DOES ISLAMIC BANKING SECTOR MATTER FOR INCOME DISPARITY REDUCTION? EMPIRICAL EVIDENCE FROM INDONESIA

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ABSTRACT

Purpose: This empirical study aims to investigate the impact of the Islamic banking sector, economic growth, and inflation on the reduction of income disparities in Indonesia from the short-run and long-run perspectives.

Theoretical framework: Since the 19th century, the interaction between the financial sector, economic growth, and income disparity has been intensively researched and received attention both from financial economists and practitioners. The linkages between the financial sector, including the banking industry, economic growth, and income inequality have been a debatable issue, whether the financial sector affects economic growth and income inequality or vice versa. Within this theoretical framework, the study builds an empirical model to examine the contribution of the Islamic banking industry to economic growth and income inequality in the context of Indonesia.

Design/methodology/approach: An Autoregressive Distributed Lag (ARDL) method is adopted to analyse the monthly time-series data from January 2015 to December 2020 to measure the short-run and long-run effects of Islamic banking performance, economic growth, and inflation on income disparity in Indonesia.

Findings: The results of the study revealed that Islamic banks contributed to the reduction of income disparity in Indonesia both in the short run and long run. In addition, economic growth and price stability also helped reduce income disparities in the country both in the short run and long run.

Research, Practical & Social implications: The findings of the study suggest the importance for Islamic banks to provide quality of balanced, effective, affordable, and high-quality financing to the priority real sector to enhance their impacts on economic growth and income disparity reduction. The Indonesian Monetary Authority should continuously strengthen the policy mix through various innovations to continuously ensure banks' ability to channel financing to the real economic sector and build an effective financing allocation mechanism to promote inclusive economic growth that reduces income disparity nationwide.

Originality/value: The study is among the first attempts to measure and evaluate the contribution of the Islamic banking industry to income disparity reduction in Indonesia using various indicators to measure Islamic banking performance and an Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration.

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O SETOR BANCÁRIO ISLÂMICO É IMPORTANTE PARA A REDUÇÃO DA DISPARIDADE DE RENDA? EVIDÊNCIA EMPÍRICA DA INDONÉSIA

Objetivo: Este estudo empírico tem como objetivo investigar o impacto do setor bancário islâmico, do crescimento econômico e da inflação sobre a redução das disparidades de renda na Indonésia a partir de perspectivas de curto e longo prazo.

Estrutura teórica: Desde o século XIX, a interação entre o setor financeiro, o crescimento econômico e a disparidade de renda tem sido intensamente pesquisada e tem recebido atenção tanto de economistas financeiros quanto de profissionais. As ligações entre o setor financeiro, incluindo o setor bancário, o crescimento econômico e a desigualdade de renda têm sido uma questão discutível, se o setor financeiro afeta o crescimento econômico e a desigualdade de renda ou vice-versa. Dentro dessa estrutura teórica, o estudo constrói um modelo empírico para examinar a contribuição do setor bancário islâmico para o crescimento econômico e a desigualdade de renda no contexto da Indonésia.

Projeto/metodologia/abordagem: Um método ARDL (Autoregressive Distributed Lag) é adotado para analisar os dados mensais de séries temporais de janeiro de 2015 a dezembro de 2020 para medir os efeitos de curto e longo prazo do desempenho do sistema bancário islâmico, do crescimento econômico e da inflação sobre a disparidade de renda na Indonésia.

Conclusões: Os resultados do estudo revelaram que os bancos islâmicos contribuíram para a redução da disparidade de renda na Indonésia, tanto no curto quanto no longo prazo. Além disso, o crescimento econômico e a estabilidade de preços também ajudaram a reduzir as disparidades de renda no país, tanto no curto quanto no longo prazo.

Implicações sociais, práticas e de pesquisa: Os resultados do estudo sugerem a importância de os bancos islâmicos fornecerem financiamento de qualidade, equilibrado, eficaz, acessível e de alta qualidade ao setor real prioritário para aumentar seus impactos sobre o crescimento econômico e a redução da disparidade de renda. A Autoridade Monetária da Indonésia deve fortalecer continuamente a combinação de políticas por meio de várias inovações para garantir continuamente a capacidade dos bancos de canalizar financiamento para o setor econômico real e criar um mecanismo eficaz de alocação de financiamento para promover o crescimento econômico inclusivo que reduza a disparidade de renda em todo o país.

Originalidade/valor: O estudo está entre as primeiras tentativas de medir e avaliar a contribuição do setor bancário islâmico para a redução da disparidade de renda na Indonésia, usando vários indicadores para medir o desempenho do setor bancário islâmico e uma abordagem de teste de limites de lag distribuído autorregressivo (ARDL) para cointegração.

Palavras-chave: Banco Islámico, Disparidade de Renda, Índice de Produção Industrial, ARDL.

