

An empirical study on income equality, economic growth and financial inclusion in Indonesia: model development on SMEs financing

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An empirical study on income equality, economic growth and financial inclusion in Indonesia: model development on SMEs financing

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Abstract: In line with economic growth (EG) in the world today, as one of the developing countries, Indonesia must rise to the challenge of income equality (IE) for all layers of the community. Financial inclusion (FI) is a government program employed to respond to such an issue. The study conducted is to develop an empirical model to evaluate such FI program. Credit distribution to SMEs through financing institutions (SMEs financing) is added to the model to evaluate the hypothesis that could strengthen FI's influence both toward IE and EG. Data were analysed using fixed and random effect models for all provinces during five years. Empirical analysis results indicate that FI is an Indonesian government program that can increase IE of the community. SMEs financing has a significant role in the strengthening of FI toward IE and the potential to foster greater FI within the overall goal of elevating EG in Indonesia.

Keywords: economic growth; financial inclusion; income equality; SMEs financing; Indonesia.

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1 Introduction

Improving income equality (IE) and economic growth (EG) is one among 17 issues the world is paying its attention to through SDG programs. In developed or industrialised countries improving IE and EG is easy to achieve. However, for developing countries, it is not easy to get both to align. There tends to be a trade-off between EG and IE because the economy will grow when an investment goes up, be it by the government, the private sector, or off-shore. This leads to the inability of prosperity to be enjoyed by all community groups/classes or layers, especially those lacking the power/capability to

compete (medium and small groups). This IE phenomena also surfaces in Indonesia, which is in the category of developing countries. Despite the implementation of regional decentralisation disparity still exists concerning financial deepening (Trinugroho, 2015). Financial inclusion (FI) is the step taken by the Indonesian Government to eliminate various obstacles faced by the community in accessing financial services. FI is also a national strategy to foster EG through IE, poverty eradication, and consolidation of financial resources (Bank Indonesia, 2014). On the other hand, according to Yustika (2012, p.180), EG is one of the significant aspects with which to access the success of development besides IE. The indicator of EG becomes significant as it points to the overall economic performance encompassing investment, workforce absorption, national output and income generation.

Inequality in income distribution occurs due to several factors, among others: population growth not accompanied by balanced national income growth, high inflation, inter-regional development disparity, unbalanced investment on capital and labour-intensive projects, low social mobility, implementation of import substitution industrial policy and the depreciating currency exchange. The collapse of local products dominated by small and medium enterprises (SMEs) can also lead to income inequality [Arsyad, (2004), p.226]. The role of SMEs sector to eradicate poverty and fix income disparity has been proven in several studies. The micro SMEs sector, with a relatively small wage as compared to big businesses, has been able to distribute income to a wider range of the community, through worker wages or capital [Harvie and Lee, (2002), p.3]. Ali et al. (2014) also gave evidence of the SME sector playing a role in the eradication of poverty in Pakistan through improvement of job opportunities. SMEs are dominant business units in Indonesia, as they represent significant contributions both in urban and in rural areas. Therefore, bank loans to SMEs are of key interest in Indonesia (Trinugroho et al., 2014).

The study conducted by Trinugroho et al. (2015) on determinants of cross-region differences in financial deepening in Indonesia, indicates that "poor local governance significantly impedes financial deepening. In the socioeconomically less developed regions, the level of financial deepening is lower than that of more developed regions." Despite the decentralisation policy, regional disparity regarding financial deepening still exists. The study recommends regulators take into consideration regulations that would limit the distribution of bank loans. Trinugroho et al. (2015) further revealed that banking access related to loans is strictly regulated and can only be enjoyed by the upper-middle-class community or, in other words, groups with a higher capability of accessing banking facilities. Almost all loans must be collated with tangible or intangible asset forms. As such, the role of funding by financial institutions to the SMEs becomes worth looking into (Yuniarti, 2011; Effendi and Yasmin, 2017). Based on such phenomena, this study is motivated to formulate an empirical model that can evaluate whether SMEs financing (SMEF) as a government program could strengthen the FI program in improving IE and EG.

The rest of this paper is structured as follows: Section 2 reviews previous study and the theoretical framework of related issues. Section 3 describes the methodology. This section describes the variables and models developed to examine the hypotheses.

Section 4 reports the results and discussion. This section describes the results of the analysis of the models that have been tested and includes a discussion of the difference in results. Section 5 concludes our findings, disclosure limitation and provides a recommendation for further study and use by regulatory bodies.

