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Does Financial Inclusion Strengthen the Role of Monetary Policy Effectiveness?

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Abstract:
The purpose of this study is to determine how the financial inclusion index (FII) affects monetary policy efficacy in emerging Asian nations. Learn. The Fixed Effects Model is used in the analytical model. The findings show that the money supply, currency rate, and financial inclusion index all have a negative but negligible impact on inflation. In the meanwhile, inflation is positively and significantly impacted by interest rates. Monetary stability is empirically negatively impacted by IFI. The negative correlation between IFI and inflation suggests that raising IFI helps keep inflation under control, enhancing the efficacy of monetary policy. Based on the analysis of the empirical results, it shows two things: first, the implication of any sustainable development of financial inclusion requires appropriate circumstances; second, efforts in amplifying financial inclusion need to pay attention to the dynamics of financial inclusion, context, and economic conditions.

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Index financial inclusion, Developing Asia, Monetary policy

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1. Introduction

Monetary policy is a key indicator in maintaining macroeconomic stability, especially in maintaining price stability, inflation rate, and balance of payments. Through various transmission channels such as interest rates, exchange rates, and other asset prices (bonds, stock markets) that work efficiently and effectively contribute to improving stability (Garbobiya et al., 2024).

However, there is a challenge in improving the effectiveness of monetary policy where the creation of effectiveness depends on the ability of the country's financial instruments to reach the public at large, an aspect that is limited in developing countries due to low levels of financial inclusion. The development of financial inclusion is based on the phenomenon of financial exclusion. Financial exclusion is a condition where people are unable to reach and utilize formal financial products and access (Sarma, 2012).

Based on empirical research, financial inclusion has been linked to economic stability. Research by Yin et al (2019) shows that monetary policy has positive short-term implications for financial inclusion indicators. In line with several studies that show that monetary policy has a negative influence on the index of financial inclusion (Komala & Widodo, 2022).

The effects of the financial inclusion index on the characteristics of particular central bank instruments have been examined in a number of earlier empirical research (Anarfo et al., 2019). According to some research, monetary policy and the financial inclusion index have a causal relationship or a sign of an endogeneity issue (Lapukeni, 2015). The inflation rate was utilized in earlier research to illustrate monetary policy (Lenka & Bairwa, 2016; Komala & Widodo, 2022). Monetary policy is represented by the interest rate set by the central bank (Ozili, 2023). The effectiveness of monetary policy is demonstrated by the inflation rate (Arshad et al., 2021). Maintaining expectations and public trust in the financial system, macroeconomic stability, and the efficacy of monetary policy transmission are all impacted by the inflation rate at a controllable level.

Emerging Asia has diverse economic structures, economic dynamics, and monetary policy frameworks. The phenomenon of disparity in financial inclusion index in developing Asia illustrates the structural differences in access to formal financial services. Samoa, Brunei Darussalam, and Mongolia have high financial inclusion indices, with Mongolia experiencing a 37.21% decline in its index from 2016 to 2017. In 2017, the financial inclusion index in Bangladesh decreased and did not show a significant increase until 2021.

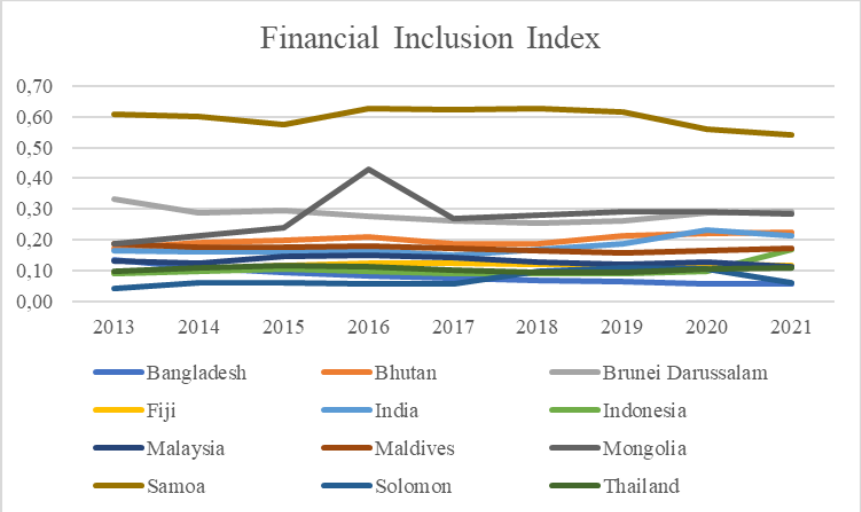

Figure 1. Financial Inclusion Index in Developing Asia
Source: Financial Acsess Survey, processed (2025)

