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Research Paper

Financial Deepening, Macroeconomics, and Income Inequality in Indonesia: An Autoregressive Distributed Lag Approach

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ABSTRACT: *This study aims to determine the impact of financial deepening and macroeconomic on income inequality in Indonesia. In addition, this study also aims to determine whether there is a non-linear relationship between financial deepening and income inequality as proposed by the Greenwood and Jovanovic (GJ) hypothesis. The research period used is from 1982 to 2018, with an autoregressive distributed lag (ARDL) analysis tool. The results show that financial deepening in the short term supports a U-shaped relationship to income inequality, while in the long term it supports the GJ hypothesis with an inverse U-shaped relationship. Meanwhile, in the short term, income inequality is also influenced by macroeconomic variables such as inflation, economic growth, and international trade. Meanwhile, in the long term, the variable of income inequality is only influenced by the inflation variable. This research has implications for the importance of the government to improve the financial sector in Indonesia.*

KEYWORDS: *Income Inequality, Financial Deepening, Macroeconomic, GJ Hypothesis.*

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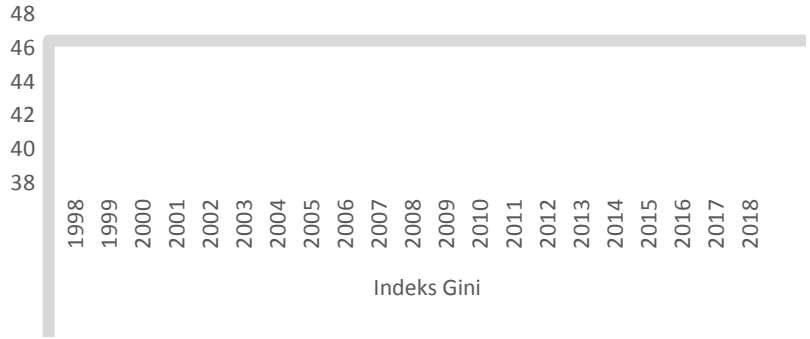
I. INTRODUCTION

The World Economics Situations and Prospects (2018) states that the level of income inequality in most countries in the world has increased over the last two decades and has been the subject of long debate among policymakers. This widening inequality is due to an increase in the income of the upper-class population, where the main driving factor is the increase in salaries and wages before the global crisis. Inequality is one of the goals of sustainable development or commonly known as the Sustainable Development Goals (SDGs), which for the first time in the context of internationally agreed development goals, the 2030 agenda includes targets to reduce inequality-based income (World Social Report, 2020).

Developing countries are often characterized by various problems of economic development, one of which is related to income inequality. This condition reflects the problem of whether or not income is evenly distributed in the community. Indonesia as a developing country also has income distribution problems which are illustrated by the following graph:

Figure 1
Gini Index in Indonesia 1998-2018



Source: Data processed in 2021.

Based on the graph above, it can be seen that from 2000 to 2018 income inequality in Indonesia has an increasing trend. The World Bank (2015) states that the increase in income inequality that occurs in Indonesia is caused by a faster increase in the income of the upper-class population when compared to the income of the poorest households. Countries with a large population allow for an unequal distribution of income among the population so that this results in higher inequality.

Economists and development practitioners have long shown an interest in analyzing the contribution of finance to development. Nearly a century ago, Schumpeter (1911) argued that financial intermediation through the banking system played an important role in economic development by way of the allocation of savings, where the allocation would increase productivity, technical change, and the rate of economic growth (Uddin, Shahbaz & Arouri, 2013). Financial development is defined as improving the quality, quantity, and efficiency of financial intermediaries (Levine, 2005). Therefore, financial development through financial deepening can help companies with low productivity to enter the market and gain access to external finance. In addition, Adams and Klobodu (2016) state that most of the prosperity, innovation, and increasing opportunities in the last few decades can be attributed to the development of the financial sector.

