

The Impact of Islamic Monetary Policy on Indonesia's Economic Growth

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Abstract

Indonesia is a Muslim-majority country with relatively low economic growth. Therefore, the success of monetary policy does not only depend on conventional instruments, but also on Islamic instruments. Islamic monetary policy instruments tend to be more related to real activities and real assets. So that increasing public awareness of Islamic principles will cause the effectiveness of Islamic monetary instruments to become stronger, which will also be followed by increased economic growth. This research aims to determine the effect of PUAS, FASBIS, and SBIS on GDP using secondary data in the form of monthly time series from 2018-2022. Data was collected using the Purposive Sampling technique, with the Quantitative Associative method. The data was processed using Eviews 9 and then analyzed using the VAR VECM method to see the long-term and short-term effects of PUAS, FASBIS, and SBIS on GDP. The results show that there is a two-way causal relationship between PUAS and FASBIS, FASBIS and GDP, SBIS and PUAS, as well as a one-way relationship between GDP and SBIS. There is a significant relationship between SATISFIED and GDP, in the long term. Meanwhile, in the short term, all variables do not have a significant effect on GDP. In the long term, the variable that is strong and dominant in influencing GDP is PUAS and has the largest composition that contributes to the GDP variable. This research provides practical and theoretical implications to increase scientific insight in the field of economics and references in making policy decisions to improve technological infrastructure and regulations that support the development of Sharia financial markets.

Keywords: Islamic Monetary; GDP; SBIS; FASBIS; PUAS

Abstrak

Indonesia merupakan negara mayoritas beragama Islam dengan pertumbuhan ekonominya yang tergolong rendah. Maka dari itu kesuksesan kebijakan moneter tidak hanya bergantung pada Instrumen Konvensional, melainkan juga pada Instrumen Islam. Instrumen kebijakan moneter Islam cenderung lebih terkait dengan kegiatan riil dan asset riil. Sehingga kesadaran Masyarakat akan prinsip Islam yang meningkat akan menyebabkan efektivitas instrument moneter Islam semakin kokoh yang juga akan diikuti dengan peningkatan pertumbuhan ekonomi. Penelitian ini bertujuan untuk mengetahui pengaruh PUAS, FASBIS, dan SBIS terhadap PDB menggunakan data Sekunder berbentuk time series bulanan dari tahun 2018-2022. Data dikumpulkan menggunakan tehnik Purposive Sampling, dengan metode Kuantitatif Asosiatif data diolah menggunakan Eviews 9 kemudian dianalisis dengan metode VAR VECM untuk melihat pengaruh jangka panjang dan jangka pendek

PUAS, FASBIS, dan SBIS terhadap PDB. Hasil memperlihatkan adanya hubungan kausalitas dua arah antara PUAS dan FASBIS, FASBIS dan PDB, SBIS dan PUAS, serta hubungan satu arah PDB terhadap SBIS. Terdapat hubungan signifikan PUAS terhadap PDB, dalam jangka panjang. Sementara pada jangka pendek seluruh variable tidak berpengaruh signifikan terhadap PDB. Pada jangka panjang, variabel yang kuat dan dominan mempengaruhi PDB adalah PUAS serta memiliki komposisi terbesar yang memberikan kontribusi terhadap variabel PDB. Penelitian ini memberikan implikasi praktis dan teoritis menambah wawasan keilmuan dalam bidang ekonomi dan refrensi dalam pengambilan Keputusan kebijakan peningkatan infrastruktur teknologi dan regulasi yang mendukung pengembangan pasar keuangan Syari'ah.

Kata kunci: *Moneter Islam; PDB; SBIS; FASBIS; PUAS*

INTRODUCTION

Economic conditions often serve as indicators reflecting the quality of a country. One parameter of a country's welfare can be measured through its economic growth rate (Indayani and Hartono 2020). When a country's economy achieves stability, it can be considered a sign of progress. Conversely, if the economy declines, the country cannot yet be regarded as a developed country. An increase in economic growth can be reflected in the rise of industrial goods production, the development of the service sector, the increase in capital goods production, and the enhancement of infrastructure in the country's regions (Ramadhan, Aji, and Wijayanti 2021).

One way to observe economic growth in Indonesia is by examining the growth rate of the Gross Domestic Product (GDP). Indonesia's GDP income remains relatively low compared to other developed countries (Winata 2020). This is due to several factors such as the low quality of human resources, low investment, and low productivity. Therefore, the government must focus on economic policies as an effort to increase income and boost the rate of economic growth (Nurlia et al. 2023). Achieving the planned and forecasted economic growth rate, reducing unemployment, and maintaining inflation stability are considered indicators of successful economic policies. Thus, various policy implementations in the economic sector are carried out to achieve an optimal economic growth rate.

The economic success of a country is greatly impacted by the proper implementation of monetary policy in response to microeconomic conditions, which are then managed at the macro level by policymakers (Ajuna 2017). Monetary policy aims to control the inflation rate and support exchange rate stability, as price stability is considered a crucial condition for economic recovery and smooth economic activities. The main task of monetary policy is to achieve macroeconomic stability, which can be observed from adequate job availability, price stability, and improvements in actual production trends (Sinaga, Fuadi, and Sinaga 2022). In Indonesia, the implementation of monetary policy involves two alternatives: expansionary monetary policy and contractionary monetary policy (Mehar 2023). The implementation of expansionary monetary policy is expected to have a positive effect on economic growth and job opportunities, but it can negatively impact the inflation rate and balance of payments. Conversely, contractionary monetary policy is

expected to have a positive impact on price stability and the balance of payments, but it may negatively affect economic growth and job opportunities. The choice of policy alternatives heavily depends on the economic conditions and the priority issues being faced.

Monetary policy and economic growth have a long-term equilibrium relationship (Harahap and Tambunan 2022). Through the control of inflation and exchange rate stability, monetary policy can create a conducive environment for investment and sustainable economic growth. By maintaining moderate and stable interest rates, the central bank can provide incentives for healthy consumption and investment, which in turn can support long-term economic growth. Monetary policy that focuses on price stability, economic growth, and trade balance can establish a solid foundation for long-term growth. This finding is also supported by the research of Tambunan and Nawawi (2018), who stated that the most effective transmission of monetary policy occurs through the exchange rate and credit mechanisms in Malaysia.