¿ES IMPORTANTE EL SECTOR BANCARIO ISLÁMICO PARA REDUCIR LA DISPARIDAD DE INGRESOS? DATOS EMPÍRICOS DE INDONESIA

Objetivo: Este estudio empírico pretende investigar el impacto del sector bancario islámico, el crecimiento económico y la inflación en la reducción de la disparidad de ingresos en Indonesia desde perspectivas a corto y largo plazo.

Marco teórico: Desde el siglo XIX, la interacción entre el sector financiero, el crecimiento económico y la disparidad de ingresos se ha investigado intensamente y ha recibido la atención tanto de economistas financieros como de profesionales. Los vínculos entre el sector financiero, incluido el sector bancario, el crecimiento económico y la desigualdad de rentas han sido una cuestión discutible: si el sector financiero afecta al crecimiento económico y a la desigualdad de rentas o viceversa. Dentro de este marco teórico, el estudio construye un modelo empírico para examinar la contribución del sector bancario islámico al crecimiento económico y a la desigualdad de ingresos en el contexto de Indonesia.

Diseño/metodología/enfoque: Se adopta un método ARDL (Autoregressive Distributed Lag) para analizar series temporales mensuales de datos desde enero de 2015 hasta diciembre de 2020 con el fin de medir los efectos a corto y largo plazo del rendimiento del sistema bancario islámico, el crecimiento económico y la inflación sobre la disparidad de ingresos en Indonesia.

Conclusiones: Los resultados del estudio revelan que la banca islámica contribuyó a reducir la disparidad de ingresos en Indonesia tanto a corto como a largo plazo. Además, el crecimiento económico y la estabilidad de precios también contribuyeron a reducir la disparidad de ingresos en el país tanto a corto como a largo plazo.

Implicaciones sociales, prácticas y de investigación: Las conclusiones del estudio sugieren la importancia de que los bancos islámicos proporcionen financiación de calidad, equilibrada, eficaz, asequible y de alta calidad al sector real prioritario para potenciar sus efectos sobre el crecimiento económico y la reducción de la disparidad de ingresos. La Autoridad Monetaria de Indonesia debería reforzar continuamente la combinación de políticas a través

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de diversas innovaciones para garantizar continuamente la capacidad de los bancos para canalizar la financiación hacia el sector económico real y crear un mecanismo eficaz de asignación de fondos para promover un crecimiento económico inclusivo que reduzca la disparidad de ingresos en todo el país.

Originalidad/valor: El estudio es uno de los primeros intentos de medir y evaluar la contribución del sector bancario islámico a la reducción de la disparidad de ingresos en Indonesia, utilizando diversos indicadores para medir el rendimiento del sector bancario islámico y un enfoque de prueba de límites autorregresivos distribuidos rezagados (ARDL) para la cointegración.

Palabras clave: Banca Islámica, Disparidad de Ingresos, Índice de Producción Industrial, ARDL.

INTRODUCTION

Income disparity is one of the persistent topics that has emerged as a critical issue in the global economy. Income disparity may reflect ongoing disadvantages for some societal segments due to a lack of mobility and income opportunities. Low economic growth and macroeconomic instability, inefficient use of human resources, and other unfavourable economic conditions have widened a country's income disparity. Income disparity is indeed an economic phenomenon that contributes to the uncertainty of the global economy (Ridzuan et al., 2021; Dabla-Norris et al., 2015). The problem of unequal income distribution exists throughout the world, including in Indonesia. Therefore, reducing income disparities between countries is one of the targets for the Sustainable Development Goals (SDGs) set by the United Nations to be accomplished by 2030.

According to the World Inequality Database (2020), from 1980 to 2019, the level of inequality was persistently high in almost all of the world's countries, and the income of the top 10% of the population as a share of total national income was also high. In European countries such as Germany, France, and the United Kingdom, the richest 10% of the population controlled 37.3%, 32.1%, and 35.2% of total national income in 2019. For a similar period, the percentage even reached 45.4% in the United States. For Asian countries, such as China in 2019, the richest 10% of the group controlled 41.4% of the total national income. The issue is even the most severe in South Africa, where the richest 10% enjoyed 65.1% of the total national income. This phenomenon is certainly very concerning, considering that both governments in each country and multilateral institutions have made various efforts, but problems persist.