Theories about the effect of financial deepening on income distribution offer contradictory predictions, where on the one hand the literature proposes an inverse U-shaped relationship that leads to a non-linear relationship (Greenwood & Jovanovic, 1990), while on the other hand predicts a negative linear relationship (Galor & Ziera, 1993; Bannerjee & Newman, 1993). The theory of Greenwood and Jovanovic (1990) states that in the early stages of deepening the financial sector, income distribution will deteriorate, but over time as the whole process progresses, income inequality tends to improve. This is based on the premise that at the beginning of financial deepening, only the rich can access financial services because of the fixed access fees to join a financial coalition. However, as the economy develops, access costs become more affordable for the poor and ultimately financial deepening will help equalize income distribution. Although theories provide conflicting conclusions about the relationship between finance and inequality, empirical work has shown that financial deepening contributes to poverty and inequality reduction (Naceur & Zhang, 2016).

In general, various studies use financial depth as a proxy for financial development (Law & Tan, 2009; Ang, 2010; Shahbaz & Islam, 2011; Tan & Law, 2012; Shahbaz, et al., 2015; Naceur & Zhang, 2016; Adams & Klobodu, 2016; Chiu & Lee, 2019), and uses the ratio of private credit to GDP as a proxy for deepening financial institutions. Seven and Coskun (2016) explain that private credit to GDP can be an indicator of financial development in developing countries, where financing and borrowing in the financial sector are the main sources of business development (Putriani & Prastowo, 2019). Shahbaz and Islam (2011) also state that the ratio of private credit to GDP is a comprehensive proxy for financial development.

In addition to theories that offer conflicting predictions, the results of previous studies also provide mixed results and can be classified into four hypotheses. First, the hypothesis of widening inequality (Adams & Klobodu, 2016; Buhaerah, 2017; Chiu & Lee, 2019). Second, the hypothesis of inequality narrowing (Hamori & Hashiguchi, 2012; Naceur & Zhang, 2016; Rachmawati, Wulandari & Narmaditya, 2018; Putriani & Prastowo, 2019). Third, the financial Kuznets curve hypothesis shows an inverted U-shaped relationship (Shahbaz, et al., 2015; Destek, Sinha & Sarkodie, 2020). Fourth, relations of financial and inequality are U-shaped (Tan & Law, 2012). Although several studies have shown the effect of finance on inequality, other studies have failed to find an effect between the two (Law & Tan, 2009; Kunieda, Okada & Shibata, 2011; Ahmed & Masih, 2017).

Understanding the relationship between financial deepening and income inequality is important for policymakers, as it will enable them to assess whether financial deepening will correct inequality and when it might be useful to do so. If financial deepening can reduce income inequality, policymakers should focus their attention on the creation and promotion of modern financial institutions that provide long-term income

distribution benefits (Law & Tan, 2009). Unfortunately, studies that empirically examine the effect of financial development on income inequality have not been widely carried out. The unavailability of adequate data both in the form of cross-country and time series is one of the factors causing the lack of studies related to financial issues and income inequality (Buhaerah, 2017).

In general, financial deepening is divided into two, namely financial institution deepening and financial market deepening. This research will focus on the deepening of financial institutions, because the deepening of financial markets or capital markets in various middle-income and low-income countries is still underdeveloped, even in some cases non-existent (Putriani & Prastowo, 2019). Furthermore, various literature evidence also shows that stock market deepening does not have a significant effect on income inequality in developing countries (Law & Tan, 2009; Ang, 2010; Ahmed & Masih, 2017), this is because many of those with low incomes are not only limited to income inequality on access to capital markets, but also in terms of their finances. In addition, Destek, Sinha, and Sarkodie (2020) found that stock market development has an effect on income inequality but in a sample of developed countries. Sri Mulyani stated that the main goal of development in Indonesia is to realize prosperity for all people who are supported by sources of financing, where in the financial sector so far the need for financing is indeed dominated by the banking sector as the intermediary party (Kemenkeu, BI, OJK, 2018).

In addition, this study will also use macroeconomic variables in analyzing factors that influence income inequality such as international trade, inflation, and economic growth. This study also aims to complement the various studies above and enrich the literature by providing further evidence on how financial deepening influences income inequality in Indonesia by examining the non-linear relationship or financial Kuznet proposed by Greenwood and Jovanovic (1990). The results of this study will contribute to policymakers whether improving the financial sector is one of the effective efforts to reduce poverty and equalize income distribution.

