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## Profit Sharing & Economic Growth: The Indonesian Experience

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# Profit-Sharing and Economic Growth: The Indonesian Experience

Zaini Ibrahim<sup>1\*</sup>, Muhammad Fajri<sup>2</sup>

<sup>1</sup>Universitas Islam Negeri Sultan Maulana Hasanuddin Banten, Indonesia

<sup>2</sup>Universitas Islam "45" Bekasi, Indonesia

E-mail: <sup>1</sup>[zaini.ibrahim@uinbanten.ac.id](mailto:zaini.ibrahim@uinbanten.ac.id), <sup>2</sup>[fjri.mhmd@gmail.com](mailto:fjri.mhmd@gmail.com)

\*Corresponding author

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## ABSTRACT

**Research Originality:** The research's originality investigated the causal relationship between profit-sharing schemes (saving and financing) and economic growth.

**Research Objectives:** This study aimed to examine the effect of profit-sharing schemes in Islamic banking on Indonesia's economic growth, both in the short and long term. Another objective was investigating the causal relationship between profit-sharing schemes and economic growth.

**Research Methods:** This study used two models: the risk-sharing deposit (RSD) and the profit-and-loss-sharing financing (PLS). It used secondary data from the Financial Services Authority of the Republic of Indonesia, Bank Indonesia (BI), and the Central Bureau of Statistics of the Republic of Indonesia. It also used Nonlinear Autoregressive Distributed Lag (NARDL), Error Correction Model (ECM), and Granger Causality methods to analyze quarterly data for the 2009Q1-2022Q4 period.

**Empirical Results:** The results showed that profit-sharing schemes did not have a significant effect on Indonesia's economic growth in the short-term and long-term because the probability figure was more than 10%. This study obtained new findings, showing that the relationship between the RSD instrument and economic growth followed the feedback hypothesis.

**Implications:** The results of this study had implications for Islamic banking efforts to increase efficiency, improve regulations, and reallocate financing.

## Keywords:

feedback hypothesis; supply-leading hypothesis; profit-sharing schemes; economic growth; nonlinear autoregressive distributed lag

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## INTRODUCTION

Several recent studies have explored the intricate relationship between financial sector development and economic growth. This relationship is characterized by contrasting viewpoints, with one asserting the positive impact of financial sector development on economic growth and the other presenting an opposing perspective (McKinnon, 2010). In addition, the first viewpoint is encapsulated in Schumpeter's theorem, positing that the financial system plays an essential role in stimulating the development of the economy (supply-leading hypothesis). According to this theorem, intermediary services offered by financial institutions facilitated through financial mobilization and credit channels are essential for financing technological innovation and sustaining economic development (King & Levine, 1993). However, the openness of the banking system can create instability in the financial sector, which tends to impede growth (Shaw, 1973). The second viewpoint adheres to the hypothesis that economic growth supports the development of the financial sector (demand-following hypothesis). In this context, the expansion and diversification of the real sector create a demand for financial institutions to enhance the efficiency of capital recruitment (Robinson, 1979). Apart from these viewpoints, a third hypothesis, the feedback hypothesis, posits that the financial sector and economic growth are mutually dependent (Patrick, 1966). This dynamic relationship suggests that as the economy expands, it is supported by capital accumulation facilitated by the presence of financial institutions. Simultaneously, economic growth generates a demand for financial services, absorbing the surplus income of individuals. A subsequent hypothesis proposed by Lucas (1988) asserts that financial sector development and economic growth are independent (neutrality hypothesis).

Controversies regarding the influence of financial system development on economic growth are evident in the Islamic financial sector, particularly in Islamic banking. Several empirical studies have offered divergent conclusions, with some supporting the supply-leading hypothesis in the context of Islamic banking and economic growth (Abedifar et al., 2016; Boukhatem & Moussa, 2018; Caporale et al., 2020; Caporale & Helmi, 2018; Kassim, 2016; Kismawadi, 2024; Mensi et al., 2020; Shah et al., 2020; Abubakar & Haq, 2020; Tabash & Anagreh, 2017; Zarrouk et al., 2017). Meanwhile, other studies suggested a neutral relationship between the two variables. This study shows that the development of transactions in Islamic banking has no impact on economic growth and vice versa (Afandi & Amin, 2019; Al Fathan & Arundina, 2019). A distinct perspective by Anwaret al. (2020) proposed a bidirectional relationship, while Nofrianto et al. (2021) stated that the development of Islamic banking impeded economic growth.

A typical question that often arises is: Why is it essential to explore themes that have been widely discussed in previous literature? In addition, most existing studies exploring the relationship between the development of Islamic banking and economic growth are based on samples from developed countries. These countries typically have banking systems and financial products that exhibit a relatively higher safety from information asymmetries, lower transaction costs, and more complete regulations (Boukhatem & Moussa, 2018). Based on the findings, it is still unclear whether the conclusions regarding the influence

of Islamic banking development on economic growth also apply to profit-sharing schemes, which have recently been shown to play an essential role in maintaining the financial system's stability.

The selection of profit-sharing schemes was based on their ability to show the positioning of Islamic banks compared to conventional banks. In contrast to non-profit-sharing schemes, commonly referred to by most Islamic finance experts as just a mirroring of the interest system (Abbas & Arizah, 2019), profit-sharing schemes are unique due to their ability to encourage the growth of the productive sector because they have a return must be shared between *Shahibul Maal* and *Mudharib* (Fianto et al., 2018). Profit-sharing schemes can also maintain balance in the monetary and real sectors because the business's development determines the disbursement of funds (Jedidia & Hamza, 2023). Another unique aspect of these schemes lies in their ability to instill financial discipline in managing resources to be shared (Suzuki & Miah, 2023).