2 Literature review

2.1 Income distribution to IE

IE illustrates income distribution level generated by various economic activities [Latumaerissa, (2015), p.89]. IE is achieved when EG is generated and enjoyed by many [Todaro and Smith, (2009), p.251]. Income distribution is interpreted in two ways, namely functional income distribution and income value distribution, or distribution to each (Cowell, 2007). Income functional distribution is related to relative prices, output, and work, while income value distribution relates to household savings and investment in education. Distribution of income can produce IE or inequality. The measurement of IE and inequality frequently used is the Gini coefficient. It is an indicator of actual income distribution, consumption expenses or other variables related to distribution where each receives the same share (Firman and Herlina, 2006). Gini coefficient ranges from 0–1. Income distribution is categorised as equal if the Gini coefficient is close to 0 and categorised as lame or in equal if it is close to 1. Although EG is not always followed by the process of income equalisation, EG is a prerequisite to income distribution further leading to IE.

Within this study, IE is measured using the Gini ratio. Gini ratio (aggregate inequality) is a proxy used to measure income difference (income inequality). There is a growing recognition that increasing access to formal financial services has both private and social benefits. Extending access to financial services encourages EG and can improve income distribution or equality.

2.2 The role of SMEs on EG

Another important aspect to measure the success of development in a country is EG. EG can be achieved in two ways. First is by improving resources, encompassing natural resources, machinery, and workforce, commonly referred to as extensive economic [Yustika, (2012), p.184]. The second is by improving the productivity of resources by improving the production process through technology [Yeager, (1999), p.47], commonly referred to as intensive EG. Intensive EG driven by innovation, technology, and capital is the foetus of the new EG theory.

In the new EG theory, countries possessing innovation, technology, and capital will have a high competitive edge and ultimately will achieve higher EG. Based on a survey conducted by World Bank in 1999, 2002 and 2004, this prerequisite can be achieved if the government stipulates policy that supports SMEs development. This is based on the argument that: First, SMEs are capable of improving competency and entrepreneurship leading to a wide range of economic efficiency, innovation, and aggregate productivity growth. Second, SMEs are more productive than large-scale businesses. Third, SMEs absorb a greater amount of workforce (Beck et al., 2000). Despite their limitations, SMEs are more resilient against economic crisis as SMEs have the flexibility and capability to face rapid change. Taking into account SMEs significant role in eradicating poverty and elevating EG, policy or decision makers should give pay more attention to consolidating formal financial market to eliminate financial obstacles faced by SMEs by simplifying loan procedures, enforcing law to protect SMEs financial rights and reducing cost or rate of interest for SMEs (Ali, 2013).

In economic activities, EG is an activity to increase the production of goods and services within a certain time frame. It is measured by GDP. IE indicates income distribution, meaning that gross domestic product (GDP) is evenly distributed within the population (Dumairy, 1999). Income distribution is measured by the distribution of size or value and function. Distribution of size or value is the amount of income received by each. Distribution of function is the distribution of production factors (Todaro and Smith, 2009).

There was a marginally positive effect of trade openness, energy and financial development on EG in South Africa (Kumar et al., 2012). Mohammad (1981) observed the effectiveness of trade policies and their assessment in achieving EG and IE in India. The result of the study showed that trade by bringing higher levels of production and employment could reduce IE.

2.3 Indonesian Government policy on FI

Besides the effort to encourage EG, one of the main initiatives, as mentioned in The 2030 Agenda for Sustainable Development, is an effort to eradicate poverty and create inclusive and sustainable development. Specifically with respect to the FI agenda, the G20 developed national remittance plans as an effort to reduce the amount of global remittance to a maximum of 5% from the total transferred funds by migrant labourers and support the effort of increasing other forms of FI in the global partnership framework for FI (Bank Indonesia, 2015). Based on the President's Instruction No. 3 the year of 2010 regarding the justifiable development, FI is one of the Indonesian Government programs aimed at poverty eradication and community empowerment.

The purpose of the FI program is to increase IE of the people. Theoretically, one means of increasing EG is by eradicating poverty. According to De Koker and Jentszsch (2012), informal employment and cash preference reduce the inclination to use mobile financial services. Gupte et al. (2012) measured the extent of FI based on the computation of an index that comprehensively captures the impact of multi-dimensional variables with specific reference to India. The Reserve Bank of India (RBI) has initiated several measures to enhance the FI in India. The social-banking policy has played a crucial role in fostering FI across the states in India (Chakravarty and Pal, 2013).

According to INPRES no. 3/2010 regarding sustainable development in Indonesia, there are three characteristic programs:

- 1 for the people
- 2 justice for all
- 3 achievement of millennium development goals.

From the three programs, FI is the 'for the people' program. The 'for the people' program focuses on community-based poverty eradication, community, and SME empowerment. Both community-based and SME empowerment are governed by FI implementation strategy.