II. DATA AND RESEARCH METHODS

1. Empirical Models and Data

The data used is the annual time series data from 1982 to 2018 in Indonesia. The dependent variable used is income inequality sourced from the Standardized World Income Inequality Database (SWIID) developed by Solt (2020), while the independent variables used include financial deepening, international trade, inflation, and economic growth sourced from the World Development Indicators (WDI). The income inequality model (INEQ) can be written with the following equation:

$$\mathrm{INEQ}_t = \beta_0 + \beta_1 \mathrm{CRE}_t + \beta_2 \mathrm{CRE}_t^2 + \beta_3 \mathrm{TO}_t + \beta_4 \mathrm{INF}_t + \beta_5 \mathrm{LNGDP}_t + \varepsilon_t$$

where t and ε_t are period and residual term. The gini index (INEQ) is used as a proxy for income inequality. The ratio of private credit per GDP (CRE) is used as a proxy for financial deepening, where based on the GJ hypothesis it is expected that $\beta_1 > 0$ and $\beta_2 < 0$; and then an inverted U-shaped relationship is accepted. Trade openness (TO) is used as a proxy for international trade and is defined as the number of exports and imports divided by GDP. Inflation (INF) is defined as the percentage change in the annual cost for the average consumer to acquire several goods and services. Real GDP per capita constant 2010 U$ is used as a proxy for economic growth, where LNGDP is the natural logarithm of GDP.

2. Empirical Methodology

This study uses an autoregressive distributed lag (ARDL) analysis tool. The error correction model (ECM) cannot be applied if there is stationary data at the level, while the autoregressive distributed lag (ARDL) model can be used to solve different stationary problems (except 2nd difference). This model was developed by Pesaran and Shin (2001) with the same steps as ECM, namely (Widarjono, 2018): 1) stationarity test using the Augmented Dickey-Fuller (ADF) test; 2) cointegration test, to determine whether or not there is a long-term relationship in the ARDL model which can be identified by using the cointegration bound testing approach; 3) estimation of long-term and short-term ARDL. The equation for the ARDL model for the long-term equation is written as follows:

$$\begin{aligned}\Delta\mathrm{INEQ}_t = \alpha_0 &+ \sum_{i=1}^{n} \alpha_{1i}\, \Delta\mathrm{INEQ}_{t-1} + \sum_{i=1}^{n} \alpha_{2i}\, \Delta\mathrm{CRE}_{t-1} + \sum_{i=1}^{n} \alpha_{3i}\, \Delta\mathrm{CRE}_{t-1}^2 + \sum_{i=1}^{n} \alpha_{4i}\, \Delta\mathrm{TO}_{t-1} \\ &+ \sum_{i=1}^{n} \alpha_{5i}\, \Delta\mathrm{INF}_{t-1} + \sum_{i=1}^{n} \alpha_{6i}\, \mathrm{LNGDP}_{t-1} + \theta_1 \mathrm{INEQ}_{t-1} + \theta_2 \mathrm{CRE}_{t-1} + \theta_3 \mathrm{CRE}_t^2 + \theta_4 \mathrm{TO}_{t-1} \\ &+ \theta_5 \mathrm{INF}_{t-1} + \theta_6 \mathrm{LNGDP}_{t-1} + \mathrm{e}_t\end{aligned}$$

Δ is lag. The coefficients α_{1i} to α_{6i} are short-term dynamic relationship models and coefficients θ_1 to θ_6 are long-term dynamic relationships. The important thing in estimating ARDL is to determine the optimal lag

length using the Akaike Information Criterion (AIC) or Schwarz Information Criterion (SIC) criteria. The ARDL model in the form of an error correction model is written as follows:

$$\Delta INEQ_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\, \Delta INEQ_{t-1} + \sum_{i=1}^{n} \alpha_{2i}\, \Delta CRE_{t-1} + \sum_{i=1}^{n} \alpha_{3i}\, \Delta CRE_{t-1}^2 + \sum_{i=1}^{n} \alpha_{4i}\, \Delta TO_{t-1} + \sum_{i=1}^{n} \alpha_{5i}\, \Delta INF_{t-1} + \sum_{i=1}^{n} \alpha_{6i}\, LNGDP_{t-1} + \vartheta ECT_{t-1} + u_t$$

ECT_{t-1} is an error correction variable (residual) from the previous period.