In Indonesia, the Gini ratio, which is commonly used to measure the extent of disparity, has fluctuated. According to Statistics-Indonesia (BPS, 2020), the Gini ratio in 2014 was 0.414%, then declined to 0.380% in 2019. However, the Gini coefficient again rose to 0.385% in 2020. This implies that the income disparity amongst Indonesians is widening. Furthermore, BPS stated that Indonesia's economic growth has stagnated. For the last four years, from 2017 to 2020, Indonesia's economic growth has been stagnant at 5.0%, 5.03%, 5.07%, 5.17%, and

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5.02%, respectively. BAPPENAS (2020) affirms that Indonesia's stagnant economic growth occurs mainly due to low productivity without any structural reforms. The inhibiting factors are as follows: (1) overlapping regulations and burdensome bureaucracy; (2) insufficient tax revenue system and amount; (3) the low quality of infrastructure, particularly connectivity and energy; (4) the quality of human resources and labor productivity are still low; (5) inadequate financial sector intermediation and shallow financial markets; and (6) an ineffective innovation system.

One way to enhance Indonesia's economic growth and reduce income disparity is through balanced and high-quality financial sector intermediation (i.e., banking sector) that channels credit and financing to the real sector, therefore improving people's welfare (Bank Indonesia, 2022; Tambunan, 2015). The financial sector has drawn attention recently as a versatile tool for ensuring multifaceted economic stability, equitable and sustainable growth, the creation of jobs, the reduction of poverty, and income distribution for developed and developing markets (Omar & Inaba, 2020). The financial sector occupies this role by providing formal financial services easily accessible, available, and usable—especially for the most vulnerable members of society, including low-income families, women, and rural residents who greatly benefit from basic financial services such as loans, financing, and savings. Furthermore, financial sector inclusion gives consumers and businesses adequate financial resources to finance spending and investment, which boosts economic activity. Long-run participation in investment activities, effective resource allocation, cheaper capital costs, and the ability to deal with unexpected short-run shocks can be facilitated by financial inclusion. This can reduce the need for an informal loan, which is often exploitative (Demirguc-Kunt et al., 2015).

Several pieces of previous studies on this topic have previously been conducted. For example, Du et al. (2016) found that banking activities reduce income disparities by boosting average income levels. Islamic banking possesses the capability to reduce income disparity by utilising Islamic financing and engaging in Corporate Social Responsibility (CSR) initiatives, as proven by Mohamad et al. (2020). Banks play a vital role in reducing income disparity and poverty significantly in developing markets (Seven & Coskun, 2016; Omar & Inaba, 2020). García-Herrero & Turégano (2015) and Kim (2016) revealed that financial inclusion contributes to reducing income disparities. High levels of bank and credit intermediation have been proven to reduce income disparity by facilitating the poor's access to financial services (Ouechtati, 2020). According to Tiwari & Shahbaz (2010), financial development contributes

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to economic growth, which in turn reduces income disparity in India. Financial development is crucial for reducing income disparity (Gharleghi & Jahanshahi, 2020).

The above-reviewed studies show a dearth of previous scientific studies on the contribution of Islamic banks to the reduction of income disparity in the Indonesian context. This present study aims to bridge a number of gaps left by previous studies with several highlights. First, this study uses a variety of variables to evaluate the role of Islamic banking to get robust empirical conclusions. Second, the cointegration of the long and short-run roles of Islamic banking in this study was examined by employing Autoregressive Distributed Lag (ARDL) method. The ARDL method has a lot of benefits, one of which is that it can accommodate studies with little or limited observations. ARDL is capable of overcoming differences in stationarity levels among variables. Finally, this research is expected to offer a reference for designing comprehensive policies to strengthen the presence of the Islamic banking sector in reducing income disparities.

The findings of the study are hoped to shed some light for policy-makers in designing proper policy to enhance the role of the Islamic banking sector in promoting economic growth as well as reducing income disparity nationwide. The results of the study are also hoped to enrich the empirical findings on the links between the Islamic banking industry and the real economic sector and unequal income distribution in the context of the largest Muslim populous country in the world, Indonesia.

The rest of the study is structured into the following sections. The prior empirical literature on this topic is reviewed in Section 2. The empirical methodology, data, and stages of data analysis are described in Section 3. Section 4 provides the findings and empirical discussion, and Section 5, finally, concludes the study.

LITERATURE REVIEW

The issue of the extent to which the banking sector contributes to economic performance, particularly equal income distribution has been the focus of several studies. Using data from China, Ran et al. (2020) conducted an empirical study between 2002 and 2013. The findings of this study demonstrate that financial deepening, as determined by the ratio of bank and financial institution loans to GDP, has a positive impact on the income distribution of Chinese citizens and that higher financial development levels help to reduce income disparity. This is further supported by Du et al. (2016), who stated that banking activity reduces disparity by raising the average income. Economic disparity in these communities is reduced as a result

of banks' increased access to banking infrastructure and provision of liquidity to the local American economy. Meanwhile, Omar and Inaba (2020) offer convincing proof indicating financial inclusion decreased poverty and income disparity in emerging countries. This finding encourages marginalized groups to use formal financial services more frequently to enhance society's well-being. According to Tiwari & Shahbaz (2010), financial development contributes to economic growth, which in turn reduces income disparities in two ways. First, loans with lower interest rates tend to be more alluring to investors. Small business owners could obtain adequate capital to grow their companies and boost their profitability. As a result, as financial development increases, so do employment possibilities, output creation, and the well-being of the poor. Low-cost loans will also encourage families to send their kids to higher education and medical care, which is a stepping stone to escaping the cycle of poverty and improving the quality of human resources. Gharleghi (2020) added that because it enables people to launch new businesses, financial development is essential for reducing income disparity because it boosts productivity.