Indonesia is the country with the largest Muslim population in the world. Along with the increasing awareness of Sharia principles in society, the Islamic monetary sector in Indonesia has experienced rapid growth. Since the amendment of Banking Law from Number 7 of 1992 to Law Number 10 of 1998, Indonesia has officially implemented a dual banking system, where conventional banks and Sharia banks can operate together. Furthermore, following the issuance of Law Number 23 of 1999 concerning Bank Indonesia, BI was given a new responsibility as a dual monetary authority, which includes the implementation of conventional monetary policy and Sharia monetary policy (Rizal Muttaqin 2018). Bank Indonesia, recognized as the main monetary authority in Indonesia, has the mission to achieve and maintain the stability of the rupiah. This mission is documented in accordance with the provisions of Article 7 of Law Number 3 of 2004 concerning Bank Indonesia.

As a country implementing a dual monetary system, there are differing views on monetary policy. Therefore, the success of monetary policy in Indonesia depends not only on conventional instruments but also on the effectiveness of Sharia instruments. It has been proven that monetary control instruments in the conventional economic system are not as efficient and stable as those in the Sharia economic system (Bayuni and Srisusilawati 2018). This is because, in the Sharia economic system, there are restrictions on the use of financial instruments prohibited by Sharia, such as interest (*riba*) and speculative transactions. As a result, Sharia economic monetary control instruments are designed to promote greater stability and economic justice. Moreover, Sharia economic financial instruments tend to be more connected to real activities and real assets. This can lead to less speculation and more stable market behavior than in the conventional economic system. The Sharia economic system often emphasizes community participation and a more equitable distribution of economic wealth. By understanding the impact of

Sharia monetary instruments on economic development, we can strengthen the policy foundation to achieve economic stability.

The alignment among the monetary sectors impacts the overall economy. An increase in funding sources from Sharia banks affects economic balance, which in turn impacts economic growth. The development of the Sharia financial system in Indonesia continues to grow. This is evident from the evolution of Sharia monetary instruments and the increasing performance and trust in the Sharia banking sector. In 2022, Third-Party Funds (DPK) and financing provided by Sharia banks reached IDR 619.5 trillion (Alifian Asmaysi 2023).

The growth of assets, DPK, and financing by Sharia banks has been increasing every year, even showing positive growth during the pandemic. By December 2020, the total Sharia financial assets in Indonesia (excluding Sharia stocks) reached IDR 1,802.86 trillion or USD 127.82 billion (Anisa Mawaddah Nasution and Batubara 2023). Bank Umum Syari'ah (BUS) was the largest holder of DPK with a total portfolio of IDR 429.02 trillion, followed by Unit Usaha Syari'ah (UUS) with a total DPK of IDR 177.03 trillion, and lastly Bank Perkreditan Rakyat Syari'ah (Widodo, Adhidharma, and M. Arna Ramadhan 2022).

To support the increase in funding sources from Sharia banks, which significantly impacts economic balance and eventually economic growth, Bank Indonesia conducts its monetary operations with two systems: conventional monetary operations and Sharia monetary operations, in accordance with Bank Indonesia regulation number 16/12/PBI/2014 issued on July 24, 2014. One strategy for monetary control based on Sharia principles is through the implementation of Sharia monetary operations, which aim to impact the liquidity levels of Sharia banks (Nasution and Sudiarti 2023). The implementation of Sharia Monetary Operations (OMS) refers to the execution of monetary policy by Bank Indonesia to control monetary conditions through Open Market Operations and providing standing facilities based on Sharia principles (Hiya 2022). Achieving these operational targets involves influencing Sharia bank liquidity through monetary contraction (reducing bank liquidity via OMS activities) and monetary expansion (increasing bank liquidity via OMS activities).

One way to conduct Sharia open market operations is by issuing Sharia Bank Indonesia Certificates (SBIS), Sharia-compliant securities with short-term maturities in rupiah issued by Bank Indonesia. Meanwhile, standing facilities can be provided through the Sharia Bank Indonesia Deposit Facility (FASBIS) and support liquidity through the Interbank Sharia Money Market (PUAS) (Adela 2018). It is important to note that Sharia financial characteristics show a direct link between the monetary sector and the economic system. SBIS, PUAS, and the Sharia Bank Indonesia Deposit Facility (FASBIS) become key components in the developing Sharia financial ecosystem. SBIS provides Sharia-compliant investment options, while PUAS and FASBIS form the foundation for liquidity and financing that supports various Sharia banking activities.

A stronger Sharia financial system will increase the portion of financing channeled by Sharia banks. This is evident from the rise in Sharia bank financing activities, which impact the production of goods and services in society. As community productivity increases, the chances of meeting domestic needs also rise, and the option to export goods abroad will grow. With increased exports, there will be additional national income from the foreign exchange generated, which can later be used to meet domestic capital goods needs (Fahmi 2019).

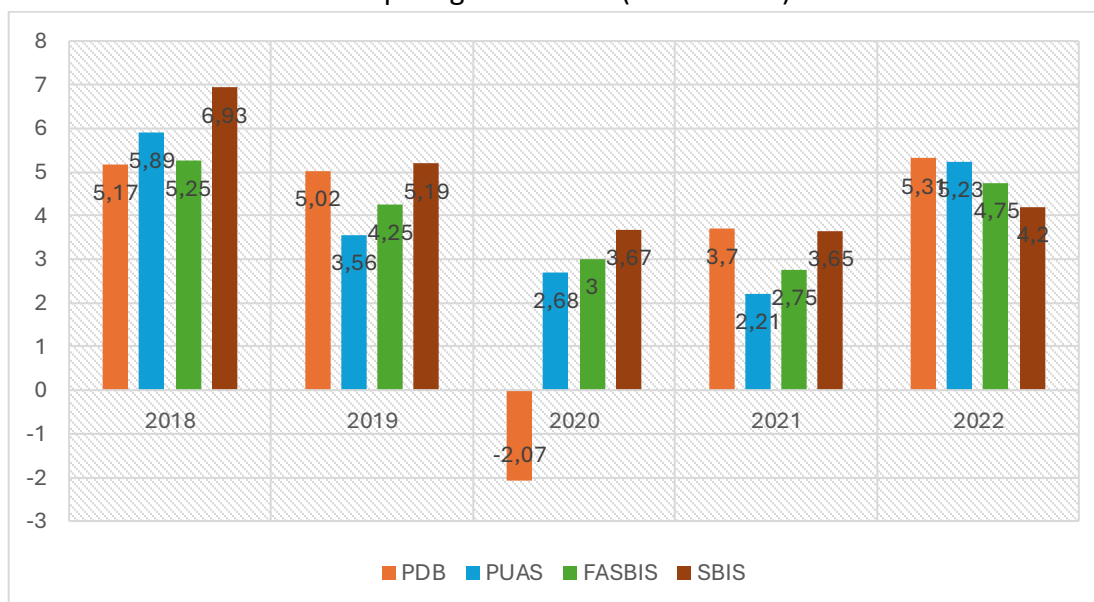


Figure 1. GDP, PUAS, FASBIS, and SBIS Data in Annual Form for the Period 2018-2022