III. RESULT AND DISCUSSION

This study discusses the relationship between the financial deepening and macroeconomic on inequality in Indonesia in 1982-2018. This study also discusses the short-term and long-term relationship with the autoregressive distributed lag (ARDL) analysis tool. In addition, the relationship between financial deepening and inequality uses the theory proposed by Greenwood and Jovanovic (1990) with an inverted U-shaped relationship that leads to a non-linear relationship. Furthermore, this study provides further evidence of whether upgrading the financial sector is the right step in equalizing income distribution in Indonesia.

1. Stationarity Test

Dickey-Fuller (DF) developed the unit root test by entering a higher AR and adding the lags of the differential variable known as the Augmented Dickey-Fuller (ADF) test. If the ADF t-statistical value > Mackinnon's critical value (critical value = 5%) then H_0 is rejected, meaning that the data is stationary.

Table 1
Stationarity Test Results

Variable	ADF t-Stat.	Prob.	ADF t-Stat.	Prob.
	Level		1st Difference	
INEQ	-2.6660	0.2558	-4.2512	0.0126
CRE	-1.8482	0.6601	-4.2262	0.0104
CRE^2	-2.4920	0.3298	-4.1926	0.0113
TO	-3.4409	0.0617	-8.0027	0.0000
INF	-4.8956	0.0018	-7.2145	0.0000
GDP	-0.1690	0.9914	-4.3191	0.0083
Test critical values MacKinnon:				
1% level		-4.2436		
5% level		-3.5442		
10% level		-3.2046		

Source: Data processed in 2021.

Based on Table 1, it is known that only the inflation variable (INF) has been stationary at the level (α = 5%). It can be seen from the ADF t-statistic value is greater than the critical value of MacKinnon (4.8956 > 3.5442), with a probability value of less than 0.05 (H_0 is rejected). Meanwhile, in the 1st difference level, all variables consisting of income inequality (INEQ), financial deepening (CRE and CRE^2), inflation (INF), international trade (TO), and economic growth (GDP) are said to be stationary. The ARDL model can be used to solve the problem of different stationarity levels and nothing is stationary at the 2nd difference level. Therefore, it can be said that this test is following the requirements of the ARDL estimation because there are variables that are stationary at the level, while others are at the 1st difference level.

2. Cointegration Test

The cointegration test is used to determine whether the ARDL model used has a long-term relationship or not. This can be known by the bound testing approach which is based on the F statistical test. The critical F value consists of two, namely the lower bound or I(0) and the upper bound or I(1). If the calculated F value > I(1) value, then there is cointegration. If the calculated F value < I(0) value then there is no cointegration, whereas if the calculated F value is between I(1) and I(0) then there is no decision.

Table 2: Cointegration Test Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Stat.	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.26	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Data processed in 2021.

Based on Table 2, it is known that the F-statistic value is greater than the upper bound or I(1) value, namely 5.26 > 3.38 (α = 5%). Therefore, it can be said that this test rejects H_0 which means that there is cointegration between the variables studied.

3. ARDL Estimation

ARDL estimation is used to determine the optimal lag length using the Akaike Information Criterion (AIC) method.