According to previous studies, profit-sharing schemes in Islamic banking are divided into two types, namely those from the liability side in the form of Risk-Sharing Deposits (RSD) and others from the asset side in the form of Profit and Loss-Sharing financing (PLS). The existing literature reflects a paucity of empirical studies examining these two products, with significant exceptions being the reports of Kassim (2016) and Chowdhury et al. (2018). Kassim (2016) focused on RSD products, showing that changes in RSD did not affect Malaysia's economic growth. Meanwhile, Chowdhury et al. (2018) focused on the asset side, concluding that PLS financing positively affected Bangladesh's economic growth.

Table 1. The Growth of Profit-Sharing Schemes and Indonesian GDP (in %)

Year	Growth of RSD	Growth of PLS	Growth of GDP
2009	40,67	24,92	4,63
2010	42,91	36,72	6,22
2011	54,01	25,52	6,49
2012	24,83	35,98	6,26
2013	26,08	34,79	5,56
2014	20,99	19,14	5,01
2015	6,43	18,50	4,88
2016	21,31	24,07	5,03
2017	19,44	26,61	5,07
2018	10,30	22,63	5,17
2019	10,50	17,71	5,02
2020	7,08	9,05	-2,07
2021	17,48	5,83	3,7
2022	11,63	18,41	5,31
<b>Average</b>	<b>22</b>	<b>23</b>	<b>4,73</b>

Source: (BPS-Statistics Indonesia, 2022; OJK, 2022); data is processed

In contrast to the reports conducted by Kassim (2016) and Chowdhury et al. (2018), the focus of this study extends to Indonesia for three compelling reasons. First, Indonesia has great potential because it has the world's largest Muslim population. It is one of the countries used as a barometer in developing profit-sharing schemes for other countries (Fianto et al., 2018). Second, it is one of the first countries to reform the financial system by integrating Islamic and conventional banking management (Anwar et al., 2020). Third, the average growth of profit-sharing schemes from 2009 to 2022 is more than 22%, while economic growth in the same period is relatively low, standing at only 4.73%, as shown in Table 1. Based on this argument, an in-depth study is needed regarding the influence of profit-sharing schemes on Indonesia's economic growth.

This study aims to determine the effect of profit-sharing schemes on economic growth in the short and long term and show the causal relationship between their development and economic growth in Indonesia. The results are expected to contribute to the design of better profit-sharing policies and practices by the central bank and Islamic banking.

## METHODS

This study used quarterly data from 2009Q1 to 2022Q4. Furthermore, it tested secondary data from the Financial Services Authority of the Republic of Indonesia, Bank Indonesia (BI), and the Central Bureau of Statistics of the Republic of Indonesia. The primary variable examined was profit-sharing schemes, consisting of savings and financing. Deposits were given the notation RSD, namely the total deposits under a *mudharabah* agreement. Meanwhile, it was written in the PLS Financing notation on the financing side, which comprised *mudharabah* and *musyarakah* financing. RSD and PLS were expected to positively impact real GDP in this study (Chowdhury et al., 2018; Kassim, 2016).

This report also included other independent macroeconomic factors, including gross fixed capital formation (GFCF), government expenditure (GE), trade openness (TO), and inflation (INF). Tabash and Anagreh (2017) stated that GFCF was expenditure on only capital with more than one year of practical life. In this study, the GFCF variable was a proxy for capital accumulation, which was expected to influence real GDP positively.

GE was a variable for government spending in the public sector, and the relationship between government consumption and economic growth was still being debated from two different points of view. Government spending could increase economic growth when used for infrastructure development. Meanwhile, it could damage economic performance, primarily through private investment. In this report, more lavish government spending was expected to impact real GDP positively (Chowdhury et al., 2018).

TO was the ratio of total exports and imports to GDP. The more open a country was, the higher its productivity level because it could develop technology, take advantage of economies of scale, allocate resources efficiently through comparative advantages, and

encourage competition in domestic and foreign markets. This variable was expected to contribute positively to real GDP because it opened access for local entrepreneurs to enter the global market (Shah, Rashid, & Hassan, 2020).

The inflation rate reflected changes in the purchasing power of individuals, impacting consumption, savings and investment decisions, and economic growth. High inflation has always been associated with weakening economic activity (Gheeraert & Weill, 2015). Furthermore, countries with controlled inflation rates tended to have better economic growth.