Based on Figure 1, we obtain information that each variable (GDP, PUAS, FASBIS, and SBIS) experienced both declines and increases. From 2018 to 2020, a decline in PUAS, FASBIS, and SBIS was accompanied by a decrease in GDP. The decline during 2018-2019 was caused by future uncertainty, reaching its lowest point in 2020 due to the impact of the Covid-19 pandemic, which crippled almost all economic sectors. In 2021, PUAS, FASBIS, and SBIS continued to decline while GDP increased, which is an anomaly from the monetary objective. PUAS, FASBIS, and SBIS are Sharia monetary variables whose usage should positively impact Sharia bank financing, affecting economic balance and indicating that they positively impact economic growth. By 2022, when PUAS, FASBIS, and SBIS increased, GDP also increased. This research fills the gap in the literature by analyzing the 2018-2022 period comprehensively, covering the phases before, during and after the Covid-19 pandemic.

The 2018-2022 period covers several significant stages in global and national financial development. Challenges such as global economic uncertainty, regulatory changes, and the impact of the Covid-19 pandemic have provided an interesting context for understanding the role of Islamic monetary instruments in supporting economic growth. The aim of this research is to see the influence of Islamic monetary policy instruments on economic growth in Indonesia, both in the short and long term. This research makes a significant contribution to academic and practical literature,

thus the theoretical benefit of research is that it can increase scientific insight in the field of Islamic economics and can become a reference material in making economic policy decisions.

LITERATURE REVIEW

Economic Growth

According to Djojohadikusumo, economic growth is based on the process of increasing the production of goods and services within the economic activities of society (Rahmawati et al. 2023). Meier and Baldwin describe economic growth as a process where per capita output increases sustainably over a long period. They highlight three essential elements in this definition: 1) the evolution of the process, 2) per capita output, and 3) an extensive time span (Basuki Pujoalwanto 2014).

Classical Theory is an economic growth theory that posits a country will experience economic growth decline as its population decreases. This theory, explained by Adam Smith and David Ricardo, suggests that population growth and output growth will form better economic conditions (Yunianto 2021). Neoclassical Theory explains that a country's economic growth can stabilize with three critical components: capital, technology, and labor (Simanungkalit 2020). Keynesian Theory posits that investments and government actions should reduce production costs and help drive economic growth (Meiriza et al. 2024). Endogenous Growth Theory explains economic growth caused by factors within the production process, such as economies of scale or technological changes, rather than external factors like population growth. In endogenous growth theory, the rate of economic growth depends on a primary variable: the rate of return on capital. The main difference between endogenous growth models and neoclassical economics is that in neoclassical theory, the return on capital decreases with increased capital accumulation (Serly 2018).

Sharia Economic Growth Theory is an approach to economics based on Islamic economic principles. Key points in Sharia economic growth theory include: Justice and Balance, Adherence to Islamic Principles, Participation and Partnership, Avoidance of Usury (Interest) and Other Prohibited Practices (Muna and Qomar 2020). Economic growth in the context of the modern economy is the development that results in increased production of goods and services within a society, which in turn enhances societal welfare. In macroeconomic analysis, a country's economic growth rate is measured by the development of real national income, known as Gross National Product (GNP) or Gross Domestic Product (GDP) (Putra 2022).

Gross Domestic Product (GDP)

GDP, or Gross Domestic Product, is a measure of the total value of all goods and services produced within a country over a one-year period. The products measured include capital goods without accounting for their depreciation, hence the recorded figure in GDP is considered a gross figure (Imsar, Nurhayati, and Harahap

2023). GDP measures the flow of money within an economy and can be calculated using the following three methods (Tedy Herlambang, Sugiarto, Brastoro 2001).

Production Approach

The production approach is achieved by combining the gross value added from all production sectors. The formula is as follows:

$$Y = (Q_1 \times P_1) + (Q_2 \times P_2) + (Q_3 \times P_3) + \dots + (Q_n \times P_n) \quad (1)$$

Where:

Y = National Income

P_1 = Price of the first good

P_n = Price of the nth good

Q_1 = Quantity of the first good

Q_n = Quantity of the nth good

Income Approach

Using the income approach, GDP is calculated by summing all the incomes received by the population as compensation for the services they provide in the production process. Mathematically, the income approach can be formulated as follows:

$$Y = w + r + i + p \quad (2)$$

Where:

Y = National Income

r = Income from wages, salaries, and others

w = Net income from rent

i = Income from interest

p = Income from corporate and individual profits

Expenditure Approach

In the expenditure approach, the calculation is done by combining the final demand from economic units, such as household consumption (C), business investment (I), and government spending (G). This approach is often described as follows:

$$Y = C + I + G \text{ (for a closed economy)} \quad (3)$$

$$Y = C + I + G + (X - M) \text{ (for an open economy)} \quad (4)$$

Where:

Y = National Income

C = Household consumption

I = Investment

G = Government expenditure

X = Exports

M = Imports

Islamic Monetary Policy

Monetary policy is the government's policy carried out through the central bank to control the amount of money in circulation with the aim of maintaining economic stability, regulating inflation, interest rates, and economic growth (Irwan et al., 2022). The objectives of monetary policy in the context of Islam align with the objectives of monetary policy in general. This includes maintaining the stability of the currency, developing diverse financial instruments, increasing liquidity, implementing transparency in the financial system, and applying efficient market mechanisms to achieve desired economic growth. The stability of the currency is also closely related to the principles of sincerity and openness in human interactions (Paramita 2021). As mentioned in the Al-Qur'an chapter Al-an'am verse 152.