Focusing more on Islamic banks, Mohamad et al. (2020) explored whether increasing the active participation of Islamic banks in Corporate Social Responsibility (CSR) increased their effectiveness in reducing income disparities in selected OIC nations. Between 2006 and 2013, a sample of 24 OIC nations was estimated using the generalized moment method, fixed and random effects models, which characterize static models. This study's results indicate that CSR and Islamic banking financing both contribute to a reduction in the income disparity between the rich and poor. Yuliani & Rohman (2020) examined the effect of Islamic bank financing schemes in reducing disparities in ISDB Group countries. From 1977 to 2018, statistical data from the World Bank and the Islamic Development Bank were used as samples. The findings reveal that equity and leasing reduce disparities in low-income countries, with ijarah being the most effective. Additionally, installation financing significantly reduces disparities in middle-income nations, with loans becoming the sole significant instrument to do so across all IDB member nations.

Based on prior studies, we can infer that there is still a dearth of scientific studies, particularly in Indonesia, that concentrate on the contribution of Islamic banks to the reduction of income disparity. This indicates that formulating policy based on the findings of empirical research has not been done effectively. As a result, this present study aims to bridge a number of gaps left by previous research with several highlights. First, this study uses a variety of indicators or variables to evaluate the role of Islamic banking to get robust empirical

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conclusions. Second, the cointegration of the long and short-run roles of Islamic banking in this study was examined by employing Autoregressive Distributed Lag (ARDL) method. The ARDL method has a lot of benefits, one of which is that it can accommodate studies with little or limited observations. ARDL is capable of overcoming differences in stationarity levels among variables. Finally, this research is expected to be used as a reference in designing comprehensive policies aimed at reducing income disparities.

DATA AND METHODOLOGY

This empirical study aims to investigate the contribution of Islamic banking to reducing income disparity in Indonesia. Data for the monthly time series were utilized from 2015 to 2020. In this study, monthly income disparity data were interpolated using a cubic spline technique. Interpolation based on cubic spline models is frequently used in numerical low-frequency data analysis (Gerald & Wheatley, 1994). Since monthly income disparity data are not available, the interpolation technique was applied in this study. This technique has previously been used in economics research by previous studies (Jamal, 2019; Lamabelawa, 2018; Financial Services Authority, 2015; Primary et al., 2014).

Income disparity is measured using the Gini ratio obtained from the Central Statistics Agency. Total Financing (TF), Financing to Deposit Ratio (FDR), Non-Performing Financing (NPF), Return on Assets (ROA), and Third Party Funds (TPF), are used to assess the contribution of Islamic banking provided by the Financial Services Authority (OJK). The Industrial Production Index (IPI) and the Consumer Price Index (CPI), both derived from Bank Indonesia, are used in this study's control variables to quantify economic growth and inflation, respectively.

In this study, dynamic interactions between variables, as well as short and long-run impacts, are explored using an autoregressive distributed lag model (ARDL). There are various advantages to utilizing the ARDL model developed by Pesaran and Shin (1999) in this study, including the flexibility to conduct investigations with a little or limited set of observations. Differences in the degree of stationarity among variables can be overcome through ARDL. Short and long-run responses of the dependent variable to a unit change in the explanatory value can also be determined by the ARDL model. The ARDL model, which was used to address the issues presented by this research, can be expressed using the following equation:

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$$GR_t = \beta_{01} + \sum_{i=1}^{k} \beta_{11} \Delta GR_{t-i} + \sum_{i=1}^{k} \beta_{12} \Delta TF_{t-i} + \sum_{i=1}^{k} \beta_{13} \Delta FDR_{t-i} + \sum_{i=1}^{k} \beta_{14} \Delta NPF_{t-i} +$$

$$\sum_{i=1}^{k} \beta_{15} \Delta ROA(s)_{t-i} + \sum_{i=1}^{k} \beta_{16} \Delta TPF(s)_{t-i} + \sum_{i=1}^{k} \beta_{17} \Delta IPI_{t-i} + \sum_{i=1}^{k} \beta_{18} \Delta CPI_{t-i} + \theta_{11} GR_{t-i} + \theta_{12} TF_{t-i} +$$

$$\theta_{13} FDR_{t-i} + \theta_{14} NPF_{t-i} + \theta_{15} ROA(s)_{t-i} + \theta_{16} TPF(s)_{t-i} + \theta_{17} IPI_{t-i} + \theta_{18} CPI_{t-i} + \varepsilon_{1t} (1)$$

where: GR is the Gini ratio; TF is Total Financing; FDR is Financing to Deposit Ratio; NPF is Non-Performing Financing; ROA(s) is the Return on Assets of Islamic banks; TPF(s) are Third-party funds of Islamic banks; IPI is the industrial production index; CPI is the consumer price index; β is the short run coefficient; θ is the long run coefficient; i and k are lag lengths; t is a year t, and ε is an error term.