According to Dixit and Ghosh (2013) and Arun and Kamath (2015), the need for inclusive growth comes in the picture of economic development, especially in a country that has large scale and rapid EG. Inclusive growth plays a very important role in the process of EG. There is no comprehensive measure that can be used to assess the overall level of FI in an economy. Bihari (2011) attempts to fill this gap by proposing a financial

inclusion index (FII), which is a multi-dimensional index that captures information on various dimensions of FI in one single digit between 0 and 1, where 0 denotes complete FI, and 1 indicates complete FI in an economy. FI helps to eliminate poverty, reduce inequality, eliminate unequal access to opportunities, reduce inequalities of choice (Dayananda, 2017).

FI may be defined as the process of ensuring access to financial services for timely and adequate credit needed by vulnerable groups such as the weaker sections of society and low-income groups at an affordable cost (RBI, 2008). FI is identified as one of the important factors for national development in ASEAN countries. Thus, FI is an important strategy to support the wider goal of economic integration within the territory of ASEAN. FI has become the main goal in the ASEAN Economic Community (AEC) blueprint. It has an effect on capital and capital constraint in the financial system in ASEAN countries. Based on data issued by ADB, Park and Mercado (2015), it is stated that Indonesia's FI index is ranked at 102, with a value of 24.36. The first rank is held by Spain with an FI index of 90.98, while the bottom rank (ranking 176) for ASIA region is Republic of Congo with an FI index of 2.38. Industrial countries tend to have higher FI indexes compared to developing countries such as Indonesia.

In comparing the cases of Malaysia and Indonesia in the context of market and policy, there are both similarities and differences. Both are developing and predominantly Islamic countries (World Bank Annual Report, 2013) but pose a stark contrast regarding FI index. Demirguc-Kunt and Levine (2001) found that the share of adults with an account at a formal FI between Malaysia and Indonesia respectively was 66% and 20%, poorest income quintile was 45% and 8%, and women was 63% and 19%. There are three differences that motivate us to study the policy instruments and operational strategies these countries are adopting concerning FI. Additionally, the growth of the SMEs sectors in Malaysia is higher than Indonesia. In comparing their data with ours, we are interested in gaining an elaboration of the strengths of financial policy for the SMEs sectors in Malaysia which may be implemented in Indonesia.

FI is defined as a proposition of individuals or company who use financial services (World Bank, 2014). FI can be measured using four indicators, among others: access, quality, benefit, and welfare. Access is the component that stresses on community's capability to utilise financial services and financial services products. Quality is conformity measurement between banking services and products with consumer needs. Benefit measures the amount of product and frequency of product utilisation by the community. Welfare is the measurement of banking services and product impact on consumers, such as the impact of business activities. This study uses one of the above components, which is accessibility, with the number of administrative offices and bank services as indicators.

In many developing countries less than half of the population have accounts at financial institutions. The Indonesian conditions are only marginally better, just about half of the population have such access. Diniz et al. (2012) stated that although access to financial resources is a fundamental way to promote local development to the low-income population, such access should be accompanied by other inclusive mechanisms like financial education to be effective. Table 1 shows the international comparison of financial sectors.

Based on Table 1, Indonesia's financial sector is still small in relation with its GDP which is 103.6%. This is considerably less than the size of the financial sectors in other

ASEAN economies, such as Malaysia, which stands at 383.5%. As a proportion to GDP, the credit made available by Indonesian banks to the private sector is also among the lowest in the region, only 25%. Hopefully, if it is possible this study will contribute to that data which had been collected and taken into account for about ten years ago. And not merely as a contribution for another researcher, but to the government and its practices as a basis for policymaking.

Table 1 The international comparison of financial sectors

Countries	Total financial assets (% of GDP)	Credit to private sector (% of GDP)	Equity market capitalisation (% of GDP)	Private bonds (% of GDP)	Public bonds (% of GDP)	GNI per capita (Atlas method, in US\$)
China	542.5	114.5	189.9	0.2	0.4	2,360
Malaysia	383.5	108.8	180.2	4.4	7.1	6,540
India	298.3	47.4	155.4	0.7	0.2	950
Thailand	210.6	84.4	79.8	1.4	1.2	3,400
Brazil	205.1	49.8	104.3	2.9	3.6	5,910
Pakistan	150.2	29.4	48.9	0.6	1.3	870
Philippines	128.7	23.8	71.6	1.7	11.3	1,620
Indonesia	103.6	25.4	48.9	2.1	1.1	1,650
Sri Lanka	60.8	34.0	23.3	0.3	0.2	1,540
Bangladesh	54.8	37.7	10.0	470