This paper referred to two models that Kassim (2016) and Chowdhury et al. (2018) tested. The first model was to test the contribution of RSD to real GDP, and the second was to assess the contribution of PLS financing. These two models were analyzed using the Nonlinear Autoregressive Distributed Lag (NARDL) method developed by Shin, Yu, & Greenwood-Nimmo (2013). This method helped to test asymmetric relationships between variables in the long term. The asymmetric relationship in this study was that fluctuations (up and down) occurring in the independent variable had a different influence on the dependent variable (Karim et al., 2017). Both models were written in the following equation:

$$LNGDPR = \beta_0 + \beta_1 LNRSD_t^+ + \beta_2 LNRSD_t^- + \beta_3 LNGFCF_t^+ + \beta_4 LNGFCF_t^- + \beta_5 LNGE_t^+ + \beta_6 LNGE_t^- + \beta_7 TO_t^+ + \beta_8 TO_t^- + \beta_9 INF_t^+ + \beta_{10} INF_t^- + e_t \tag{1}$$

$$LNGDPR = \beta_0 + \beta_1 LNPLS_t^+ + \beta_2 LNPLS_t^- + \beta_3 LNGFCF_t^+ + \beta_4 LNGFCF_t^- + \beta_5 LNGE_t^+ + \beta_6 LNGE_t^- + \beta_7 TO_t^+ + \beta_8 TO_t^- + \beta_9 INF_t^+ + \beta_{10} INF_t^- + e_t \tag{2}$$

Where LNGDPR = natural logarithm of real GDP, LNRSD = natural logarithm of RSD, LNPLS = natural logarithm of PLS financing, LNGFCF = natural logarithm of gross fixed capital formation, LNGE = national logarithm of government expenditure, TO = trade openness, INF = monthly inflation, and p = lag length. All variables were converted into natural logarithms except TO and inflation. Positive (+) and negative (-) signs were conditions when the independent variable experienced an increase or decrease.

When applied to the NARDL model, equations (1) and (2) become the following equations (3) and (4):

$$\begin{aligned} \Delta LNGDPR_t = & \beta_0 + \beta_1 LNGDPR_{t-1} + \beta_2 LNRSD_{t-1}^+ + \beta_3 LNRSD_{t-1}^- + \beta_4 LNGFCF_{t-1}^+ + \beta_5 LNGFCF_{t-1}^- + \\ & \beta_6 LNGE_{t-1}^+ + \beta_7 LNGE_{t-1}^- + \beta_8 TO_{t-1}^+ + \beta_9 TO_{t-1}^- + \beta_{10} INF_{t-1}^+ + \beta_{11} INF_{t-1}^- + \\ & \sum_{k=1}^n \alpha_{1i} \Delta LNGDPR_{t-k} + \sum_{k=0}^n (\alpha_{2i} \Delta LNRSD_{t-k}^+ + \alpha_{3i} \Delta LNRSD_{t-k}^-) + \\ & \sum_{k=0}^n (\alpha_{4i} \Delta LNGFCF_{t-k}^+ + \alpha_{5i} \Delta LNGFCF_{t-k}^-) + \sum_{k=0}^n (\alpha_{6i} \Delta LNGE_{t-k}^+ + \alpha_{7i} \Delta LNGE_{t-k}^-) + \\ & \sum_{k=0}^n (\alpha_{8i} \Delta TO_{t-k}^+ + \alpha_{9i} \Delta TO_{t-k}^-) + \sum_{k=0}^n (\alpha_{10i} \Delta INF_{t-k}^+ + \alpha_{11i} \Delta INF_{t-k}^-) + \mu_t \end{aligned} \tag{3}$$

$$\begin{aligned} \Delta LNGDPR_t = & \beta_0 + \beta_1 LNGDPR_{t-1} + \beta_2 LNPLS_{t-1}^+ + \beta_3 LNPLS_{t-1}^- + \beta_4 LNGFCF_{t-1}^+ + \beta_5 LNGFCF_{t-1}^- + \\ & \beta_6 LNGE_{t-1}^+ + \beta_7 LNGE_{t-1}^- + \beta_8 TO_{t-1}^+ + \beta_9 TO_{t-1}^- + \beta_{10} INF_{t-1}^+ + \beta_{11} INF_{t-1}^- + \\ & \sum_{k=1}^n \alpha_{1i} \Delta LNGDPR_{t-k} + \sum_{k=0}^n (\alpha_{2i} \Delta LNPLS_{t-k}^+ + \alpha_{3i} \Delta LNPLS_{t-k}^-) + \\ & \sum_{k=0}^n (\alpha_{4i} \Delta LNGFCF_{t-k}^+ + \alpha_{5i} \Delta LNGFCF_{t-k}^-) + \sum_{k=0}^n (\alpha_{6i} \Delta LNGE_{t-k}^+ + \alpha_{7i} \Delta LNGE_{t-k}^-) + \\ & \sum_{k=0}^n (\alpha_{8i} \Delta TO_{t-k}^+ + \alpha_{9i} \Delta TO_{t-k}^-) + \sum_{k=0}^n (\alpha_{10i} \Delta INF_{t-k}^+ + \alpha_{11i} \Delta INF_{t-k}^-) + \mu_t \end{aligned} \tag{4}$$

The next procedure for estimating equations (3) and (4) above was as follows: In the first step, equations (3) and (4) were calculated in the OLS method using the general to specific method to eliminate insignificant lags. The second step investigated cointegration or the long-term relationship between the dependent and independent variables using the

Bounds Testing approach developed by Pesaran, Shin, & Smith (2001). When  $\beta_i = 0$ ,  $i = 1, 2, 3, \dots, 11$ , then there was no cointegration or long-term relationship between variables, and vice versa. The third step was to test the long-term asymmetric influence of RSD and PLS on GDP.