In brief, the stages of testing the ARDL model consist of the unit root test, optimal lag length test, cointegration test, long run and short run effect test, and model stability test.

RESULTS AND DISCUSSION

Unit root test

Augmented Dickey-Fuller (ADF) was used to test each variable's unit root. The unit root does not exist and the variable becomes stationary if the ADF test statistic value is higher than the critical area value and the probability value falls below the 0.05 level of significance. The unit root test findings for the variables in this study are depicted in Table 1. As observed from Table 1, the unit root test findings suggest that the data for the IPI and TF variables are stationary at level I (0), as indicated by a probability value that is less than a significant level of 0.05. Other variables, including GR, FDR, NPF, ROA(s), TPF(s), and IPC, are stationary at the first difference I but not at level I(0) (1). The findings of the unit root test reveal that the degree of stationarity of the data in this study differs at level I(0) for the IPI and TF variables, and also at the first difference I(1) for the GR, FDR, and NPF variables. ARDL model can thus be continued.

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TABLE 1. The results of the Augmented Dickey Fuller (ADF) Unit Root Test

Variable	Level I(0)				Fisrt Difference I(1)			
	ADF t-statistic value	MacKinnon's Critical Value	Prob	Conclusion	ADF t-statistic value	MacKinnon's Critical Value	Prob	Conclusion
GR	-2,4967	-3,5004	0,3285	Not Stationary	-4,9594	-3,5023	0,0000*	Stationary
TF	-7,8034	-3,4878	0,0000*	Stationary	-8,9088	-3,4906	0,0000*	Stationary
FDR	-2,1909	-3,4878	0,4856	Not Stationary	-8,7553	-3,4892	0,0010*	Stationary
NPF	-1,6091	-2,9117	0,4716	Not Stationary	-9,1175	-2,9126	0,0000*	Stationary
ROA$_{(s)}$	-2,9987	-3,4878	0,1413	Not Stationary	-8,1249	-3,4906	0,0000*	Stationary
TPF$_{(s)}$	-0,9603	-3,4878	0,9414	Not Stationary	-7,3935	-3,4892	0,0000*	Stationary
IPI	-4,975	-3,4878	0,0008*	Stationary	-8,0581	-3,4906	0,0000*	Stationary
CPI	-2,6466	-3,4892	0,2621	Not Stationary	-4,2088	-3,4892	0,0079*	Stationary

Source:Data Processing results with Eviews 10
*Note: *) indicates significance at 5% level*

Optimum lag-length test

Prior to estimating the ARDL model, the study determines first the optimum order lag length of the variables be incorporated in the model. Lag is useful to explain the duration of the influence of one variable on another variable. The suitable lag length for the model can be determined using lag length criteria, such as the Akaike Information Criteria (AIC), the Schwartz-Bayesian Criteria (SBC), and other criteria information that has the minimum value of prediction error. Considering its strength, the optimal lag incorporated in our model is selected based on the AIC criteria. The selected optimal lag generates the best model for each variable, thus it could provide a robust estimation. Based on the AIC criteria, the ARDL model (3, 5, 5, 2, 4, 5, 5, 5) was found as the best model. Figure 1 illustrates the best ARDL model to estimate the short run and long run effects of the Islamic banking sector and economic growth on income disparity reduction in Indonesia as compared to other possible optimal lag lengths that produce relatively higher prediction errors.