Table 3: ARDL Estimation Results

	Model 1			Model 2		
	Dependent Variable: INEQ			Dependent Variable: INEQ		
	Method: ARDL			Method: ARDL		
	Selected Model: ARDL(3, 4, 4, 3, 4, 1)			Selected Model: ARDL(3, 4, 4, 3, 4, 1)		
				HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)		
Variable	**Std. Error**	**t-Stat.**	**Prob.***	**Std. Error**	**t-Stat.**	**Prob.***
INEQ(-1)	0.2501	5.2699	0.0008	0.3325	3.9652	0.0041
INEQ(-2)	0.5540	0.3585	0.7292	0.7848	0.2530	0.8066
INEQ(-3)	0.3571	-1.8444	0.1023	0.5173	-1.2731	0.2387
CRE	0.0382	-2.4097	0.0425	0.0504	-1.8265	0.1052
CRE(-1)	0.0345	2.8139	0.0227	0.0449	2.1619	0.0626
CRE(-2)	0.0316	0.7503	0.4745	0.0375	0.6329	0.5444
CRE(-3)	0.0248	-1.2716	0.2392	0.0216	-1.4614	0.1820
CRE(-4)	0.0247	3.2652	0.0114	0.0206	3.9120	0.0045
CRE^2	0.0004	1.6338	0.1409	0.0005	1.3190	0.2236
CRE^2(-1)	0.0003	-2.1898	0.0599	0.0004	-1.9768	0.0835
CRE^2(-2)	0.0003	-1.3713	0.2075	0.0004	-1.0808	0.3113
CRE^2(-3)	0.0003	1.1102	0.2991	0.0002	1.3409	0.2167
CRE^2(-4)	0.0002	-3.0202	0.0166	0.0002	-4.2351	0.0029
TO	0.0093	-1.8853	0.0961	1.2245	-1.4401	0.1878
TO(-1)	0.0079	2.5578	0.0338	0.6630	3.0560	0.0157
TO(-2)	0.0081	-2.4243	0.0416	0.8300	-2.3677	0.0454
TO(-3)	0.0096	0.7767	0.4596	1.0323	0.7237	0.4898
INF	0.0090	-0.3892	0.7072	0.0160	-0.2211	0.8305
INF(-1)	0.0060	-4.6411	0.0017	0.0079	-3.5150	0.0079
INF(-2)	0.0063	1.4995	0.1721	0.0036	2.5966	0.0318
INF(-3)	0.0053	-3.2013	0.0126	0.0069	-2.4881	0.0376
INF(-4)	0.0077	-0.9676	0.3616	0.0084	-0.8879	0.4005
LN(GDP)	2.0636	-0.8082	0.4423	3.5968	-0.4637	0.6552
LN(GDP(-1))	2.0862	0.8211	0.4353	3.6023	0.4755	0.6471
C	1.5476	3.6586	0.0064	2.4785	2.2845	0.0517

Source: Data processed in 2021.

Based on Table 3, it is known that the optimal lag length in the model is ARDL(3, 4, 4, 3, 4, 1). In model 1, the estimation still contains autocorrelation (Table 4), while in model 2 the ARDL estimation has passed the autocorrelation with the healing method using HAC. The Heteroskedasticity and Autocorrelation Consistent Covariance Matrix (HAC) method can make the standard error consistent so that when there is autocorrelation, it is still possible to evaluate the t-test and F-test. After using the HAC method, it can be seen that there are changes in the standard error, t-statistics, and probability.

Table 4: Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	17.674	Prob. F(2,6)	0.0031
Obs*R-squared	28.211	Prob. Chi-Square(2)	0.0000

Source: Data processed in 2021.

The autocorrelation test is very important for time series data because if it is exposed to autocorrelation problems it can cause the estimation results to be biased. Based on the results of the autocorrelation test using the LM test method (Breusch-Godfrey Serial Correlation LM) it is known that the probability of Obs*R^2 is less than 0.05, so it can be concluded that this test accepts Ha, which means there is an autocorrelation problem in the model studied.