The following mechanism was to carry out short-term analysis through the Error Correction Model (ECM) equation as follows:

$$\Delta LNGDPR_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta LNGDPR_{t-i} + \sum_{i=0}^p \beta_2 \Delta LNRSD_{t-i} + \sum_{i=0}^p \beta_3 \Delta LNGFCF_{t-i} + \sum_{i=0}^p \beta_4 \Delta LNGE_{t-i} + \sum_{i=0}^p \beta_5 \Delta TO_{t-i} + \sum_{i=0}^p \beta_6 \Delta INF_{t-i} + \varphi ECT_{t-1} + \eta_t \tag{5}$$

$$\Delta LNGDPR_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta LNGDPR_{t-i} + \sum_{i=0}^p \beta_2 \Delta LNPLS_{t-i} + \sum_{i=0}^p \beta_3 \Delta LNGFCF_{t-i} + \sum_{i=0}^p \beta_4 \Delta LNGE_{t-i} + \sum_{i=0}^p \beta_5 \Delta TO_{t-i} + \sum_{i=0}^p \beta_6 \Delta INF_{t-i} + \varphi ECT_{t-1} + \eta_t \tag{6}$$

ECT is the Error Correction Term, a parameter that shows the dependent variable's response speed to changes occurring in the independent variable in the long term. Apart from using ECM, Granger causality analysis was also used to determine the causal relationship between endogenous variables (Engle & Granger, 1987).

## RESULTS AND DISCUSSION

Estimating the NARDL model required stationary data at the first level of difference. Therefore, the first step was to perform a stationarity test using the Augmented Dicky-Fuller (ADF) and Phillip-Perron (PP) methods, as presented in Table 2. The results showed that all variables were stationery at the first difference level. This showed that there was no stationary data at the second level of difference, and NARDL model estimation could be carried out.

Table 2. ADF and PP Unit Root Test Results

Variables	ADF Test		PP Test	
	Level	1st Differ	Level	1st Differ
LNGDPR	0.591	0.000***	0.000***	0.000***
LNRSD	0.000***	0.001***	0.000***	0.000***
LNPLS	0.007***	0.000***	0.012**	0.000***
LNGFCF	0.351	0.000***	0.000***	0.000***
LNGE	0.000***	0.000***	0.000***	0.000***
TO	0.024**	0.000***	0.027**	0.000***
INF	0.000***	0.000***	0.000***	0.000***

Note: \*\*\*/\*\*/\* denote significance at 1%, 5%, and 10% levels respectively.  
Source: Eviews' output

The NARDL model estimated in equations (3) and (4) was carried out to determine the two models' short-term and long-term asymmetric effects, with the results being presented in Table 3. Furthermore, both models used a maximum lag of three because the data used was quarterly. The lag estimation results in the LNRSD model showed that the increase and decrease in RSD did not significantly affect Indonesia's economic growth.

From the perspective of other macroeconomic variables, government spending in the third lag ( $\Delta \text{LNNGE}^+_{t-3}$ ) positively impacted on GDP. The LNGE coefficient of 0.370 showed that every 1% increase in government spending impacted an increment in real GDP by 0.37%. If used effectively, government spending could contribute positively to economic growth (Kassim, 2016). The Indonesian government's recent focus on spending had been aimed at building valuable infrastructure for smoothing distribution channels, thereby increasing productivity, as reflected in the increase in GDP. This finding contradicts the conclusion of Chowdhury et al. (2018) and Mensi et al. (2020), stating the negative influence of government consumption on economic growth due to the perceived lack of targeting.

Table 3. NARDL Estimates Results

LNRS Model			LNPLS Model		
Variables	Coefficients	Std. Errors	Variables	Coefficients	Std. Errors
C	12.141	17.485	C	0.652	18.522
LNGDPR <sub>t-1</sub>	-0.825	1.225	LNGDPR <sub>t-1</sub>	-0.005	1.257
LNRS <sup>+</sup>	0.277	1.029	LNPLS <sup>+</sup> <sub>t-1</sub>	-2.801	5.202
LNRS <sup>-</sup>	-0.313	1.295	LNPLS <sup>-</sup> <sub>t-1</sub>	3.141	5.579
LNGFCF <sup>+</sup>	-0.405	0.724	LNGFCF <sup>+</sup> <sub>t-1</sub>	-0.248	1.487
LNGFCF <sup>-</sup>	0.544	0.709	LNGFCF <sup>-</sup> <sub>t-1</sub>	0.839	0.543
LNGE <sup>+</sup>	0.098	0.157	LNGE <sup>+</sup> <sub>t-1</sub>	-0.067	0.297
LNGE <sup>-</sup>	0.074	0.391	LNGE <sup>-</sup> <sub>t-1</sub>	-0.119	0.333
TO <sup>+</sup>	0.006	0.009	TO <sup>+</sup> <sub>t-1</sub>	-0.002	0.010
TO <sup>-</sup>	0.000	0.001	TO <sup>-</sup> <sub>t-1</sub>	-0.001	0.001
INF <sup>+</sup>	-0.026	0.032	INF <sup>+</sup> <sub>t-1</sub>	-0.052*	0.026
INF <sup>-</sup>	-0.011	0.012	INF <sup>-</sup> <sub>t-1</sub>	-0.022	0.015
$\Delta \text{LNGDPR}_{t-1}$	0.320	0.814	$\Delta \text{LNGDPR}_{t-1}$	-0.668	0.600
$\Delta \text{LNRS}^+_{t-1}$	0.972	1.357	$\Delta \text{LNPLS}^+_{t-1}$	-7.311	8.517
$\Delta \text{LNRS}^+_{t-2}$	-0.578	1.236	$\Delta \text{LNPLS}^+_{t-2}$	-0.668	5.420
$\Delta \text{LNRS}^+_{t-3}$	-0.215	1.332	$\Delta \text{LNPLS}^+_{t-3}$	1.066	5.104
$\Delta \text{LNRS}^-_{t-1}$	-0.892	1.356	$\Delta \text{LNPLS}^-_{t-1}$	8.372	9.423
$\Delta \text{LNRS}^-_{t-2}$	0.801	1.231	$\Delta \text{LNPLS}^-_{t-2}$	0.840	5.922
$\Delta \text{LNRS}^-_{t-3}$	0.232	1.357	$\Delta \text{LNPLS}^-_{t-3}$	-0.939	5.693
$\Delta \text{LNGFCF}^+_{t-1}$	-0.224	0.510	$\Delta \text{LNGFCF}^+_{t-1}$	0.303	0.477
$\Delta \text{LNGFCF}^+_{t-2}$	-0.019	0.230	$\Delta \text{LNGFCF}^+_{t-2}$	-0.138	0.278
$\Delta \text{LNGFCF}^+_{t-3}$	-0.042	0.168	$\Delta \text{LNGFCF}^+_{t-3}$	-0.221	0.158
$\Delta \text{LNGFCF}^-_{t-1}$	-0.184	0.598	$\Delta \text{LNGFCF}^-_{t-1}$	-0.699	0.594
$\Delta \text{LNGFCF}^-_{t-2}$	-0.191	0.352	$\Delta \text{LNGFCF}^-_{t-2}$	-0.506	0.462
$\Delta \text{LNGFCF}^-_{t-3}$	-0.210	0.344	$\Delta \text{LNGFCF}^-_{t-3}$	-0.755**	0.265