Figure 1- Akaike Information Criteria (top 20 models)
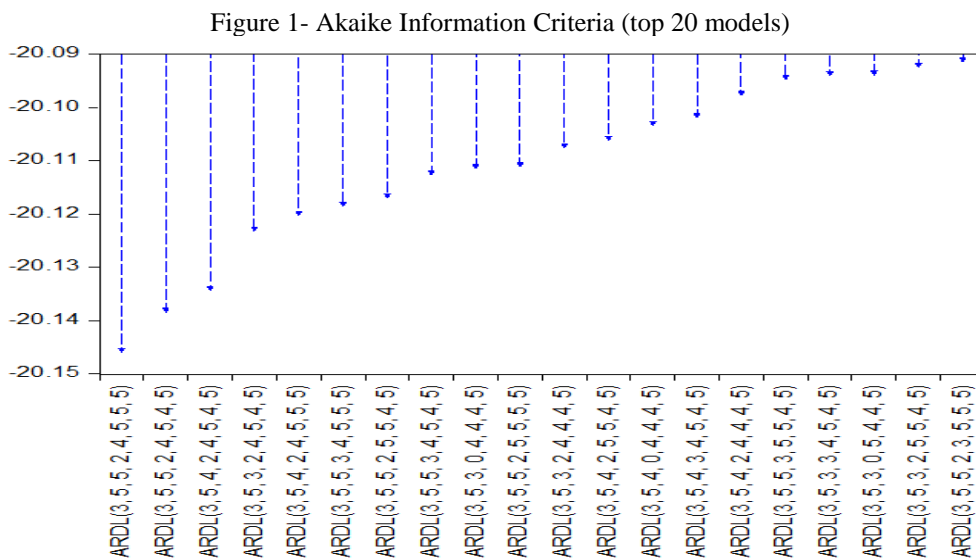
Source: Data Processing results with Eviews.10

Cointegration test

When the data becomes stationary and the optimum lag is determined, a cointegration test is run to assess the long-run equilibrium between income disparities and Islamic banks in Indonesia. This study used the bound test to examine cointegration, and the F-statistic result was 15.7211. This F-statistic exceeds the upper critical value bond I(1) at a significance level of 5 percent, which is 3.60. The null hypothesis (H0), which asserted that there is no cointegration, can be rejected by the fact that 15.7211 > 3.60. To put it another way, the ARDL (3, 5, 5, 2, 4, 5, 5, 5) model contains cointegration or a short-to-long run relationship. ARDL (3, 5, 5, 2, 4, 5, 5, 5) estimations can be defined in terms of short and long run estimations with cointegration in the model. Table 2 below summarizes the results of the Bound Test used in this study.

TABLE 2. Bound Test Results

Model	Test Statistic	Value	k	Signif 5% I(0)	Signif 5% I(1)
ARDL (3, 5, 5, 2, 4, 5, 5, 5)	15,7211	7	2,41	3,60	15,7211

Source: Data Processing results with Eviews.10

Long-run and short-run effects of Islamic banks on income disparity reduction

The estimation of the long-run and short-run effects can be done if the data have already been cointegrated. Table 3 reports the estimated long-run and short-run impacts of ARDL (3, 5, 5, 2, 4, 5, 5, 5). As observed from Table 3, the Islamic banking variable reflected by Total Financing has a significant negative impact on income disparities both in the long and short run

at a significance level of 10%. Variable third-party funds likewise have significantly negative impacts on income disparity in the long and short run but at a significance of 5 percent. This means that when the value of Total Financing and Third-party funds in Islamic banking increases, it will cause income disparities to decrease in the long and short run. Conversely, when the value of Total Financing and Third-party funds in Islamic banking decreases, it will cause disparities to increase in the long and short run. Our findings suggest that the financing provided by Islamic banks serves to assist the community in meeting their needs in increasing their business. Thus, Islamic banking financing can also aid in reducing income disparities by increasing people's income through funds channeled to productive financing for MSMEs or small businesses.

For Islamic bank variables represented by Financing to Deposit Ratio and Return on Assets have a significant negative impact on income disparity only in the short run at a significance level of 5%. This means that when the value of the Financing to Deposit Ratio and Return on Assets in Islamic banking increases, it will cause income disparities to decrease in the short run. On the other hand, when the value of the Financing to Deposit Ratio and Return on Assets in Islamic banking decreases, it will cause disparity to increase in the short run. Meanwhile, the Islamic banking variable represented by non-performing financing has a significant positive effect on income disparity only in the short run. This implies that if the value of non-performing financing rises, the income disparity would also rise within the short run, as well as if the non-performing financing of Islamic banks decreases, the income disparity will also decrease within the short run.

Our results revealed that in the short run, Islamic banks can maintain their performance well. This is proven by the consistent FDR, ROA, and NPF ratios that have been maintained to reduce income disparities. The effectiveness of a bank's intermediation function in managing and distributing funds depends on its ability to sustain bank liquidity by fulfilling its financial obligations with readily available current funds. The higher the FDR ratio of the bank, the more it indicates that the total quantity of funding provided is bigger than the sum of the funds that have been received.