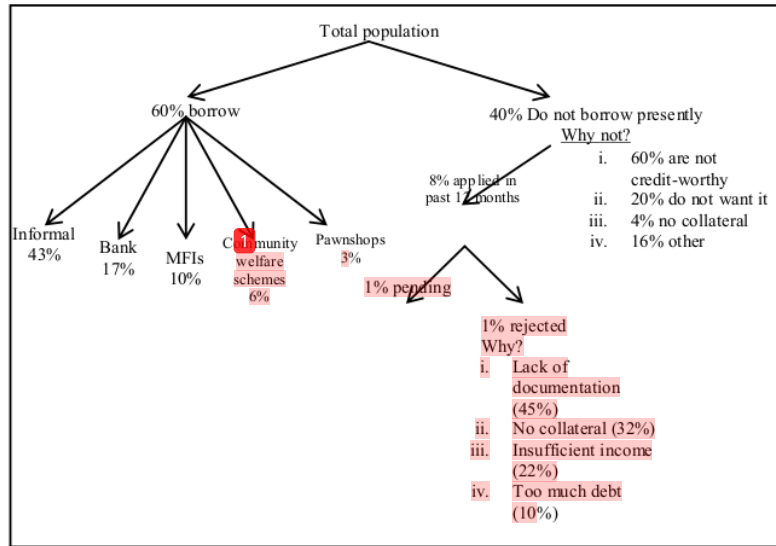
Source: Nenova et al. (2009)

Based on the World Bank Annual Report (2013), Figure 1 illustrates the profile of borrowers in Indonesia.

Figure 1 state that 6% of the borrowers are in the community welfare schemes. This means that the absorption of the fund for increasing community welfare was still very low. On the other hand, there were 40% under the 'do not borrow' status and 32 % from the above number that was not in possession of collateral and 45% was due to the lack of documentation. Only 17% of Indonesians borrowed from banks and about one-third more borrowed from informal sectors. Therefore 40% of the population was financially excluded from credit services.

SMEF is credit allocated to SMEs in line with Act No. 20 in the year 2008 regarding micro SMEs. SMEF can be seen from SMEs credit development comprising SMEs work capital and investment credits. It cannot be denied that the development of the SMEs sector in Indonesia still has some constraints, among others: institutional capacity, low human resource quality, and limited access to productive resources including financial (Tricahyadinata, 2013). The low access toward productive resources, including financial resources, leads to the lack of working capital resulting in reduced production capacity and consequently the competitiveness of products produced by SMEs (Cook and Nixon, 2000). As such, the government needs to study SMEs development strategy and accessibility toward financial institutions in particular. Table 2 shows data on the progress of SMEs credit.

Figure 1 Profile of borrowers in Indonesia



Source: World Bank Annual Report (2013)

Table 2 Progress of SMEs credit

Credit type	2011	2012	2013	2014	2015
UMKM credit	85,587.60	72,339.50	87,245.40	67,990.30	63,078.60
Total credit	448,604.00	519,094.90	605,273.00	396,883.00	396,329.10
Percentage (%)	19.08	13.94	14.41	17.13	15.92

Source: Bank Indonesia (2016)

2.4 Indonesian Government capital expenditure and financing policy

The model constructed in this study is controlled by two variables, namely financing policy (FP) and capital expenditure (CE). These controlling variables are applied to minimise errors in the modelling. The argument for the use of FP is that FP and FI are both government policies. Good FP strategy can determine good regional financial management strategy. FP cannot instantly increase EG and IE so that the empirical model constructed must be moderated with CE. One of the instruments to increase EG is government investment. To invest the government needs funding. The option of alternative funding must be assessed on which can have a more significant effect toward EG and IE, whether it is debt or PDB. Funding must be in the form of expenses that can serve as leverage or stimulate community income.

Under the Government Accounting Standard Statement, CE is defined as “budget disbursement for the acquisition of fixed and other assets that would yield benefits for more than one accountancy period” (KSAP, 2006). Under budgeting terminology, capital disbursement is defined as expenditures to cultivate capital on physical assets such as land, buildings, network, machinery and other physical forms. Within a macro economy context, such definition is too narrow as in reality such expenses are also used in grant expenditures and social aids and therefore the term government investment expenditures. Government investment expenditures are government expenditures utilised to fund activities with a dimension of longer than one budget year. The aim of investment expenditure is to generate capital stock expected to create a significant multiplier effect sustainable into the future (Waryanto, 2017). In addition to boosting EG, state expenditures through capital or investment disbursement could narrow the disparity of community income and welfare [Jhingan, (2000), p.389].

3 Methodology

For six years (2011–2016) panel data was applied in 33 provinces following the issuance of INPRES (Presidential Instruction) in 2010 on sustainable development by the regulatory body. The sources of the data were from the Bank of Indonesia, National Development Planning Agency (BAPENAS), Financial Service Authority (OJK) and World Bank (Jakarta representative).

Types of variables used in this study were:

- 1 IE and EG as dependent variables
- 2 FI as independent variable
- 3 SMEF as moderating variable
- 4 FP and CE as control variables.