وَلَا تَقْرَبُوا مَالَ الْيَتِيمِ إِلَّا بِالَّتِي هِيَ أَحْسَنُ حَتَّىٰ يَبْلُغَ أَشُدَّهُ ۚ وَأَوْفُوا الْكَيْلَ وَالْمِيزَانَ
بِالْقِسْطِ ۗ لَا تُكَلِّفُ نَفْسًا إِلَّا وُسْعَهَا ۚ وَإِذَا قُلْتُمْ فَاعْدِلُوا وَلَوْ كَانَ ذَا قُرْبَىٰ ۗ وَبِعَهْدِ اللَّهِ
أَوْفُوا ۗ ذَٰلِكُمْ وَصَّوْكُمْ بِهِ لَعَلَّكُمْ تَذَكَّرُونَ ۙ

And do not approach the orphan's property except in a way that is best until he reaches maturity. And give full measure and weight in justice. We do not charge any soul except [with that within] its capacity. And when you testify, be just, even if [it concerns] a near relative. And the covenant of Allah fulfill. This has He instructed you that you may remember.

The fundamental difference lies in the Sharia principles' inability to guarantee nominal value or interest rates. Therefore, in the context of implementing Sharia-based monetary policy, it is not feasible to set interest rates as operational targets (Anisa Mawaddah Nasution and Batubara 2023). The Sharia economic monetary system refers to the Islamic economic framework that aims to achieve Sharia principles, including realizing justice, welfare, and avoiding usury (riba). This is as stated in the Al-Qur'an, chapter Al-Hadid verse 25.

لَقَدْ أَرْسَلْنَا رُسُلَنَا بِالْبَيِّنَاتِ وَأَنْزَلْنَا مَعَهُمُ الْكِتَابَ وَالْمِيزَانَ لِيَقُومَ النَّاسُ بِالْقِسْطِ ۗ
وَأَنْزَلْنَا الْحَدِيدَ فِيهِ بَأْسٌ شَدِيدٌ وَمَنْفَعٌ لِلنَّاسِ وَلِيَعْلَمَ اللَّهُ مَنْ يَنْصُرُهُ وَرُسُلَهُ
بِالْغَيْبِ ۗ إِنَّ اللَّهَ قَوِيٌّ عَزِيزٌ ۙ

We have already sent Our messengers with clear evidences and sent down with them the Scripture and the balance that the people may maintain [their affairs] in justice. And We sent down iron, wherein is great military might and benefits for the people, and so that Allah may make evident those who support Him and His messengers unseen. Indeed, Allah is Powerful and Exalted in Might.

The Sharia economic monetary system refers to the Islamic economic framework that aims to achieve Sharia principles, including realizing justice (Iqamah

al' Adl), promoting welfare (jalb al maslahah), and avoiding usury (riba). This is emphasized in all sectors, including economic life, to create justice and welfare (Rahmad Riho Zeen et al. 2022). To achieve the ultimate objectives of monetary policy, one method of monetary control based on Sharia principles is through the implementation of Sharia monetary operations to impact liquidity availability in Sharia banking (Andri Soemitra 2018). Bank Indonesia carries out Sharia monetary operations (OMS) as a monetary control strategy based on Sharia principles, aiming to support Bank Indonesia's tasks in setting and implementing monetary policy. The achievement of these operational targets is done by manipulating liquidity in Sharia banking through monetary contraction (reducing bank liquidity through OMS activities) and monetary expansion (adding liquidity to banks through OMS activities) (Natsir 2014).

Sharia Monetary Operations (OMS) are conducted through various means, including Sharia Deposit Placement Optimization (OPT) and Sharia Standing Facilities. In accordance with Article 26 of Sharia Banking Law Number 21 of 2008 and Bank Indonesia Regulation on OMS Article 4 Number 10/36/PBI/2008, these activities must comply with Sharia principles as declared through fatwas and/or Sharia opinions by authorized fatwa authorities, such as the Indonesian Ulama Council (MUI) - National Sharia Council (DSN) (Andri Soemitra 2018).

Sharia Open Market Operations (OPT Sharia) are money market trading activities that follow Sharia principles and are conducted by Bank Indonesia with banks and other entities as part of Sharia Monetary Operations (OMS). OPT Sharia is conducted regularly but can be done anytime if needed, including through Fine True Operation (FTO) among other forms. The OPT Sharia process involves auction and/or non-auction mechanisms (Irwan et al., 2022). The implementation of OPT Sharia is carried out by issuing Sharia Bank Indonesia certificates (SBIS), trading in securities in Indonesian currency in accordance with Sharia principles, including Sharia Bonds (SBIS), Government Sharia Securities (SBSN), and other high-quality and easily redeemable securities.

Shariah Bank Indonesia Certificates (SBIS)

Shariah Bank Indonesia Certificates (SBIS), commonly referred to as SBIS, are a type of Shariah-compliant securities with short-term maturity in Indonesian currency issued by Bank Indonesia (Andri Soemitra 2018). Standing Facilities include the provision of funds in the form of rupiah (lending facilities) conducted through the repurchase agreement (Repo) system for securities, as well as rupiah placements by banks at Bank Indonesia (deposit facility) done by placing rupiah funds for a period at Bank Indonesia (Eka et al. 2021). Shariah Standing Facilities are services provided by Bank Indonesia to banks to support Shariah monetary operations. Shariah Standing Facilities are conducted through non-auction processes and are carried out by providing deposit facilities involving Shariah Bank Indonesia Deposit Facility (FASBIS) which implements the wadiah contract as one of its forms.

The Shariah Bank Indonesia Deposit Facility (FASBIS)

According to Bank Indonesia regulations based on Bank Indonesia Regulation Number 16/12/PBI/2014 regarding Shariah Monetary Operations, the Shariah Bank Indonesia Deposit Facility in Rupiah, abbreviated as FASBIS, refers to the deposit service provided by Bank Indonesia to banks with the aim of placing funds at Bank Indonesia as part of Shariah Standing Facilities (Fauziah 2019).

The Shariah Interbank Money Market (PUAS)

One of the Shariah monetary instruments used is the Shariah Interbank Money Market (PUAS). The Fatwa of the National Shariah Council regarding the Shariah Money Market No. 37/DSN-MUI/X/2002 was issued because Shariah banks may experience liquidity shortages due to differences in the maturity period between fund receipts and disbursements, as well as to enhance the efficiency of fund management. The contracts used in PUAS, both for purchases and transfers of ownership, include mudharabah (muqaradh), musyarakah, qard, wadi'ah, and al sharf. Transfer of ownership in PUAS is only permitted once and employs Shariah contracts (Natsir 2014).