Table 5: Long and Short Term Test Results

		Long Term	
Variable	Coeff.	t-Stat.	Prob.
CRE	0.5519	3.3351	0.0103
CRE^2	-0.0086	-4.5389	0.0019
TO	-6.7521	-0.5171	0.6191
INF	-0.3319	-2.5436	0.0345
LN(GDP)	0.3191	0.4668	0.6531
		Short Term ECM Regression	
Variable	Coeff.	t-Stat.	Prob.
D(INEQ(-1))	0.4600	3.1332	0.0139
D(INEQ(-2))	0.6587	4.0207	0.0038
D(CRE)	-0.0923	-6.6603	0.0002
D(CRE(-1))	-0.0731	-3.4252	0.0090
D(CRE(-2))	-0.0494	-3.9553	0.0042
D(CRE(-3))	-0.0810	-5.3475	0.0007
$D(CRE^2)$	0.0007	4.5623	0.0018
$D(CRE^2(-1))$	0.0010	3.9337	0.0043
$D(CRE^2(-2))$	0.0005	3.2768	0.0112
$D(CRE^2(-3))$	0.0009	4.9083	0.0012
D(TO)	-1.7636	-5.0708	0.0010
D(TO(-1))	1.2182	3.4678	0.0085
D(TO(-2))	-0.7472	-2.2340	0.0559
D(INF)	-0.0035	-1.5808	0.1526
D(INF(-1))	0.0153	3.1173	0.0143
D(INF(-2))	0.0248	7.6916	0.0001
D(INF(-3))	0.0075	2.4953	0.0372
DLN(GDP)	-1.6680	-4.0617	0.0036
CointEq(-1)*	-0.1415	-8.0282	0.0000
Adjusted R^2		0.9671	

Source: Data processed in 2021.

Based on Table 5 above, it can be seen that the financial deepening variable in the long-term supports an inverse U-shaped relationship to income inequality, while in the short-term it supports a U-shaped relationship. In addition, the international trade variable in the long-term has no effect on income inequality, while in the short-term from lag 1 to lag 3 in general it has a significant negative effect. Inflation variable in the long-term has a significant negative effect on income inequality, while in the short-term from lag 1 to lag 3 consistently shows a significant positive relationship. The variable of economic growth in the long-term has no effect on income inequality, while in the short-term it has a significant negative effect. The value of CointEq(-1)* shows a negative and significant direction, so it can be concluded that the ARDL-ECM model is valid, and has cointegration between the dependent and independent variables.

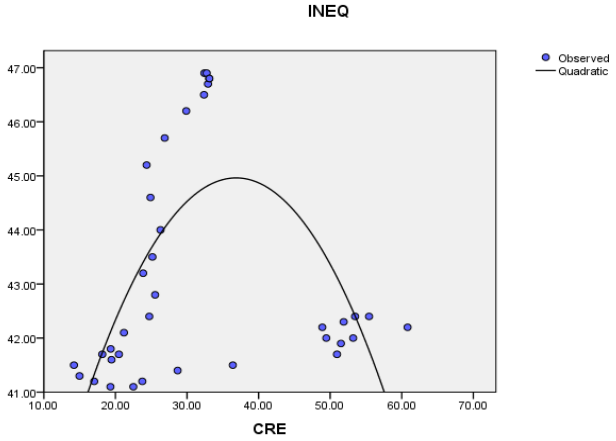
IV. DISCUSSION

The results show that in the short term the effect of financial deepening on income inequality shows a U-shaped relationship (Table 5). This can be seen from the t-statistical probability of less than $\alpha = 5\%$ for both linear (CRE) and non-linear (CRE^2) variables. The U-shaped relationship states that financial deepening can equalize the distribution of income only to a certain point, and if it is increased, what happens is that income inequality in society is widening (Tan & Law, 2012; Ibrahim, 2018). Therefore, in the short term when the government sets a policy to increase credit distribution in the community, in this condition only people with high incomes will enjoy the benefits of the policy, and this will result in a higher income gap. Rajan and Zingales (2003) stated that poor people are prevented from entering the financial market because they do not have sufficient wealth to be used as collateral. In addition, Ang (2010) highlights the issue that developing countries are often characterized by credit constraints due to moral hazard problems.

In Indonesia from 2013 to 2019 the total loans disbursed to MSMEs only ranged from 19%-20% of the total loans disbursed by banks. Meanwhile, the largest employment absorption is in the micro-enterprise sector, namely 89.2% in 2017. In 2014 more than 50 million MSMEs in Indonesia were considered unbankable and not creditworthy because they had a high risk. This is supported by research result Aldaba (2012) which found that the limited constraints of Small and Micro Enterprises (SMEs) in getting an injection of funds from banks were because SMEs did not have sufficient collateral, a limited track record such as bad credit history, financial reports (such as sales, cash flow) and inadequate business plans, and are classified as unstable business types. Therefore, in the short term, improvements in the financial sector can worsen income distribution.