LNRS Model			LNPLS Model		
Variables	Coefficients	Std. Errors	Variables	Coefficients	Std. Errors
$\Delta \text{LNGE}^+_{t-1}$	0.163	0.299	$\Delta \text{LNGE}^+_{t-1}$	0.563	0.327
$\Delta \text{LNGE}^+_{t-2}$	0.271	0.187	$\Delta \text{LNGE}^+_{t-2}$	0.149	0.225
$\Delta \text{LNGE}^+_{t-3}$	0.370*	0.190	$\Delta \text{LNGE}^+_{t-3}$	0.311	0.224
$\Delta \text{LNGE}^-_{t-1}$	-0.180	0.325	$\Delta \text{LNGE}^-_{t-1}$	-0.237	0.255
$\Delta \text{LNGE}^-_{t-2}$	-0.108	0.194	$\Delta \text{LNGE}^-_{t-2}$	-0.090	0.187
$\Delta \text{LNGE}^-_{t-3}$	0.154	0.148	$\Delta \text{LNGE}^-_{t-3}$	-0.160	0.131
$\Delta \text{TO}^+_{t-1}$	0.005	0.010	$\Delta \text{TO}^+_{t-1}$	0.005	0.007
$\Delta \text{TO}^+_{t-2}$	0.005	0.008	$\Delta \text{TO}^+_{t-2}$	0.004	0.005
$\Delta \text{TO}^+_{t-3}$	0.006	0.010	$\Delta \text{TO}^+_{t-3}$	0.002	0.006
$\Delta \text{TO}^-_{t-1}$	0.000	0.001	$\Delta \text{TO}^-_{t-1}$	0.001	0.000
$\Delta \text{TO}^-_{t-2}$	0.000	0.000	$\Delta \text{TO}^-_{t-2}$	0.001	0.000
$\Delta \text{TO}^-_{t-3}$	0.000	0.001	$\Delta \text{TO}^-_{t-3}$	0.000	0.000
$\Delta \text{INF}^+_{t-1}$	0.025	0.027	$\Delta \text{INF}^+_{t-1}$	0.051*	0.024
$\Delta \text{INF}^+_{t-2}$	0.019	0.022	$\Delta \text{INF}^+_{t-2}$	0.042*	0.020
$\Delta \text{INF}^+_{t-3}$	0.011	0.012	$\Delta \text{INF}^+_{t-3}$	0.019	0.012
$\Delta \text{INF}^-_{t-1}$	0.010	0.010	$\Delta \text{INF}^-_{t-1}$	0.020**	0.009
$\Delta \text{INF}^-_{t-2}$	0.007	0.007	$\Delta \text{INF}^-_{t-2}$	0.014	0.009
$\Delta \text{INF}^-_{t-3}$	0.003	0.004	$\Delta \text{INF}^-_{t-3}$	0.004	0.005
R-squared	0.960		0.972		
CUSUM	Stabil		Stabil		
ARCH test	1.534**		1.398**		
Cointeg. test	1.659***		3.130**		

Note: \*\*\*/\*\*/\* denote significance at 1%, 5%, and 10% levels respectively.

Source: Eviews' output

The estimation results in the LNPLS model also showed that PLS financing had no significant effect on Indonesia's economic growth. This result was inconsistent with the conclusions of Chowdhury et al. (2018), stating that PLS-based financing instruments had a positive and significant effect on economic growth. The perceived benefits of PLS financing were in the form of creating efficient resource allocation. Meanwhile, Nofrianto et al. (2021) explained that the proportion of dominant *murabahah* financing was why the effect of PLS financing still needed to be felt in the economy. Murabaha financing, which was consumer, did not provide a significant multiplier effect on the economy. Hassan & Aliyu (2018) also emphasized that *murabahah* financing did not have better economic benefits than the interest system and tended to create inflation through demand attraction due to increasing aggregate consumption. Meanwhile, PLS financing was more directed towards the productive sector, providing a more significant multiplier effect through investment in new projects.