RESEARCH METHOD

In this research, the research method used is the quantitative method. The data used in this research is secondary data (Sugiyono 2015). Apart from that, this data is a time series. Data collection involves a collection of articles from various sources, selected using purposive sampling techniques. The SBIS, FASBIS and PUAS data sources are via the Bank Indonesia (BI) website and the Financial Services Authority (OJK) website, ADHK 2010 economic growth or GDP data for the 2018-2022 period is via the Central Statistics Agency (BPS) website. The ADHK GDP data (base year 2010) that will be investigated is annual data from 2018–2022, which is then interpolated into monthly data. Therefore, the number of samples in this study reached 60. The analysis technique used was the Vector Error Correction Model (VECM) approach. VECM is a form of Vector Auto Regression (VAR) analysis designed for non-stationary data that has a cointegration relationship (Saputra and Sukmawati 2021). VECM allows efficient parameter estimation even in situations where the variables are correlated with each other and takes into account both long and short run relationships simultaneously (Civciristov et al. 2014).

RESULTS AND DISCUSSION

Stationarity Test

Stationarity in VAR is tested using the unit root test, specifically the Augmented Dickey Fuller Test (ADF Test). If the probability value is less than 0.05, then the data does not contain unit roots, indicating stationary data (Civciristov et al. 2014).

Table 1: Stationarity Test with ADF Test at Level

Variabel	Probabilitas	Result of Stationarity Test at Level
PUAS	0,1255	p>0,05 (Non-Stationary Data at Level)
FASBIS	0,5826	p>0,05 (Non-Stationary Data at Level)
SBIS	0,8305	p>0,05 (Non-Stationary Data at Level)
PDB	0,6249	p>0,05 (Non-Stationary Data at Level)

Based on the stationarity test results in Table 1, it is known that the data for PUAS, FASBIS, SBIS, and PDB are not stationary at the level, with all p-values > 0.05. The data for PUAS, FASBIS, SBIS, and PDB will be tested again for stationarity in the first difference.

Table 2: Stationarity Test with ADF Test on First Difference

Variabel	Probabilitas	Result of Stationarity Test at Level
PUAS	0.0000	p<0,05 (Stationary Data in First Difference)
FASBIS	0.0141	p<0,05 (Stationary Data in First Difference)
SBIS	0.0000	p<0,05 (Stationary Data in First Difference)
PDB	0.0001	p<0,05 (Stationary Data in First Difference)

Based on the stationarity test results in Table 2, it is found that the data for PUAS, FASBIS, SBIS, and PDB are stationary in the first difference, with all p-values < 0.05. Therefore, the testing proceeds to the determination of the Optimal Lag.

The Optimal Lag Selection

The selection of the order or lag is carried out by considering the criteria of the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan Quinn (HQ) (Sugiyono 2015).

Table 3 Results of Optimal Lag Testing

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-114.2519	NA	0.000938	4.379702	4.527034	4.436522
1	-81.90855	58.69726*	0.000513*	3.774391	4.511052*	4.058492*
2	-66.43374	25.79135	0.000529	3.793842	5.119832	4.305224
3	-53.41637	19.76712	0.000606	3.904310	5.819628	4.642973
4	-36.75276	22.83532	0.000622	3.879732	6.384378	4.845676
5	-17.60670	23.40074	0.000602	3.763211*	6.857186	4.956436

From Table 3, the optimal lag obtained based on the consideration of the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan Quinon (HQ), marked with the symbol *, is lag 1.

Stability Test of VAR

The VAR stability needs to be tested before proceeding with further analysis. The VAR model is said to be stable if its roots have a modulus less than 1 (Saputra and Sukmawati 2021).

Table 4: VAR Stability Test Results

Root	Modulus
0.719549	0.719549
0.353833	0.353833
-0.246173 - 0.161041i	0.294169
-0.246173 + 0.161041i	0.294169

No root lies outside the unit circle.
 VAR satisfies the stability condition.

Based on Table 4, it is evident that the VAR model is stable since all of its roots have modulus values less than 1.

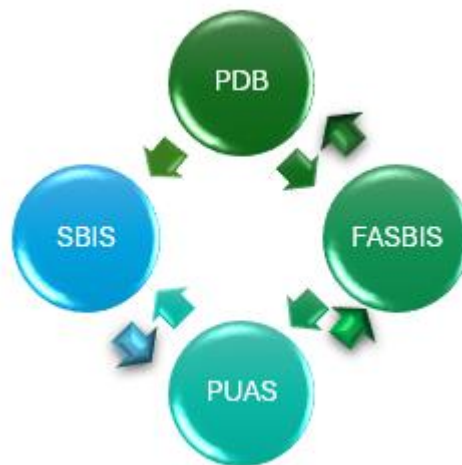
Granger Causality Test

Granger causality test is conducted to determine whether an endogenous variable can be treated as an exogenous variable. It begins with the uncertainty of interdependence between variables. If the probability value is less than 0.05, then there is a causality relationship.

Table 5 Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
PDB does not Granger Cause FASBIS	59	11.3568	0.0014
FASBIS does not Granger Cause PDB		4.92399	0.0306
PUAS does not Granger Cause FASBIS	59	16.5281	0.0002
FASBIS does not Granger Cause PUAS		4.24580	0.0440
SBIS does not Granger Cause FASBIS	59	1.48210	0.2286
FASBIS does not Granger Cause SBIS		0.12772	0.7222
PUAS does not Granger Cause PDB	59	0.24488	0.6226
PDB does not Granger Cause PUAS		2.56821	0.1147
SBIS does not Granger Cause PDB	59	3.27855	0.0756
PDB does not Granger Cause SBIS		8.39306	0.0054
SBIS does not Granger Cause PUAS	59	9.28059	0.0035
PUAS does not Granger Cause SBIS		4.49407	0.0385

Based on Table 5, the pattern of causality relationships is as follows:



Source: Primary Data Processed, 2024

Figure 2. Pattern of Causality Relationships

The probability value of PDB on FASBIS is 0.0014, which is smaller than $\alpha = 5\%$, and the value of FASBIS on PDB is 0.0306, also smaller than $\alpha = 5\%$. Thus, it is concluded that there is a two-way causality between PDB and FASBIS. This is consistent with the research (Emy Widyastuti and Nena Arinta 2020), which states a two-way or mutual impact between the Islamic financial banking sector and economic growth. As the economy grows, the demand for financing and financial products also tends to increase. Increased PDB can drive FASBIS growth because individuals and businesses seek alternative investments and financing that adhere to Sharia principles. On the other hand, the development of FASBIS can help improve financial access for previously underserved economic sectors, especially for those opting for Sharia-compliant financial products due to religious principles or moral values. This can stimulate economic growth by providing broader financial access and facilitating productive investments. Sustainable economic growth requires a stable financial system. FASBIS, with its principles more oriented toward justice and diversified risk, can help reduce financial instability that may affect economic growth. Conversely, strong economic growth can also enhance public confidence in the Islamic financial system.