Meanwhile, in the long term, the effect of financial deepening on inequality supports the inverse U-shaped relationship proposed by Greenwood and Jovanovic (1990). This result is also supported by previous research conducted by Shahbaz, et al. (2015), and Destek, Sinha, and Sarkodie (2020) which state that initially, financial deepening will have a negative impact on income distribution, but along with the growing economy, financial deepening will help in equalizing income distribution.

Figure 2
The Inverted U-Curve of Financial Deepening and Income Inequality in Indonesia



Source: Data processed in 2021.

Currently, the total distribution of MSMEs loans in Indonesia is still less than 20%. Meanwhile, the absorption of labor in the MSMEs sector is very high at more than 90%. The disbursement of credit to MSMEs which is still low has an impact on widening inequality. However, in the long term and followed by a growing economy, the financial sector has proven to be able to help equalize the distribution of income in Indonesia. The research results Ang (2010) reveal that in India credit has been directed to the agricultural sector and small and medium enterprises over the last few decades. These programs have provided significant benefits for farmers and small traders, allowing the poor to have direct access to financial services. The World Bank states that deepening the financial sector can help SMEs grow by providing them with access to finance. SMEs are usually labor intensive and create more jobs than large companies. Therefore, SMEs play an important role in economic development, especially in developing countries.

Most previous studies concluded that improving the financial system to facilitate access for low-income people can be a solution to continue reducing income inequality in society (Hamori & Hashiguchi, 2012; Rachmawati, Wulandari & Narmaditya, 2018), by targeting financial development to the poor or pro-poor policies (Law & Tan, 2009; Jauch & Watzka, 2012). Shahbaz et al. (2015) argue that access to capital creation, reallocation of resources, technological innovation, and proper human resource development are equally important in giving proper attention to the financial sector. Furthermore, Naceur and Zhang (2016) recommend policies that include credit relaxation and interest control, as well as increasing banking supervision.

The results show that in the short term international trade (TO) has a significant negative effect on income inequality (Table 5). It can be seen from the probability value of t-statistic less than $\alpha = 5\%$. This result implies that the existence of international trade activities in the form of export and import will have an impact on energy absorption, so that it will increase people's income, and in turn will reduce inequality. This seems to be related to the implementation of the ASEAN Economic Community (MEA) in 2016 which had a positive impact such as increasing the export capacity of local products abroad and making it easier for foreign investors to invest in Indonesia and ultimately expanding job opportunities.

Meanwhile, in the long term international trade does not affect income inequality. The majority of export producers in Indonesia are owned by large companies, both in the form of foreign investment and domestic investment. Meanwhile, the investment trend over the past few years has indeed led to capital-intensive investment, so that it has an impact on the decline in employment. Foreign investors prefer capital-intensive investments because the wages given are not commensurate with the quality of the resources they have. In addition, foreign investors also require that they bring experts from their country to support the company's performance. On the downside, foreign investors may prefer other developing countries with the same quality of human resources but with lower wages.

Polpibulaya (2015) states that exports cause greater income inequality because a country's exports provide more benefits to large companies than poor people or a large part of the country's population. Furthermore, Shahbaz and Islam (2011) reveal that trade may not benefit poorer workers who tend to be less educated. As economies become more open whether economically, socially, or politically, their ability to access each other's technology and culture increases, and this increase, in turn, increases income inequality. This is because the rich class of a country has more opportunities to develop financially, socially and they can be politically stable compared to the poor class and causes the concentration of money in several hands (Munir & Sultan, 2017).

The results show that in the short term inflation has a significant positive effect on income inequality (Table 5). This can be seen from the probability t-statistic which is less than α = 5%. Bank Indonesia stated that since 2015 Indonesia's inflation has entered a new era, namely low inflation or can be said to be under control. Low and controlled inflation can encourage people's purchasing power to be higher so that it indicates increasing public welfare because the real value of money does not decrease. Rukmana (2012) states that high inflation can cause economic instability, hamper export performance, increase poverty and unemployment, and reduce investment. Monnin (2014) emphasizes the importance of the government in maintaining the inflation target because it can be an important pillar to reflect the problem of income distribution in the monetary policy framework.