Macroeconomic variables that were proven to influence economic growth (LNGDPR) were the inflation rate ( $INF^+_{t-1}$ ) and gross fixed capital formation ( $\Delta LNGFCF_{t-3}$ ). The positive inflation coefficient figure at lag one ( $INF^+_{t-1}$ ) was -0.052, showing that a 1% increase in inflation in the previous period reduced Indonesia's real GDP by 0.052%. The influence of inflation on economic growth was in line with the results of Kassim's study (2016), where it negatively influenced the real sector, as represented by the industrial production index (IPI). The positive impact of inflation showed that an increase in commodity prices by a certain percentage served as a stimulus for producers to increase output, further contributing to economic growth (Mensi et al., 2020).

The negative investment variable in the third leg ( $\Delta LNGFCF_{t-3}$ ) was showed by a coefficient of -0.755. This showed that a 1% decrease in investment caused a contraction in real GDP by 0.76%. Furthermore, the results were consistent with the conclusions of Kassim (2016) and Tabash & Anagreh (2017), who stated that investment was essential in driving the real sector. Nofrianto et al. (2021) added that for investment to have a more significant impact on the economy, it must be supported by efficient bureaucratic services and legal certainty.

Table 4. Asymmetric Test Results

Variables	LNRSD Model		LNPLS Model	
	Coefficients	Std. Errors	Coefficients	Std. Errors
LNRSD	0.534	0.689	-	-
LNPLS	-	-	1269.78	341156.49
LNGFCF	0.331	0.430	232.16	62216.57
LNGE	0.066	0.041	-11.16	2991.25
TO	0.002	0.002	-0.27	72.95
INF	-0.004	0.003	-6.41	1720.96

Source: Eviews' output

At the end of the table, there was information on the coefficient of determination ( $R^2$ ) and several model tests, namely CUSUM (Cumulative Sum), to determine the level of model stability, Autocorrelation Condition Heteroskedasticity (ARCH) to test for heteroscedasticity, and cointegration test using the bound testing approach. The results for LNRSD and LNPLS models show that all CUSUM statistical plots are within critical limits with a significance level of 1% and 5%, respectively. Therefore, all coefficients in the regression are stable, so the results are suitable for policy recommendations.

Next, the authors conducted an asymmetric test to find long-term asymmetric effects in the LNRSD and LNPLS models. Based on the results of the asymmetric test in Table 4, the five variables in both models did not have an asymmetric effect on Indonesia's real GDP. To study more deeply, the authors present the long-term asymmetric coefficient to determine how significant the five variables' asymmetric impact is on GDPR. As presented in Table 5, it can be seen that asymmetric effects in the

long term did not occur in the LNPLS model. In contrast, in the LNRSD model, an asymmetric influence was found on the government expenditure (LNGE) and trade openness variables (TO). When government expenditure increases by 1% (LNGE<sup>+</sup>), it will encourage Indonesia's economic growth by 0.099%. Meanwhile, trade openness has an asymmetric influence on economic growth; where trade openness falls by 1% (TO<sup>-</sup>), it causes GDP to also drop by 0.0005%.

**Table 5. Long-Run Asymmetric Coefficient**

Variables	LNRSD Model		LNPLS Model	
	Coefficients	Probabilities	Coefficients	Probabilities
LNRSD <sup>+</sup>	0.261	0.429	-	-
LNRSD <sup>-</sup>	-0.273	0.488	-	-
LNPLS <sup>+</sup>	-	-	-598.566	0,997
LNPLS <sup>-</sup>	-	-	671.213	0,997
LNGFCF <sup>+</sup>	0.034	0.901	-52.956	0,997
LNGFCF <sup>-</sup>	-0.297	0.225	179.202	0,997
LNGE <sup>+</sup>	0.099*	0.061	-14.296	0,997
LNGE <sup>-</sup>	0.033	0.416	-25.459	0,997
TO <sup>+</sup>	0.003	0.203	-0.410	0,997
TO <sup>-</sup>	0.0005**	0.034	-0.142	0,997
INF <sup>+</sup>	-0.006	0.223	-11.152	0,997
INF <sup>-</sup>	-0.001	0.377	4.745	0,997

Note: \*\*\*/\*\*/\* denote significance at 1%, 5%, and 10% levels respectively.

Source: Eviews' output

Short-term analyses using the ECM are presented in Table 6. The LNRSD and LNPLS models found no short-term influence of profit-sharing schemes and other macroeconomic variables on economic growth (LNGDPR). The analysis resulting from the LNRSD model complemented the findings obtained by Kassim's study (2016), stating that the growth of Islamic deposits did not affect the development of the real sector in the short term. The zero influence of RSD on real GDP was supported by data on the ratio of RSD to total national banking third-party funds, which was recorded as still minimal, reaching 6.04% during the 2009-2022 period (OJK, 2022). In the same period, the RSD component was still dominated by the short-term one-month portfolio of more than 50% (OJK, 2022). In addition, the behavior of significant depositors tended to evade risk-sharing and readily migrate when there is an increase in deposit interest rates (Caporale et al., 2020).