The probability value of PUAS on FASBIS is 0.0002, smaller than $\alpha = 5\%$, and FASBIS on PUAS is 0.0440, also smaller than $\alpha = 5\%$. Thus, it is concluded that there is a two-way causality between PUAS and FASBIS, which is consistent with (Desi Nurmaida 2017). The growth of PUAS can drive the growth of FASBIS and vice versa. If PUAS develops, there will be more funds available to be channeled through Sharia-compliant deposit products. Conversely, if FASBIS develops, there will be more funds available to be traded in the Islamic interbank money market.

The probability value of SBIS on FASBIS is 0.2286, greater than $\alpha = 5\%$, and FASBIS on SBIS is 0.7222, also greater than $\alpha = 5\%$. Thus, it is concluded that there is no causality between SBIS and FASBIS. This is consistent with (Asbarini, Rahman, and Ulyani 2022), SBIS and FASBIS have different objectives and functions in the Islamic financial system. SBIS is usually issued by Bank Indonesia to regulate liquidity in the financial market, while FASBIS is a deposit product offered by Islamic banks to customers. Due to these differences in objectives and functions, there is not always a clear causal relationship between them.

The probability value of PUAS on PDB is 0.6226, greater than $\alpha = 5\%$, and PDB on PUAS is 0.1147, also greater than $\alpha = 5\%$. Thus, it is concluded that there is no causality between PUAS and PDB. This is supported by (Andini and Widiastuti 2016), PUAS and PDB may have different variable characteristics and time movements. PUAS tends to have rapid short-term fluctuations depending on market conditions and liquidity, while PDB reflects more stable long-term economic growth. Because of this difference, there is not always a clear causal relationship between PUAS and PDB.

The probability value of SBIS on PDB is 0.0756, greater than $\alpha = 5\%$, while PDB on SBIS is 0.0054, smaller than $\alpha = 5\%$. Thus, it is concluded that there is a one-way causality between PDB and SBIS. This is also supported by (Asbarini, Rahman, and

Ulyani 2022), PDB can be impacted by external factors such as global economic growth, fiscal policies, and structural changes in the economy. Changes in PDB can affect the demand and supply of SBIS as investment instruments or liquidity regulators, but not always vice versa.

The probability value of SBIS on PUAS is 0.0035, smaller than $\alpha = 5\%$, and PUAS on SBIS is 0.0385, greater than $\alpha = 5\%$. Thus, it is concluded that there is a two-way causality between SBIS and PUAS. This is supported by (Puswanti and Nasrullah 2020), PUAS is often used as a venue to trade SBIS, which is one of the commonly traded instruments in the Islamic interbank money market. Therefore, movements in PUAS can affect the demand and supply of SBIS, and conversely, movements in SBIS can also affect the activities and liquidity in PUAS.

Cointegration Test

Cointegration test is conducted to determine whether there is long-term equilibrium, meaning whether the variables in this study move together and have a stable relationship. Cointegration testing is performed using the Johansen's Cointegration Test method. If the probability value is less than 0.05, it indicates cointegration, which means there is long-term equilibrium (Gio et al. 2019).

Table 6 Result of Cointegration Test

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.633404	112.1981	47.85613	0.0000
At most 1 *	0.474570	54.99895	29.79707	0.0000
At most 2 *	0.202953	18.31725	15.49471	0.0183
At most 3 *	0.090184	5.387253	3.841466	0.0203

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Based on Table 6, it is evident that the probability values are below 0.05, indicating the presence of cointegration, meaning there is long-term equilibrium. Because the model exhibits cointegration, the analysis proceeds with the VECM Estimation model.

Table 7 VECM Estimation Results

Cointegrating Eq:	CoIntEq1
D(PDB(-1))	1.000000
D(PUAS(-1))	-17.06896 (1.81814) [9.38812]
D(FASBIS(-1))	14.85327 (7.75085) [1.91634]
D(SBIS(-1))	12.84713 (7.72854) [1.66230]
C	0.260145

Error Correction:	D(PDB,2)	D(PUAS,2)	D(FASBIS,2)	D(SBIS,2)
CointEq1	-0.003586 (0.01024) [-0.35016]	0.103179 (0.01313) [7.85598]	-0.002744 (0.00226) [-1.21434]	0.001083 (0.00323) [0.33517]
D(PDB(-1),2)	-0.438378 (0.12320) [-3.55823]	-0.122731 (0.15801) [-0.77674]	-0.021827 (0.02719) [-0.80280]	0.018474 (0.03887) [0.47527]
D(PUAS(-1),2)	-0.094266 (0.10333) [-0.91227]	0.318648 (0.13252) [2.40444]	-0.014795 (0.02280) [-0.64878]	-0.010351 (0.03260) [-0.31749]
D(FASBIS(-1),2)	0.327176 (0.63140) [0.51817]	0.433034 (0.80978) [0.53475]	-0.186572 (0.13934) [-1.33894]	-0.001172 (0.19921) [-0.00588]
D(SBIS(-1),2)	-0.367005 (0.38030) [-0.96505]	-0.135413 (0.48774) [-0.27763]	0.135288 (0.08393) [1.61196]	-0.645962 (0.11998) [-5.38375]
C	-0.017074 (0.09949) [-0.17161]	-0.019749 (0.12760) [-0.15477]	0.005898 (0.02196) [0.26863]	0.002984 (0.03139) [0.09506]

Based on table 7, it is observed that the top section of the table represents the long-term relationship between the four variables (GDP, PUAS, FASBIS, and SBIS). Meanwhile, the bottom part of the table represents the short-term relationship of these four variables. To interpret the results of the VECM estimation, the t-table value is required with the assistance of Excel using the formula $TINV(\text{probability}; \text{deg_freedom})$, resulting in a t-table value of 2.003240719. After obtaining the t-table value, it's time to compare the absolute value of the t-statistic (t-Test) with the t-table value. If the t-statistic value > t-table value, then it's significant, whereas if the t-statistic value < t-table value, then it's not significant (Civciristov et al. 2014).