Table 3 - Estimation Results of the Long-Run and Short-Run Model of Islamic Banking

Long run			
Variable	**Coefficient**	**t-Statistic**	**Prob**
TF	-0.0006	-2.0480	0.0613**
FDR	-0.0000	-1.1456	0.2726*
NPF	0.0006	0.7199	0.4843
ROA$_{(s)}$	-0.0020	1.5799	0.1381

TPF$_{(s)}$	-0.0098	-2.1844	0.0478*
IPI	-0.0003	-1.9540	0.0725**
CPI	-0.0010	-5.9504	0.0000*

Diagnostic Test Statistics	
R^2	0.999799
R^2-Adj	0.999482
D-W	2.243624
Autocorrelation	1.213499 (p-value = 0.2706)
Heteroscedasticity (Breusch-Pagan-Godfrey)	42.71601 (p-value = 0.3973)

Short run

Variable	Coefficient	t-Statistic	Prob
ΔGR (-1)	1.882068	69.23789	0.00008*
ΔGR (-2)	1.011460	39.86597	0.0000*
ΔTF	-0.000097	-5.331991	0.0001*
ΔTF (-1)	-0.000039	-2.071837	0.0587**
ΔTF (-2)	-0.000041	-2.009738	0.0657
ΔTF (-3)	-0.000952	-3.857672	0.0020**
ΔTF (-4)	-0.000826	-3.969139	0.0016*
ΔFDR	-0.000729	-1.108633	0.2877
ΔFDR (-1)	-0.000336	-4.317705	0.0008*
ΔNPF	0.000178	-2.636948	0.0205*
ΔNPF (-1)	0.000360	5.430938	0.0001*
ΔNPF (-2)	0.000531	6.993840	0.0000*
ΔNPF (-3)	0.000169	2.489571	0.0271*
ΔROA	-0.000226	-3.122653	0.0081*
ΔROA (-1)	-0.000372	-5.453021	0.0001*
ΔROA (-2)	-0.000312	-6.118968	0.0000*
ΔROA (-3)	-0.000334	-6.577777	0.0000*
ΔROA (-4)	-0.000106	-2.488056	0.0272*
ΔTPF	-0.000264	-3.220705	0.0067*
ΔTPF (-1)	-0.000844	-8.277749	0.0000*
ΔTPF (-2)	-0.000484	-6.566490	0.0000*
ΔTPF (-3)	-0.000150	-2.022940	0.0641**
ΔTPF (-4)	-0.000756	-1.331539	0.2059
ΔIPI	-0.000390	-4.057388	0.0014*
ΔIPI (-1)	-0.000010	-13.11905	0.0000*
ΔIPI (-2)	-0.000081	-11.20364	0.0000*
ΔIPI (-3)	-0.000068	-10.49030	0.0000*
ΔIPI (-4)	-0.000039	-6.808291	0.0000*
ΔCPI	0.000056	2.208011	0.0458*
ΔCPI (-1)	0.000325	10.00409	0.0000*
ΔCPI (-2)	0.000424	8.810926	0.0000*
ΔCPI (-3)	0.000253	6.682985	0.0000*
ΔCPI (-4)	0.000183	4.513003	0.0006*
CointEq (-1)	-0.037642	-15.11826	0.0000*
CointEq (-1)	-0.0444	-18.0239	0.0000

Diagnostic Test Statistics	
R^2	0.999799
R^2-Adj	0.999482
F-statistic	745.0712 (prob = 0.0000)
D-W	2.243624
Autocorrelation	1.213499 (p-value = 0.2706)
Heteroscedasticity (Breusch-Pagan-Godfrey)	42.71601 (p-value = 0.3973)

Source: Data Processing results with Eviews.10

*Note: *) indicates significance at the 5% level, **) indicates significance at the 10% level*

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These findings demonstrate that when a bank provides a large amount of financing to the public, it will help the community accomplish their needs in expanding their businesses, and the bank's profits will increase as well. Through funds channeled to productive financing for small businesses or MSMEs, the growth of community businesses will enhance community income, enabling Islamic banking financing to also aid in reducing income disparities. Banks must maintain a low level of non-performing financing to sustain high-quality financing. However, in the long run, FDR, ROA, and NPF only have an impact on the health of the bank and are ineffective at reducing income disparities.

As for the effect of the control variable, the Industrial Production Index which represents economic growth has a long-run significant negative effect at a level of 10% on income disparities. Then in the short run, IPI has a significant negative effect at the 5% level on income disparities. This means that when economic growth increases, disparities will decrease in the long and short run. Conversely, when economic growth declines, income disparities will increase in the long run and the short run. This result implies that economic growth is crucial for reducing income disparities. An economy with inclusive economic growth that strives to improve its commercial activities will have an impact on the more available infrastructure, the more community businesses that thrive, along with higher education and rising technology. Additionally, this will give locals and the community job opportunities, increasing income to meet basic necessities and enhancing community welfare.

Furthermore, the Customer Price Index as a control variable that represents inflation incorporates a positive and significant effect on income disparities in the long and short run. This means when the value of the Consumer Price Index increases, it will cause income disparities to increase. Vice versa, if the value of the Consumer Price Index decreases, it will cause income disparities to also decrease. This indicates that when prices increase, people with fixed incomes will experience difficulties so that people's purchasing power weakens and causes disparities to increase. On the other hand, if the inflation rate is low and stable, the disparity will decrease.