The results obtained for PLS financing were inconsistent with the conclusions of Chowdhury et al. (2018), stating that the PLS instrument positively affected economic growth. The study's results were also consistent with the findings of Afandi and Amin (2019), showing that working capital financing did not affect Indonesia's economic growth.

6 These findings were consistent with the conclusions of Nofrianto et al. (2021), where Islamic financing, government spending, and the amount of investment had no effect in the short term because all 3 required a long time to have an impact.

Table 6. ECM Estimates of Short-Run Relationship

Regressors	LNRSD Model		LNPLS Model	
	Coefficients	t-statistics	Coefficients	t-statistics
C	-0.013	-0.355	0.091	1.550
$\Delta$ LNGDPR(-1)	0.751	0.776	-0.568	-0.525
$\Delta$ LNRSD(-1)	0.788	1.233	-	-
$\Delta$ LNPLS(-1)	-	-	-0.767	-0.900
$\Delta$ LNGFCF(-1)	-0.434	-0.670	-0.033	-0.055
$\Delta$ LNGE(-1)	0.026	0.317	0.015	0.170
$\Delta$ TO(-1)	0.003	0.695	0.002	0.514
$\Delta$ INF(-1)	-0.029	-1.606	-0.011	-0.563
ECT(-1)	-0.169	-0.306	0.710	0.997
<b>Diagnostic Test Statistics</b>				
R-squared	0.102		0.089	
Adjusted R-Squared	-0.036		-0.052	
F-statistic	0.737		0.628	
SE-regression	0.154		0.155	
Residual sum of Squared	1.074		1.091	
DW-Statistic	1.991		1.974	

Source: Eviews' output.

2  
1 From the Granger Causality output in Table 7, this study focused on finding a causal relationship between profit-sharing schemes and economic growth (LNGDPR). Meanwhile, from the liability side, a two-way causal relationship was found between LNGDPR and LNRSD and vice versa. These results indicated the validity of the feedback hypothesis regarding the relationship between the development of RSD and economic growth. However, this causal relationship was still relatively weak because it was at the 10% significance level. The findings obtained strengthened the conclusions of Anwar et al. (2020), who stated that there was a two-way relationship between Islamic deposits and Indonesia's economic growth. Islamic banking, which also functioned as an intermediary institution, connected surplus and deficit funds, as evidenced by the growth in RSD, reaching 22% during 2009-2022. This condition was channeled through PLS financing, which grew by 23% in the same period (OJK, 2022). The increased PLS financing created new businesses that opened up jobs, encouraged productivity, and accumulated in facilitating development (Ibrahim et al., 2022). In reverse, high economic growth could stimulate increasing Islamic banking transactions. The hypothesis followed

Indonesian conditions where the initial establishment of Islamic banks was inseparable from economic growth of 7 to 8%. Rapid development accompanied by the advancement of urban Muslims had created euphoria over the need for financial transaction services in line with Islamic principles. At present, Indonesia has great potential to become the world's Islamic financial center because it has the largest Muslim population in the world, with more than 70% being of the productive age. This demographic capital was significant for the progress of Islamic banking in the form of the availability of labor and public savings.

**Table 7. Granger Causality Results**

Null Hypothesis	Obs	F-statistic	Probability
TO does not Granger Cause LNRSD	54	4.7980	0.0125**
LNGE does not Granger Cause TO	54	3.2545	0.0470**
TO does not Granger Cause LNGE	54	5.6385	0.0062***
LNGFCF does not Granger Cause TO	54	2.8991	0.0645*
TO does not Granger Cause LNPLS	54	3.3895	0.0418**
LNGDPR does not Granger Cause LNRSD	54	2.6934	0.0776*
LNRSD does not Granger Cause LNGDPR	54	2.4693	0.0951*
LNRSD does not Granger Cause LNGE	54	3.7169	0.0314**
LNPLS does not Granger Cause LNRSD	54	3.5116	0.0375**
LNRSD does not Granger Cause LNPLS	54	3.3528	0.0431**
LNPLS does not Granger Cause INF	54	6.0737	0.0044***
LNPLS does not Granger Cause LNGDPR	54	2.9714	0.0605*
LNPLS does not Granger Cause LNGE	54	3.4172	0.0408**
LNGE does not Granger Cause LNPLS	54	4.6261	0.0144**

Note: \*\*\*/\*\*/\* denote significance at 1%, 5%, and 10% levels respectively.

Source: Eviews' output.

From the asset side, the causal relationship between the PLS instrument and real GDP followed the supply-leading hypothesis theorem. However, the relationship was still relatively weak because it was at the 10% significance level. These results complemented the conclusions of previous studies, stating that there was a supply-leading hypothesis between Islamic financing and economic growth (Boukhatem & Moussa, 2018; Caporale & Helmi, 2018; Tabash & Anagreh, 2017). Tabash and Anagreh (2017) explained that Islamic financing was a stimulant for the entry of foreign direct investment (FDI), positioning as the engine driving economic growth in the United Arab Emirates (UAE). Meanwhile, Boukhatem and Moussa (2018) stated that a more robust institutional infrastructure was needed for the contribution of Islamic financing to be more significant.

Pappas et al. (2017) explained that the role of PLS financing in the economy was reflected in 4 aspects. First, PLS financing encouraged efficiency, where customers could manage their business efficiently to produce maximum profits, which was later shared

with the bank. Second, it maintained the financial system's stability, where efficient PLS transactions created stable prices, full employment conditions, and a more stable macroeconomy. Third, reduced risk faced by banks. Islamic banking could not issue securities for PLS financing, so Islamic bank balance sheets were relatively safe from price fluctuations in the secondary market. Fourth, reduced risk for entrepreneurs. In PLS financing, if the losses incurred were not like default, the bank shared the losses from the business the customer operated.