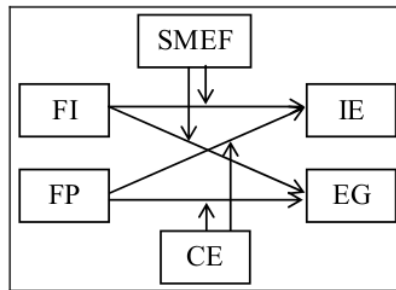
Table 3 Variables and their measurement

<i>Variables</i>	<i>Measurements</i>	<i>Descriptions</i>
Income equality	Gini ratio	$GR_u = 1 - \sum_{i=1}^n P_i(F_i + F_{i-1})$
Economic growth	Gross domestic product	$EG_u = \frac{(GDP_t - GDP_{t-1})}{GDP_0} \times 100\%$
Financial inclusion	The number of bank offices, branch offices, and bank cash offices in each province	FI_t = The number of bank offices, branch offices, and bank cash offices in each province
SMEs financing	The total of loans allocated for SMEs sector in each province	SME_{FIT} = The total of loans allocated for SMEs sector in each province
Financing policy	The number of loans divided by the total funding $\times 100\%$	$FP_{it} = \frac{FI_{it}}{CE_{it}} \times 100\%$
Capital expenditure	The capital expenditure divided by the total of expenditure $\times 100\%$	$CE_{it} = \frac{CE_{it}}{TE_{it}} \times 100\%$

IE, EG, and FI, respectively, were measured by Gini ratio, GDP, and accessibility of SMEs on the Bank. SMEF was measured by using the same proxy as used by Trinugroho, namely ratio of loans granted to SMEs over province's GDP. This ratio is a more powerful comparison for measuring SMEF. All variables and their measurements are illustrated in Table 3.

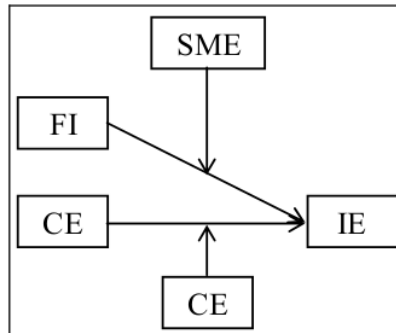
The model developed to test the hypothesis of this study is illustrated in Figure 2 which consists of two statistical equations. Both equations have been used to examine the effect of FI on IE and EG using the SMEF as contingency factor. In this study model, the control variable is added to minimise model misspecifications or other errors that may occur in the analysis of this study.

Figure 2 Proposed model for IE and EG



The overall proposed model as seen in Figure 2, can be broken down into two substructures as illustrated in Figures 3 and 4.

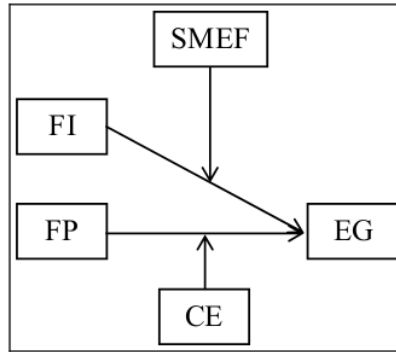
Figure 3 Model 1 for IE



- Statistical equation (1) for model 1

$$IE = \alpha_0 + \alpha_1 FI + \alpha_2 SMEF + \alpha_3 FI * SMEF + \alpha_4 FP + \alpha_5 CE + \alpha_6 FP * CE + \varepsilon$$

Figure 4 Model 2 for EG



- Statistical equation (2) for model 2

$$EG = \beta_0 + \beta_1 FI + \beta_2 SMEF + \beta_3 FI * SMEF + \beta_4 FP + \beta_5 CE + \beta_6 FP * CE + \varepsilon$$

Noted:

- IE* income equality
- EG* economic growth
- FI* financial inclusion
- SMEF* SME financing
- FP* financing policy
- CE* capital expenditure

α_0 and β_0 constanta

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ and α_6 coefficient regression model equation (1)

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 coefficient regression model equation (2)

ε error term.

Regarding IE modelling, we referred to Jalil (2012) who explained modelling income inequality and oppression in the framework of Kuznets curve. Bergh and Bjørnskov (2014) showed theoretically that by facilitating cooperation, the trust might lead to more equal outcomes, while the feedback from inequality to trust is ambiguous.

This study applied the causality design (Chandrarin, 2017) using moderating regression analysis (MRA). Analysis stages performed consist of

- 1 descriptive statistical test
- 2 correlation among variables
- 3 model accuracy test
- 4 hypothesis test using MRA.

The descriptive statistical test was used to illustrate data distribution phenomena or characteristics (mean value, standard error, minimum and maximum). MRA was used to test the alternative hypotheses whether SMEF as contingency factor formulated in the model could strengthen the effect of FI on IE and EG. Steps of the panel data analysis are as follows:

- 1 estimate panel data analysis using *fixed effect*
- 2 conduct Chow test (select *common effect* or *fixed effect* model)
- 3 conduct Hausman test (select *random effect* or *fixed effect* model)
- 4 examine classic assumption on the selected model
- 5 examine *goodness of fit* and hypothesis testing
- 6 interpret panel data regression of final model.

