26335	40.07757	0.0007
At most 4 *	0.702883	38.83612	33.87687	0.0118
At most 5	0.554077	25.84350	27.58434	0.0821
At most 6	0.339411	13.26795	21.13162	0.4279
At most 7	0.173961	6.115634	14.26460	0.5984
At most 8	0.043266	1.415372	3.841465	0.2342

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The results of the estimation with VECM are summarized in Table 3. The long-term passthrough coefficient indicates the presence of friction in the mechanism of monetary policy transmission through interest rates. The interpretation of this coefficient is that after reaching long-term equilibrium, a change in 1 unit of the benchmark interest rate will impact a difference of less than 1 unit of the interest rate on investment and working capital loans, except for consumption credit. The deposit rate that responds most quickly to changes in the benchmark interest rate is the deposit rate with a longer tenor.

Table 3. Long Term Interest Pass Through

Dependent	Independent	Long-Term	Pass-Through
Kinv	BI Rate, PUAB,PI	0,6786	Incomplete
KMK	BI Rate, PUAB,PI	0,859**	Incomplete
Kcons	BI Rate, PUAB,PI	1,3493	Complete
Dep1M	BI Rate, PUAB,PI	0,7037**	Incomplete
Dep3M	BI Rate, PUAB,PI	0,5354	Incomplete
Dep12M	BI Rate, PUAB,PI	1,45**	Complete

A short-term passthrough coefficient smaller than 1 indicates the presence of friction in the mechanism of monetary policy transmission through short-term interest rates. The short-term passthrough coefficient is significant on interest rates on short-term deposits of 1, 3, and 12 months. Interest rates on working capital loans can better adjust to changes in the benchmark interest rate than interest rates on investment and consumption loans.

Table 4. Short Term Interest Pass Through

Dependent	Independent	Short -Term	Pass-Through
Kinv	BI Rate, PUAB,PI	-0,1906**	Incomplete
KMK	BI Rate, PUAB,PI	-0,5447**	Incomplete
Kcons	BI Rate, PUAB,PI	-0,1100	Complete
Dep1M	BI Rate, PUAB,PI	-0,7293**	Incomplete
Dep3M	BI Rate, PUAB,PI	-0,7559**	Incomplete
Dep12M	BI Rate, PUAB,PI	-0,3705**	Complete

Table 5. Error Correction Term

Dependent	Independent	ECT	Pass-Through
Kinv	BI Rate, PUAB,PI	-0,1954**	Incomplete
KMK	BI Rate, PUAB,PI	-0,3193**	Incomplete
Kcons	BI Rate, PUAB,PI	-0,113**	Complete
Dep1M	BI Rate, PUAB,PI	-0,277**	Incomplete
Dep3M	BI Rate, PUAB,PI	-0,4052**	Incomplete
Dep12M	BI Rate, PUAB,PI	-0,1657**	Complete

5. CONCLUSION

The results of the estimated error-correction model for variable lending rates with the accounting impact of capital flows affecting money market interest rates found that the long-term passthrough of Indonesian banks was significant but could have been better on interest rates on working capital loans and investment loans. It indicates the presence of friction in the interest rate channel. In the short term, significant pass-throughs were found for all three types of credit, and the speed of adjustment to the benchmark interest rate and foreign capital flows was about 12 months for working capital loans, 18 months for investment loans, and 14 months for consumption credit. The deposit rate has a significant long-term passthrough in Indonesian banks but could be better at deposit rate for 1-month, 3-month, or 12-month tenors. It indicates the level of friction in the interest rate channel that varies in level. In the short-term dynamics, a significant passthrough was found for 1-month deposits with an adjustment speed of about 18 months. For 3-month deposits, the adjustment speed was about 16 months, and for 12-month warranties, its adjustment was 12 months. The variety of banking products has different friction and adjustment speed levels. Mapping the friction and speed of adjustments to the benchmark interest rate is necessary to set an inflation policy target and control foreign capital flows that dominate a monetary policy's independence. The passthrough coefficient of lending rates is lower than the 1-month deposit rate, indicating that in the short term, the effect of monetary policy is stronger on the return of savings than the cost of capital. Research shows an asymmetrical behavior in banking interest rates in Indonesia. The passthrough degree is typical of being slow when there is a decrease in the BI rate. Banks, as profit-oriented business institutions, tend to take time to cut their interest rates in the face of falling BI rates. However, banks acted offensively when the BI rate rose by raising their interest rates.

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