From the VECM model results in table 1.8, it can be interpreted as follows:

In the short term, changes in GDP one month ago significantly affect GDP this month, with a t-statistic value of [-3.55823] > t-table value [2.003240719]. If GDP one month ago increases by 1 percent, it will lead to a decrease in GDP this month by 0.438378 rupiah.

In the short term, changes in PUAS one month ago significantly affect PUAS this month, with a t-statistic value of [2.40444] > t-table value [2.003240719]. If PUAS one month ago increases by 1 percent, it will lead to an increase in PUAS this month by 0.318648 rupiah. In the short term, changes in SBIS one month ago significantly affect SBIS this month, with a t-statistic value of [-5.38375] > t-table value [2.003240719]. If SBIS one month ago increases by 1 percent, it will lead to a decrease in SBIS this month by 0.645962 rupiah.

In the long term, PUAS significantly impacts GDP with a t-statistic value of [9.38812] > t-table value [2.003240719].

From the VECM Estimate results, the VAR model obtained is as follows:

Var Model:

$$\begin{aligned}
 D(\text{PDB},2) &= A(1,1)*D(\text{PDB}(-1)) + B(1,2)*D(\text{PUAS}(-1)) + B(1,3)*D(\text{FASBIS}(-1)) + \\
 &B(1,4)*D(\text{SBIS}(-1)) + B(1,5) + C(1,1)*D(\text{PDB}(-1),2) + C(1,2)*D(\text{PUAS}(-1),2) \\
 &+ C(1,3)*D(\text{FASBIS}(-1),2) + C(1,4)*D(\text{SBIS}(-1),2) + C(1,5) \quad (5)
 \end{aligned}$$

Impulse Response Function (IRF)

Impulse response function estimation is conducted to analyze the response of other variables to shocks from the innovation variable. This estimation assumes that each innovation variable is uncorrelated, so the effect of a shock can be traced directly. The impulse response graph will show how a variable reacts to shocks from other variables over several periods after the shock occurs (Gio et al. 2019).

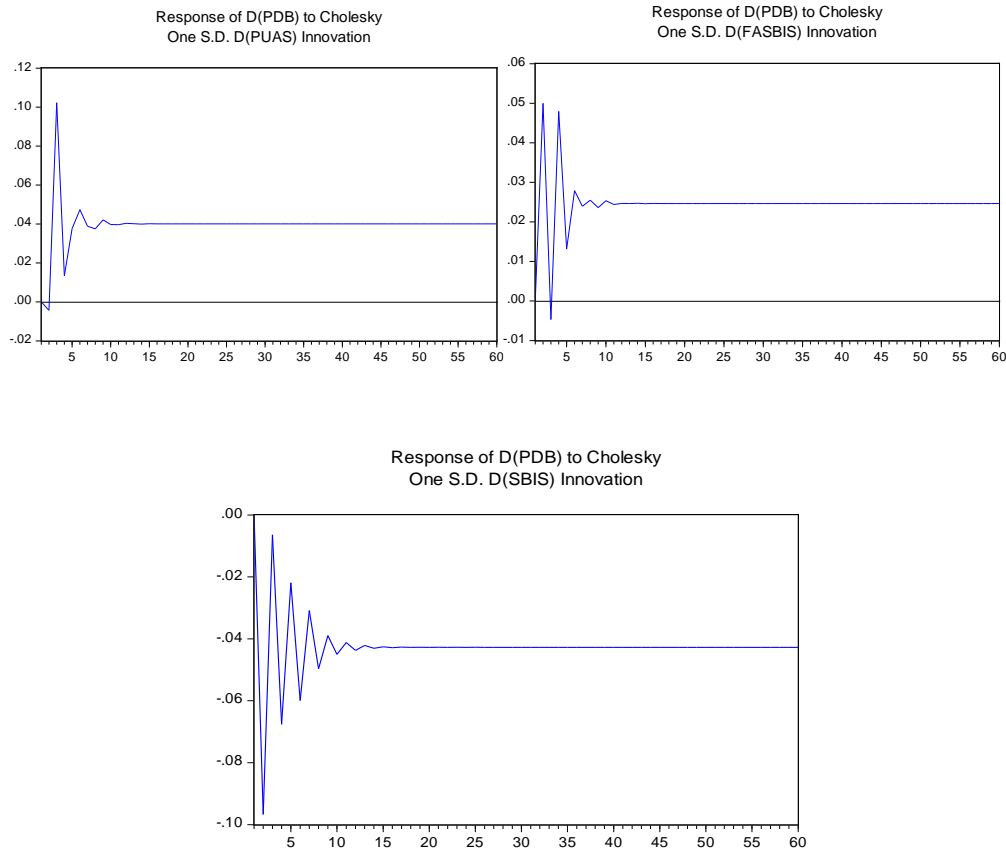


Figure 3. The impulse response graph

From the IRF test results, it is known that: The response of GDP to PUAS shows an increasing and decreasing response (highly fluctuating) from the early period up to the 10th period since the shock or disturbance occurs in PUAS. Subsequently, the fluctuations gradually decrease after the 10th period and slowly stabilize.

The response of GDP to FASBIS shows an increasing and decreasing response (highly fluctuating) from the early period up to the 10th period since the shock or disturbance occurs in FASBIS. Subsequently, the fluctuations gradually decrease after the 10th period and slowly stabilize.

The response of GDP to SBIS shows a fluctuating negative response from the early period and decreases until the 15th period. Subsequently, after the 15th period, it slowly stabilizes.

Forecast Error Variance Decomposition (FEVD)

Variance decomposition breaks down the variation of one endogenous variable into the shock components of other endogenous variables in the VAR system. This decomposition depicts the proportion of movement of a series caused by shocks from that variable itself compared to shocks from other variables.