The findings of the study are strengthened by research conducted by Du et al. (2016), who state that banking activity reduces disparity by increasing the average income level, Mohamad et al. (2020), and Yuliani & Rohman (2020), who reveal that Islamic banking helps reduce income disparity through Islamic financing and other products, as well as research by Ran et al. (2020); Omar & Inaba (2020); and Gharleghi (2020) who proves that the financial

sector plays an important role in reducing income disparities because financial services make people more productive.

Model stability test

The stability of the ARDL model was examined using the CUSUM Test and CUSUM of Squares Test. The model stability test results for ARDL (3, 5, 5, 2, 4, 5, 5, 5) are presented in Figure 2, as follows:

Figure 2- CUSUM Test and CUSUM of Squares Test
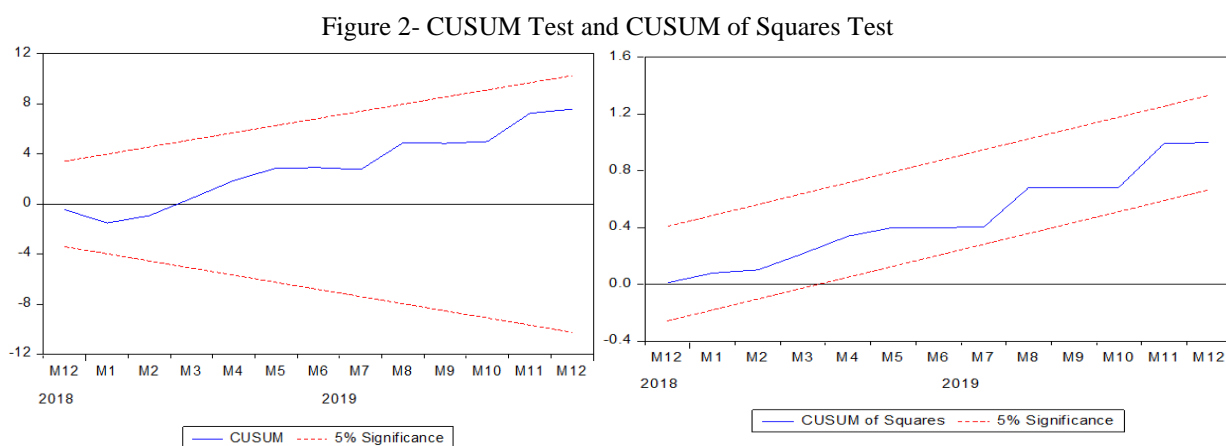
Source: Data Processing results with Eviews.10

Figure 2 shows that the resultant line from these two tests is in line with the 5% significance level. As a result, the ARDL model (3, 5, 5, 2, 4, 5, 5, 5) has proven stable.

CONCLUSION

This study aims to explore how Islamic banking, economic growth, and inflation contribute to the reduction of Indonesia's income disparities. This study employed secondary monthly time series data from January 2015 to December 2019. Based on the analysis of the ARDL method, this study reaches the general conclusion that Islamic banks contribute to reducing Indonesia's income disparities in the short and long run. The contribution of Islamic banking reflected in the Total Financing and Third Party Funds variables has a significant negative effect in the long and short run on income disparities. Financing to Deposit Ratio and returns on assets only have a significant negative short-run effect on income disparities. The Islamic banking variable represented by Non-Performing Financing only has a significantly positive short-run effect on income disparities. Economic growth and inflation, which act as control variables, also help reduce income disparities in Indonesia both in the short and long run.

The banking industry and policy-makers may refer to a number of significant implications based on the study's findings to help the banking sector contribute more to the growth of the Indonesian economy and the reduction of income disparity. The banking industry sector must provide quality of balanced, effective, affordable, and high-quality financing or credit distribution to the priority real sector to have a real impact on productivity and economic growth. The Indonesian Monetary Authority is expected to continue to strengthen the policy mix through various innovations to boost intermediation and ensure the resilience of the financial system. The monetary authority must also continue to ensure banks' ability to channel financing to the business world and build an effective financing allocation mechanism to support Indonesia's economic growth, which would have an impact on reducing income disparities.

Although this present study has revealed the importance of Islamic banks' contributions in reducing income disparity, there are several crucial issues not covered in this study that might be investigated in future studies. First, this study only examines the contribution of Islamic banks, thus it would be intriguing to compare the contributions of Islamic and conventional banks in reducing income disparities in future research. Second, this study utilized economic growth as a control variable, hence, future studies can take into consideration the possibility of using economic growth as a mediating variable to maximize the contribution of banks in reducing income disparities. Lastly, the ARDL Bound Test model was used to analyze the data in this study so that other dynamic methods could be used in future studies to get a wider range of empirical results.

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