4 Results and discussion

4.1 Results

The results of MRA analysis were done in sequence after obtaining results of descriptive statistical tests and correlation matrix and the certainty of model accuracy and coefficient of determination (R^2 and F test).

Based on descriptive analysis summarised in Table 4, in Indonesia provincial IE ranges between 0.29 up to 0.46. This goes to say that in Indonesia income distribution is considered to be mediocre, although some regions are considered to have greater disparity, such as South Sumatra Province. Moreover, there is a high degree of disparity in Indonesia's EG between provinces. The lowest rate of EG is -3.19 while the highest reaches 28.47. A rather significant disparity is also seen in support of the financial sector to SMEs, evidenced by the high degree of disparity in credit distribution to SMEs among provinces. The lowest SMEs credit distribution occurs in West Sulawesi Province with a value of IDR 1.078 billion while in Jakarta Exclusive District Province credit distribution for SMEs reaches IDR 266.146 billion. This disparity corresponds to differences among regions, including SMEs within that region, in accessing formal financial institutions. As an example, in 2010 the number of banks accessible to the community in South East Sulawesi was only 12, while in 2013 in Jakarta the number was a staggering 547 units. Table 5 illustrates the results of matrix correlations analysis (after transformed data).

Table 4 Descriptive analysis results

<i>Variables</i>	<i>Mean</i>	<i>Std. dev</i>	<i>Minimum</i>	<i>Maximum</i>
Financial inclusion	103.993	125.072	12.00	574.00
SMEs financing	19,476.11	31,012.94	1,078.0	266,146.0
Economic growth	6.517	3.025	-3.190	28.470
Income equality	0.373	0.037	0.290	0.460
Financing policy	0.095	0.067	0.004	0.351
Capital expenditure	0.233	0.074	0.070	0.448

Table 5 Results of matrix correlations analysis

	<i>EG</i>	<i>FI</i>	<i>SMEF</i>	<i>FI * SMEF</i>	<i>FP</i>	<i>CE</i>	<i>FP * CE</i>
EG	1.000000	-0.151393	-0.197474	-0.153380	-0.140344	0.068158	-0.101485
FI	-0.151393	1.000000	0.825607	0.991054	0.276257	-0.231562	0.128380
SMEF	-0.197474	0.825607	1.000000	0.883025	0.233621	-0.185192	0.120867
FI *	-0.153380	0.991054	0.883025	1.000000	0.267479	-0.226485	0.123702
SMEF							
FP	-0.140344	0.276257	0.233621	0.267479	1.000000	0.142785	0.887505
CE	0.068158	-0.231562	-0.185192	-0.226485	0.142785	1.000000	0.560697
FP * CE	-0.101485	0.128380	0.120867	0.123702	0.887505	0.560697	1.000000

Table 5 is matrix correlation table which illustrates that FI correlates positively both with EG and IE, two dependent variables formulated in this study model. As well, SMEF as moderating variable and Financing policy as control variable both correlate positively with IE and EG.

Table 6 The result of model accuracy test (Chow test)

<i>Chow test of model 1</i>			
<i>Effects test</i>	<i>Statistic</i>	<i>d.f.</i>	<i>Prob.</i>
Cross-section F	16.801003	(32,159)	0.0000
Cross-section chi-square	292.515940	32	0.0000
<i>Chow test of model 2</i>			
<i>Effects test</i>	<i>Statistic</i>	<i>d.f.</i>	<i>Prob.</i>
Cross-section F	2.647314	(32,159)	0.0000
Cross-section chi-square	84.564095	32	0.0000

Table 6 shows that result of model accuracy test (Chow test) for model 1 and model 2 is a *fixed effect*, statistically significant at level α at 5% (p-value < 0.05).

Table 7 The result of test cross-section random effects

<i>Test summary</i>	<i>Chi-Sq. statistic</i>	<i>Chi-Sq. d.f.</i>	<i>Prob.</i>
Cross-section random of model 1	14.951098	6	0.0206
Cross-section random of model 2	6.370591	6	0.3830

Table 7 shows that result of model accuracy test (Hausman test) for model 1 is fit for *fixed effect*, statistically significant at level α at 5% (p-value < 0.05). Estimation for model 2 is fit for *random effect*, statistically significant at level α at 5% (p-value > 0.05).

Based on the result of Hausman test for model 2, the fit model for estimation is a *random effect*. Table 8 shows the result of LM test, to make sure that estimation model for model 2 using *random effect*, statistically significant at level α at 5% (p-value < 0.05). Based on the result of model accuracy test consist of Chow test, Hausman test and LM test it can be stated that the type of model 1 is a *fixed effect*, and the type of model 2 is a *random effect*.