Table 8 Result of FEVD Test

Variance Decomposition of D(PDB):					
Period	S.E.	D(PDB)	D(PUAS)	D(FASBIS)	D(SBIS)
1	0.961526	93.97860	6.021398	0.000000	0.000000
2	1.097848	92.59841	5.813991	0.334890	1.252708
3	1.103661	89.61002	9.298152	0.231110	0.860722
4	1.135515	89.70882	8.895868	0.358173	1.037137
5	1.152477	89.75154	9.054666	0.306772	0.887022
6	1.161719	89.43645	9.316354	0.302489	0.944705
7	1.173858	89.43970	9.399900	0.290770	0.869629
8	1.185934	89.40425	9.439938	0.284298	0.871519
9	1.196616	89.35566	9.529541	0.275936	0.838863
10	1.207578	89.32408	9.575230	0.271827	0.828861
20	1.312656	89.19285	9.814226	0.246511	0.746417
21	1.322694	89.18612	9.826193	0.245266	0.742423
22	1.332656	89.17996	9.837112	0.244132	0.738795
23	1.342545	89.17434	9.847111	0.243092	0.735461
24	1.352361	89.16916	9.856307	0.242136	0.732401
25	1.362107	89.16438	9.864795	0.241254	0.729574
26	1.371783	89.15995	9.872649	0.240437	0.726959
27	1.381392	89.15585	9.879941	0.239679	0.724530
28	1.390934	89.15203	9.886728	0.238974	0.722271
29	1.400411	89.14846	9.893060	0.238315	0.720162
30	1.409825	89.14513	9.898983	0.237700	0.718190
50	1.586407	89.10596	9.968544	0.230468	0.695027
51	1.594723	89.10479	9.970615	0.230253	0.694338
52	1.602996	89.10367	9.972607	0.230046	0.693675
53	1.611226	89.10259	9.974525	0.229846	0.693036
54	1.619415	89.10155	9.976373	0.229654	0.692420
55	1.627562	89.10055	9.978155	0.229469	0.691827
56	1.635669	89.09958	9.979874	0.229290	0.691255
57	1.643736	89.09865	9.981534	0.229118	0.690702
58	1.651763	89.09774	9.983138	0.228951	0.690168
59	1.659752	89.09687	9.984688	0.228790	0.689652
60	1.667702	89.09603	9.986187	0.228634	0.689153

From table 8, it is obtained that the variable PUAS has the greatest impact at the beginning of the period, extending to its long-term period. As the duration of its impact lengthens, its impact grows stronger, indicating that the PUAS variable has an increasingly significant effect on GDP in the long run. On the other hand, the variable FASBIS has the smallest impact compared to PUAS and SBIS, both in the short and long term. Additionally, the movement of its impact shows that as the period

lengthens, its effect diminishes. This suggests that while FASBIS has a considerable impact in the short term, its impact decreases over the long term. As for the SBIS variable, it is the second-largest impacttr after PUAS, both in the short and long term. Its impact also diminishes as the period lengthens, similar to FASBIS.

The impact of PUAS on GDP

The estimation results of VECM on GDP indicate that in the short term, PUAS does not show a significant impact on GDP. However, in the long term, the Islamic Interbank Money Market (PUAS) has a significant impact on GDP. Based on the IRF test, if there is a shock on PUAS, GDP also experiences a fluctuating shock up to period 10 and slowly stabilizes thereafter. According to the FEVD test, PUAS has the greatest impact on GDP compared to FASBIS and SBIS, both in the short and long term periods. This means that the Islamic Interbank Money Market (PUAS), which is a Sharia monetary policy to support liquidity in Islamic banking, has a non-significant short-term impact and a significant long-term impact, where in the long run, a higher value of PUAS will suppress economic growth. This is because an increase in PUAS is associated with an increase in interest rates, which makes investors prefer to participate in PUAS due to the higher yield. This is in line with (Suwondo 2023). This is also known as a contractionary monetary strategy, aimed at reducing high inflation in the long term, but has negative effects on economic growth in the short term.

The Impact of FASBIS on GDP

The estimation results of VECM on GDP indicate that the Shariah-compliant Bank Indonesia Deposit Facility (FASBIS) does not significantly affect GDP in both the short and long terms. FASBIS is also the smallest variable in influencing GDP compared to PUAS and SBIS, where its impact gradually diminishes and stabilizes over longer periods. This is in line with research by Asbarini et al (Asbarini, Rahman, and Ulyani 2022), which states that although the growth of Islamic banking continues to increase, the Islamic banking market is still segmented and has not yet reached a significant proportion in the Indonesian economy. Most people still use conventional banking products. Therefore, the impact of FASBIS is limited to the Islamic banking sector and does not affect the economy as a whole to a significant extent. Thus, the government needs to make policy decisions to develop regulations and educational literacy so that it can strengthen FASBIS in Islamic monetary instruments, so that it can have a significantly positive effect on GDP.

The Impact of SBIS on GDP

The VECM estimation results on GDP indicate that Shariah-compliant Bank Indonesia Certificates do not affect GDP either in the short or long term. Based on the IRF test, the shock caused by SBIS on GDP is negative and fluctuating insignificantly until stabilizing after the 15th period. The impact of SBIS on GDP, according to the FEVD test, ranks second largest after the PUAS variable, with

fluctuations that diminish as the period lengthens. This aligns with (Asbarini, Rahman, and Ulyani 2022), where although SBIS plays a role in supporting liquidity and developing the Islamic money market, its direct impact on the economy is not as significant as some other investment instruments. SBIS has a relatively smaller size and scale compared to other investment instruments such as government bonds or corporate bonds. So its influence does not have a significant impact on GDP, therefore the government needs special attention to the SBIS monetary instrument in the future so that its influence can have a significant positive impact on GDP growth in Indonesia.

CONCLUSION

In supporting an even better increase in the rate of economic growth, the government needs to strengthen Islamic monetary policy again. This has been proven that Islamic monetary policy tends to be more stable in encouraging economic strengthening even during the Covid-19 pandemic. The PUAS variable has a significant positive long-term effect on GDP. This shows that in the long term PUAS can influence GDP increase significantly. The increase in PUAS was triggered by an increase in interest rates, which caused investors to prefer playing PUAS because an increase in interest rates would increase income returns. So, indirectly, the increase in PUAS which is triggered by an increase in interest rates can suppress inflation growth, so that economic growth is controlled and can continue to develop well. Meanwhile, in the short term, each of the PUAS, FASBIS and SBIS variables does not have a significant influence on economic growth. Even though the growth of sharia banking continues to increase, the sharia banking market is still segmented and has not yet reached a significant proportion in the Indonesian economy. So the effect on economic growth is still not optimal. Therefore, the government needs to be consistent in strengthening and developing Islamic monetary policy as a driver of better economic growth both in terms of developing technological infrastructure, information systems, regulations and supervision that can encourage Islamic monetary literacy and innovation which tends to be more related to real activities and Real assets continue to grow rapidly and their influence reaches significant proportions in driving the economy in Indonesia to become even better.

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