There were at least four reasons why the contribution of profit-sharing schemes still did not significantly impact Indonesia's economic growth. First, the development of Islamic banking in Indonesia was still relatively slow compared to other countries. Although over 3 decades old, Indonesian Islamic banking assets only controlled 2% of global assets, far behind Malaysia, which reached 11.1%. Islamic banking market penetration was also significantly lower compared to conventional banks, leading to a lack of influence at a macro level (Al Fathan & Arundina, 2019). According to the data, Indonesia's Islamic banking market share had only reached 7%, and the average ratio of PLS financing to total credit was 2.48% (OJK, 2022). In addition, low assets were weak due to their potential to fail when internal or external shocks occurred. Banks with small assets also find it difficult to enjoy economies of scale and have limitations in creating product differentiation and technology development (Azad et al., 2020).

Second, institutional instruments still needed to be completed. Boukhatem and Moussa's (2018) study stated that although the growth of Islamic finance positively impacted the economy when the infrastructure was still weak, it reduced this positive impact. A study from Al-Jarhi (2017) also explained that one of the obstacles to developing profit-sharing schemes was the need for more availability of long-term equity instruments in the Islamic capital market. According to Al Fathan & Arundina (2019), the condition of the Islamic stock market in Indonesia had not developed well because there were not many companies offering attractive Islamic financial products. Consequently, transactions on the Islamic stock market have not contributed significantly to Indonesia's economic growth. This result showed that government intervention was needed to provide these instruments. Malaysia's experience had empirical evidence that the government was actively developing a dynamic and efficient stock market to create incentives and innovation in developing profit-sharing instruments.

Third, the lack of regulations encouraged the development of profit-sharing schemes. Afandi and Amin (2019) stated that regulations governing Islamic financing were essential in encouraging a country's economic growth, and several regulations in other countries could be used as references. Iran's central bank applied an upper and lower limit policy on PLS financing returns, which depended on the loan term, the amount of risk, and the type of contract between the bank and the client. Bank of Sudan established a minimum share capital policy of 20%, which *musyarakah* financing customers must meet. In addition, a unique account for each financing channel to accommodate transactions carried out by customers was created as a means of monitoring. Regulations were also formulated to limit *murabahah* transactions, for

example, reducing *murabahah* scheme to only 30% of total financing and decreasing *murabahah* margin to a maximum of 10% or adjusting to the inflation rate. In addition, to reduce moral hazard, banks recruited individuals with an entrepreneurial background to better understand profit-sharing schemes' characteristics.

Lastly, product development was still a duplication of conventional banks. In theory, RSD customers were shareholders of Islamic banks and shared the risks (Warninda et al., 2019). However, RSD customers were still treated like conventional bank depositors because these individuals had to accept the decisions made by the bank management regarding profits on customer deposits. In line with previous reports, other duplications included financing policies. Most Islamic banking financing has been channeled to the sizeable industrial segment, amounting to 82.27% of the total loans. The remaining 17.73% was provided to the micro, small, and medium enterprises (MSMEs) segment (OJK, 2022), despite the MSMEs sector contributing 61% to Indonesia's GDP. Therefore, so that profit-sharing instruments impacted economic growth, Yungucu & Saiti (2016) proposed that Islamic banks transformed into full-fledged investment institutions by implementing *mudharabah* and *musyarakah* schemes.

## CONCLUSION

In conclusion, this study aimed to examine the effect of profit-sharing schemes in Islamic banking on Indonesia's economic growth, both in the short and long term. Another objective was investigating the causal relationship between profit-sharing schemes and economic growth (GDPR). By using the NARDL approach and ECM, profit-sharing schemes, both RSD and PLS financing, did not affect Indonesia's economic growth both in the short-term and long-term. However, the Granger Causality test showed a causal relationship between RSD and GDPR (feedback hypothesis), and the relationship between PLS and GDPR followed the supply-leading hypothesis.

Possible policy implications to ensure that profit-sharing schemes could significantly impact Indonesia's economic growth were looking for cheap sources of funds, for example, by placing state and regional spending into Islamic banking, thereby securing affordable funds. The resultant availability of cost-effective funds enhanced the competitiveness of Islamic banks, solidifying their role as pivotal contributors to economic development. In addition, efficiency could be fostered through an augmented focus on digital service collaboration, including partnerships with e-commerce entities. A shared service mechanism could provide cost-effective, flexible, and high-quality services. Efficiency considerations did not solely drive the entry of Islamic banks into the digital ecosystem but broadened public access comprehensively, thereby augmenting economic benefits. Based on the results, a more far-reaching policy comprised of regulatory improvements. Central banking authorities must be prompted to establish upper and lower limits on PLS financing returns. Setting the minimum share capital for *musyarakah* financing and imposing regulations on the proportion of *murabahah* financing, including margin restrictions, was crucial.

Urgent enhancements to these regulations were imperative to prevent the dominance of non-profit-sharing schemes. Therefore, it is urgent to ensure these regulations do not dominate so that profit-sharing schemes will increase and become a source of funds for the productive sector and ultimately positively impact the Indonesian economy.

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