Figure 2. shows that Mongolia and Samoa have the highest availability index and have been consistent for nine years. Meanwhile, Bangladesh, India, Indonesia, Malaysia and

Thailand are at relatively low levels of financial inclusion and have been stagnant for the past nine years. This represents that physical access to financial institutions is still limited. This phenomenon indicates that the capacity of the financial system to provide services is still uneven in developing Asia.

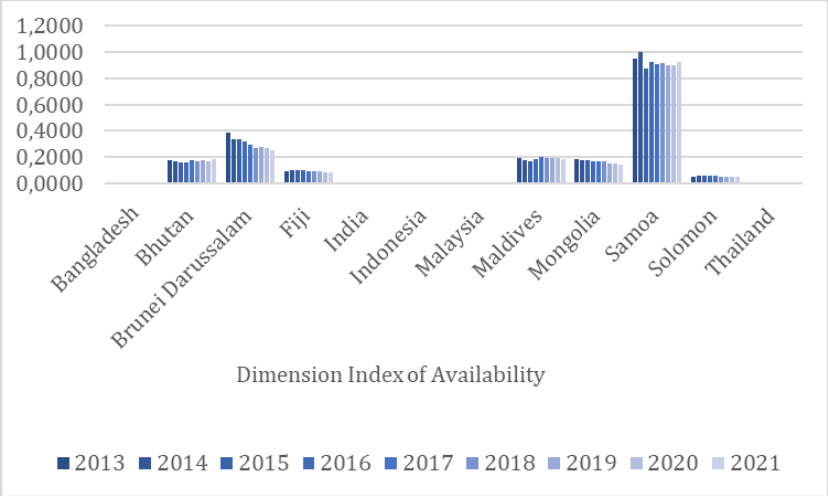

Figure 2. Dimension Index of Availability
Source: Financial Acsess Survey, processed (2025)

Figure 3. Shows that Brunei Darussalam and Samoa have the highest penetration index and have been consistent for nine years. Meanwhile Bangladesh, India, Indonesia, Malaysia and Thailand are at relatively low levels of financial inclusion and have been stagnant for the past nine years. This is similar to Figure 2 where the availability dimension is also relatively low. This represents that the level of access to financial institutions is still limited and has not been evenly amplified. This phenomenon indicates that people are still limited in reaching financial services and products in developing Asia.

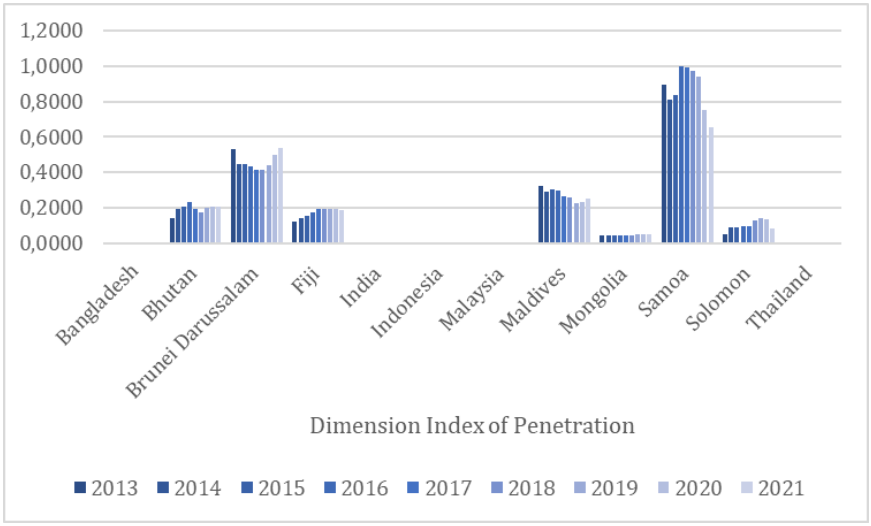

Figure 3. Dimension Index of Penetration
Source: Financial Acsess Survey, processed (2025)