After model accuracy test, we conducted assumption test for heteroscedasticity and multi-collinearity of fixed effect model on model 1. Assumption test for panel data

regression used seemingly unrelated regression (SUR) method. Durbin Watson was used to detecting the bias of autocorrelation. Heteroscedasticity test was detected by Glejser test, with residual computing value as a dependent variable. This problem was corrected by using White diagonal standard errors and covariance (d.f. corrected), the result has been illustrated in Table 9.

Table 8 The result of Lagrange multiplier test (LM test)

Null (no. rand. effect) alternative	Cross-section one-sided	Period one-sided	Both
Breusch-Pagan	17.18923 (0.0000)	0.719456 (0.3963)	17.90869 (0.0000)
Honda	4.145990 (0.0000)	-0.848207 (0.8018)	2.331884 (0.0099)
King-Wu	4.145990 (0.0000)	-0.848207 (0.8018)	0.735279 (0.2311)
GHM	-- --	-- --	17.18923 (0.0001)

Table 9 The result of Glejser test for model 1

$IE = \alpha_0 + \alpha_1 FI + \alpha_2 SMEF + \alpha_3 FI * SMEF + \alpha_4 FP + \alpha_5 CE + \alpha_6 FP * CE + \varepsilon$ (1)				
Description	Beta coefficients	Std. error	t	P
Constant	1.320173	2.178062	0.606123	0.5453
Financial inclusion	-0.127429	0.097987	-1.300469	0.1953
SMEs financing	-0.385594	0.640945	-0.601603	0.5483
SMEs financing as moderating var.	0.036121	0.028144	1.283425	0.2012
Financing policy	0.041127	0.030532	1.347018	0.1799
Capital expenditure	0.028892	0.023930	1.207337	0.2291
Capital expenditure as moderating var.	-0.002804	0.002076	-1.350602	0.1787

Table 10 The result of fixed effect method analysis

$IE = \alpha_0 + \alpha_1 FI + \alpha_2 SMEF + \alpha_3 FI * SMEF + \alpha_4 FP + \alpha_5 CE + \alpha_6 FP * CE + \varepsilon$ (1)				
Description	Beta coefficients	Std. error	T	P
Constant	2.961671	3.443244	0.860140	0.3910
Financial inclusion	0.690727	0.188490	3.664519	0.0003*
SMEs financing	2.856842	1.004187	2.844929	0.0050*
SMEs financing as moderating var.	-0.203408	0.054083	-3.761056	0.0002*
Financing policy	-0.119127	0.060299	-1.975596	0.0499*
Capital expenditure	-0.091915	0.050435	-1.822442	0.0703**
Capital expenditure as moderating var.	0.007735	0.004202	1.840707	0.0675**

Notes: * statistically significant at the level of α 5%.
 ** statistically significant at the level of α 10%.

The result of accuracy model was F test of 1.269 and a p-value of 0.156 (p-value > 0.05). Adjusted R-squared was 0.049. Residuals were homoskedastic. We just conducted assumption test for fixed effect model on model 1 and ignored assumption test for random effect model on model 2. After assumption test, the next stage is hypotheses testing for both model 1 and 2. The result of fixed effect method analysis of model 1 is shown in Table 10.

Table 11 Result of random effect model analysis

$$EG = \alpha_0 + \alpha_1 FI + \alpha_2 SMEF + \alpha_3 FI * SMEF + \alpha_4 FP + \alpha_5 CE + \alpha_6 FP * CE + \varepsilon \quad (2)$$

Description	Beta coefficients	Std. error	t	P
Constant	34.23464	9.091074	3.765742	0.0002
Financial inclusion	-0.987907	0.432858	-2.282288	0.0236*
SMEs financing	-8.109056	2.932854	-2.764903	0.0063*
SMEs financing as moderating var.	0.303684	0.125545	2.418915	0.0165*
Financing policy	0.246140	0.219760	1.120042	0.2641
Capital expenditure	0.266772	0.232637	1.146732	0.2529
Capital expenditure as moderating var.	-0.020786	0.017746	-1.171353	0.2429

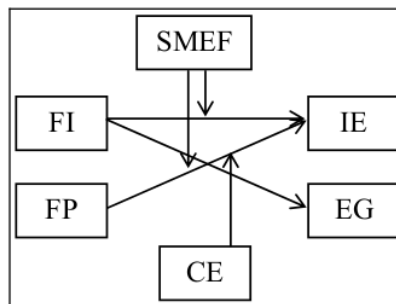
Note: *statistically significant at the level of α 5%.

Based on the result of fixed effect method analysis has been obtained that F test of 15.930, statistically significant at a p-value of 0.000 (p-value < 0.05). The value of Adjusted R-squared was 0.742. FI had a significant effect on Income Distribution at α 5% level, with a t-test value of 3.450 and p-value of 0.001. SMEF can foster FI leading toward IE. Table 11 shows the result of random effect method analysis for model 2.