Meanwhile, in the long-term, inflation has a significant negative effect on income inequality. Shahbaz and Islam (2011) reveal that mild inflation serves as a tonic for investors and thus encourages investment that creates jobs. But what is interesting is who enjoys this stable economy, Chiu and Lee (2019) found that under a stable economic environment, the rich can earn more than the poor, which increases income inequality. Correspondingly, Siami-Namini and Hudson (2019) state that over the past decade, monetary authorities in developed countries have intended to maintain low inflation targeting to stabilize the economy, which in turn has exacerbated income inequality in these countries.

The results show that in the short-term economic growth has a significant negative effect on income inequality (Table 5). This can be seen from the probability t-statistic which is less than α = 5%. The trickle-down effect theory states that policies directed at increasing high economic growth through high-income people can equalize the distribution of income through investment and then absorb labor (Djojohadikusumo, 1994). However, as previously mentioned, investment in Indonesia is very minimal in absorbing labor. In 2019, an investment of 809.6 trillion was only able to absorb 0.82% of the total employment. However, in the short term, new investments will certainly absorb labor.

Meanwhile, in the long term, economic growth does not affect income inequality. The World Bank (2015) states that in 2002, the richest 10% of the population in Indonesia consumed 42% of the total consumption of the poor, and this has increased to 54% in 2014. Kavya and Shijin (2020) state that the growth of the upper-class income signifying that they are the only sector enjoying the benefits of economic and financial development. Policies that are only directed at increasing national income will lead to a concentration of economic power among several large individuals and corporations. Furthermore, Polpibulaya (2015) reveals that countries with large areas tend to find it more difficult to distribute income among their citizens.

In poor countries, the focus of attention is on the dilemma between growth versus income distribution. Both are equally important, but difficult to do at the same time. Many countries feel that their economic growth is high, but fail to eradicate poverty (Todaro, 2000). Economic growth is only described in aggregate, not partial so that high economic growth is not always accompanied by an even distribution of income between economic actors. In many countries, the problem of income distribution is not an easy thing to do, especially if the distribution of income and property happens to involve the vested interests of the ruling class. A good policy to be taken is through changes in investment patterns (dynamic redistribution) so that low-income groups are gradually able to cultivate a lot of assets, with the weakness that it takes a very long time (Arsyad, 2010). Furthermore, Wibowo (2016) also states that government policy priorities must be adapted to different levels of community conditions.

V. CONCLUSION

Based on the discussion above, it can be concluded that financial deepening in the short term leads to a U-shaped relationship. However, in the long term, it supports the inverted U-shaped hypothesis as proposed by Greenwood and Jovanovic (1990). This implies that financial deepening in Indonesia must be increased because in the long-term financial deepening through credit has proven to be able to reduce income inequality. In addition, in the short-term income inequality is influenced by international trade, inflation, and economic growth. Meanwhile, in the long term, inflation is known to exacerbate income inequality in Indonesia. Therefore, the government is expected to be able to balance the conditions of low and stable inflation by considering the benefits obtained for the poor.

Policies aimed at fostering investment from low-income groups will take a long time. In Indonesia, the government has implemented policies in the form of subsidizing credit interest for Micro, Small, and Medium Enterprises, lowering effective interest rates, and providing unsecured loans. Although this effort has not been carried out optimally, if this program continues, the distribution of income in the community may be more evenly distributed. The government is also expected to continue to monitor the implementation of this policy, considering that the poor have a higher risk of default. Furthermore, expanding literacy for rural and remote areas is also needed to introduce them to the financial sector. Although this study uses data ending in 2018, this research contributes to the most recent data, considering that research on financial issues and inequality is still not widely done. Further research is expected to be able to expand the scope of financial development which is

not only limited to the depth of financial institutions. This research does not reach the point at which the financial sector will reduce income inequality. So that further research is expected to be able to calculate to what point finance can exacerbate income inequality in Indonesia.

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