Figure 4. Shows that the index of usage dimension in developing Asian countries has increased compared to the availability and penetration dimensions, where several countries such as Mongolia, India, Indonesia, and Malaysia show relatively high levels of financial services usage compared to the Maldives which is at the lowest level. This condition reflects that public participation in loan services in developing Asia is relatively high. This means that people can utilize the facilities provided by financial institutions and this encourages people to participate in formal financial services and products.

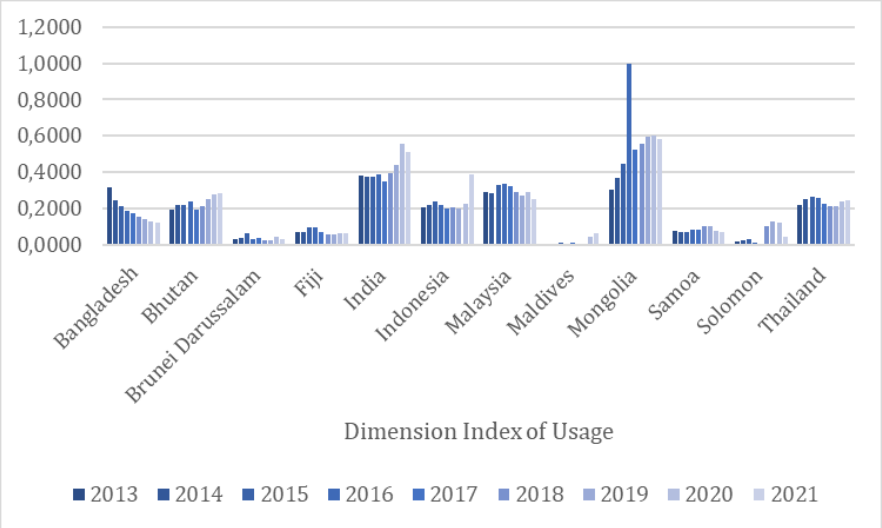

Figure 4. Dimension Index of Usage
Source: Financial Acsess Survey, processed (2025)

Prior empirical research has concentrated on how financial inclusion supports macroeconomic stability and the financial system. However, there are still few specific studies on the role of financial inclusion in the monetary domain, particularly when it comes to developing Asian nations. In the meanwhile, the diversity of financial inclusion index may have an impact on how monetary policy is communicated in emerging Asia. As a result, the main objective of this study is to examine how monetary policy with a varied financial structure in emerging Asia relates to the financial inclusion index.

2. Literature Review

2.1. Measuring Financial Inclusion

The measurement of the financial inclusion index is done with a non-parametric approach in developing a composite index, which is a three-step procedure based on the calculation of the Human Development Index (Sha'ban et al., 2024). On the other hand, some studies use Principal Component Analysis (PCA) to calculate the level of financial inclusion index. Research by (Arshad et al., 2021) uses PCA measurements which divide three indicators, namely: use which consists of two constructs, access which consists of four

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constructs, and barriers which consist of four constructs. Research by Komala & Widodo (2022) In this study using the Sarma method in calculating the financial inclusion index. Several studies conducted previously used several indicators and certain constructs in financial development. The index calculation in this study focuses on three dimensions, each of which consists of one construct.

2.2. The Relationship between Financial Inclusion and Monetary Policy

The experience of the crisis, especially the global financial crisis, illustrates that macro-financial stability is an important element in developing countries in maintaining the economy's resilience to external shocks. One of the crucial instruments in order to maintain such stability is through monetary policy. One of these elements is an effort to regulate the demand and supply of money by controlling liquidity in the financial system (Jungo et al., 2022). Empirical studies conducted by Oanh et al (2023) comparing countries with low and high financial development, where countries with low financial development are negatively correlated with the inflation rate. This happens because many people switch from informal financial systems, such as loans to relatives, friends, and illegal online loans. However, it is inversely proportional in countries with high financial development, where increased financial inclusion has implications for expansive credit expansion, the occurrence of which is due to diverse and easily accessible financial innovations. The effectiveness of monetary policy, with domestic credit instruments and money supply management, not only contributes to macroeconomic stability but has implications for amplifying the level of financial inclusion (Zanfack et al., 2024).

Empirical studies conducted by (Khan et al., 2023) analyzed countries in developing Asia which showed the development of the financial sector had implications for reducing interest rates so that the cost of borrowing decreased. Research by Sethy et al (2025) explores the role of financial inclusion in South Asia 2004-2023 where financial inclusion plays an important role in controlling inflation. Both supply and demand side financial inclusion indicators contribute to bank credit channels. Financial inclusion has an important role in increasing economic growth and reducing inflation, where financial inclusion is a key predictor of growth and implementation of monetary policy (Takyi et al., 2024). On the other hand, financial technology and financial inclusion have a positive short- and long-term relationship with inflation as a representation of monetary policy (Mittal et al., 2023).

3. Data and Methodology

3.1. Data

This study uses secondary data, namely annual panel data with a research period of nine years (2013-2021). The selection of the research time span is based on the historical economic context that has relevance in developing Asian countries. The year 2013 is the period after the global financial crisis which reflects the recovery phase, considering that countries in the region faced significant economic pressures due to the shock of the global crisis. In addition, the time span also includes the period of crisis due to the COVID-19

pandemic that impacted the global economy, including the financial sector and monetary policies in developing countries. The year 2021 was chosen as the endpoint because it represents the initial phase of the transition to global post-pandemic economic recovery. The aspects of financial inclusion, money supply, interest rates, exchange rates, and inflation serve as the study's secondary data. The World Development Indicator and the Financial Access Survey (FAS IMF) provided the data used in this analysis.

3.2. Financial inclusion index indicators

The indicators of the financial inclusion index use three dimensions which include the availability dimension which is commercial bank branches per 100,000 adults, this indicator shows the physical access of financial services which reflects how easy it is for people to reach financial access. The user dimension is loan accounts with commercial banks per 1,000 adults, which represents people's active interaction with the financial system. The penetration dimension is deposit accounts with commercial banks per 1,000 adults, which shows how many people have deposit accounts. The weighting in calculating the financial inclusion index by giving equal weight to each dimension is 1 (Umar, 2017).

3.3. Model specification

The model specification in this study uses an empirical study that aims to identify the influence between the financial inclusion index and monetary policy in developing Asian countries. The parameters in the financial inclusion index use three dimensions. Therefore, to test the impact of financial inclusion on monetary policy, the model specification is as follows:

$$INFRA_{i,t} = \beta 0 + \beta 1\, IIK + \beta 2\, M2 + \beta 3\, lnEXRT + \beta 4\, INRT + \varepsilon_{i,t} \quad (1)$$

Where, Equation 1, (INFRA) is the variable of inflation rate, IIK is financial inclusion index, M2 is money supply, lnEXRT is exchange rate, and INRT is interest rate. ε_(i,t) is the error term in unit i at time t.

4. Result and Discussion

Descriptive statistics can be seen in **Table 1**, which explains the initial description of the data conditions in the study. This aims to identify distribution patterns and basic characteristics of each variable.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
INFRA	108	3.020322	2.88181	-2.595243	12.25398
IIK	108	0.1926837	0.1422707	0.041994	0.6279332
M2	108	9.200371	6.791088	-5.5042	30.45326
lnEXRT	108	3.465767	2.711683	0.2240757	9.587557
INRT	108	9.484327	4.082979	3.06	20.00692

Source: Stata, processed (2025)

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Table 1 shows the number of observations of 108 and the average value of each variable, namely inflation rate, financial inclusion index, money supply, and exchange rate. Countries in Emerging Asia have relatively high inflation rates and interest rates of 3.02% and 9.48%.

Table 2. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	P-Value
IIK	-10.72487	7.28597	-1.47	0.144
M2	-0.0049873	0.03263	-0.15	0.879
lnEXRT	-6.968822	2.47543	-2.82	0.006 *
INRT	0.139188	0.20449	-0.68	0.489
Konstanta	27.96492	9.07518	3.08	0.003 *

Information: *significant 1%
Source: Stata, processed (2025)

$$INFRA_{i,t} = 27.96 - 10.72IIK - 0.0049M2 - 6.96lnEXRT + 0.139INRT$$

The Fixed Effects Model's estimation results demonstrate that, of the variables examined, only the exchange rate significantly affects inflation as a measure of monetary policy in developing nations. In particular, the coefficient is significant at the 1% level with a value of -6.97 and a p-value of 0.006. This shows that the efficacy of monetary policy is negatively impacted by currency depreciation. Put otherwise, it follows that a rise in the exchange rate will lower the rate of inflation. The study's conclusions are in line with research by Anarfo et al. (2019), which found a strong and negative correlation between financial inclusion and exchange rates in sub-Saharan Africa. The financial inclusion index, on the other hand, displayed a coefficient of -10.72487, which was not statistically significant (p-value = 0.144). However, in theory, more financial inclusion can improve the transmission of monetary policy. This study demonstrates that the setting of developing Asian nations has not adequately reflected this effect. This may be due in part to the fact that financial inclusion in many of the sample nations is still in its infancy and has not yet had a significant impact on the monetary mechanism.

The M2 variable shows an insignificant effect, indicating that monetary aggregates have not played an optimal role in strengthening the effectiveness of monetary policy. However, the coefficient shows a negative relationship, where this phenomenon indicates that if inflation increases, the monetary authority will respond by conducting a contractionary policy by increasing interest rates or by reducing liquidity. This aims to reduce the money supply in the community, which in turn has implications for reducing the inflation rate. However, what needs to be considered in the long run is that an increase in the money supply triggers inflation. This indicates that the interaction between M2 and inflation depends on the time frame and direction of the relationship being viewed. Empirical studies by Lapukeni (2015) explain that there is a theoretical contradiction with field results, where there is an inverse relationship to inflation and money supply.

Furthermore, interest rates do not have a significant effect on the inflation rate, indicating that the interest rate-based transmission mechanism has not worked well, indicating that the sample countries are at a low level of penetration of financial institutions. The coefficient shows a positive relationship direction, which can be seen if the economic cycle rotates quickly without being

balanced with the capacity and strengthening of the production sector causing overheating in the economy, where the inflation rate increases. On the other hand, if there is an increase in liquidity that causes the inflation rate to rise, the central bank as the monetary authority will respond by raising interest rates with the aim of controlling the money supply in the community so that inflation is at a manageable level.

5. Conclusion

The objective of this research is to examine and determine empirically how the financial inclusion index affects the efficacy of monetary policy in emerging Asia. When monetary policy is represented by the inflation rate, empirical tests are used to determine whether aspects of the financial inclusion index have an impact on monetary policy. The results demonstrate that the only factor that significantly affects monetary policy's efficacy is the exchange rate. This highlights the significance of external stability in the global environment, especially exchange rate management, in fostering an inclusive and interconnected financial ecosystem that improves the efficacy of monetary policy. Meanwhile, the role of financial inclusion, M2, and interest rates show an insignificant effect, which illustrates that monetary instruments and the structure of the financial system in developing Asia still need to be strengthened and formal integration is broad and equitable. Although it does not yet have a significant contribution, it holds great potential if developed structurally and inclusively.

This study confirms that the creation of monetary policy effectiveness needs to consider various conditions and views, including: First, the structure of the financial system in each country is very diverse, which in this study shows the disparity of financial system indicators. Second, the variation of research results from financial inclusion, M2 variables, and exchange rates reflects the differences in financial market structure, level of informality, affordability of formal financial services and access, and institutional capacity in each country. Third, global dynamics, financial system interconnectivity, capital flow volatility, and systemic crisis implications form complex conditions in the implementation of monetary policy.

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