Based on the result of random effect method analysis for model 2 that obtained F value was 1.880, statistically significant with p-value is 0.080 (p-value < 0.10). Value of Adjusted R-squared was 0.026. FI had a significant effect on EG at α 5 % level, with a t-test value of 3.450 and p-value of 0.001. SMEF can foster FI leading toward EG.

The model accuracy of both, models 1 and 2 are fit. The result of fixed effect and random effect method analysis for models 1 and 2 will be illustrated in Figure 5, final model as follows.

Figure 5 Model final for IE and EG



Based on Figure 5 it is stated that statistically, FI has a significant effect on IE and EG at a p-value less than 0.05. The final model indicates that FI has a bearing on EG. Those model can be aligned both the effect of FI on IE and EG. SMEF can foster FI leading toward both IE and EG. It is not easy to get both to align, especially in developing country like Indonesia.

Theoretically, EG is not only influenced by capital but also other factors such as natural resources, human resources, technology, and culture. Meanwhile, FI is indicated by the degree of accessibility, i.e., the number of banks acting as intermediary institution bridging capital owners and those requiring funding. However, financing of SMEs acts as a moderator which strengthens the influence of FI toward income distribution and also strengthens the influence of FI toward EG. Funding the SMEs sector will increase SMEs production capacity and drive the real sector, leading to improved EG. The higher credit distribution to SMEs will enhance income distribution opportunity, both through SMEs workers' wages and capital income received by SMEs owners.

4.2 Discussion

Developing final model in this study was conducted in many stages. After examined data through transformation data, the model specification conducted consists of Cho, Hausman and LM testing. The result of Cho test stated that accuracy model for both models 1 and 2 were fixed effect model. The result of Hausman test stated that model 1 of fixed effect, meanwhile model 2 of random effect. The result of LM test stated that the accuracy model for model 2 was random effect model. Assumption test for multi-collinearity and heteroscedasticity used SUR. Glejser test for detected heteroskedasticity was corrected by using White diagonal standard errors and covariance (*d.f.* corrected). SUR model was introduced by Zellner in 1962.

Regarding IE modelling, we referred to Jalil (2012) who explained modelling income inequality and oppression in the framework of Kuznets curve. Bergh and Bjørnskov (2014) showed theoretically that by facilitating cooperation, the trust might lead to more equal outcomes, while the feedback from inequality to trust is ambiguous.

Theoretically, IE will prevail if EG is existence and enjoyed by many [Todaro and Smith, (2009), p.251]. As such, the higher the EG, the higher the opportunity to distribute income to more people, meaning that income will be evenly distributed.

This resultant condition has been caused not only by the factor of capital affecting EG but also human and natural resources, technology, and culture. Meanwhile, accessibility to banking, as an FI indicator, is seen in the intermediary institutions between the owner and parties in need of funding. The Government of Indonesia uses SMEF as one of the contingency factors to strengthen the effect of FI on IE and EG. FI program can increase IE of the community. There is an alignment between IE and EG.

National income distribution equalisation reflects a country's development success in creating improvement within the community such as indicating poverty, unemployment, and other (Latumaerissa, 2015). Lack of equality in income distribution is the biggest issue faced by developing countries in the early stage of development (Kuznets, 1963). A country's development not only requires high and sustainable growth but also the number of people involved in such growth (Todaro and Smith, 2009).

In many developing countries, not only in Asia-Pacific countries, less than half of the population have an account with a financial institution. In Indonesia, this is due to the

fact that financial absorption is still lower than in most countries. Based on the World Bank Annual Report (2013), regarding the profile of borrowers in Indonesia, it is stated that only 60% of the total population were borrowers, and only under 10% were in the community welfare scheme, meaning that the absorption of funds increasing community welfare was still very low. The remaining 40% of the total population were not borrowers, with various excuses. Reasons for this include being not creditworthy and not intending to be, lack of documentation, no collateral, insufficient income, too much debt and others. FI is a program that can systematically resolve financial access to the community large, especially the poor or disadvantaged. Regarding FI in Indonesia, results of a study conducted by Rosengard and Prasetyantoko (2011) and Effendi and Yasmin (2017) stated that Indonesian commercial banks had performed well only in term of profitability and soundness, but they failed to broaden access to finance, especially for the underprivileged and SMEs. Therefore, this study focuses on FI variables as IE determinants.

IE in Indonesia is considered as mediocre and in need of improvement. This can be measured by looking at Gini ratio which stands at 0.40 in 2016. In several provinces, such as West Papua, West Java, and DKI Jakarta, the Gini index was still above the national value. Before 2010, the Indonesian Gini index was in the 0.3-0.38 range (Statistics Indonesia, 2017). On the other hand, the contribution of SMEs sector to PDB Indonesia has increased from 57.84 to 60.34 in 2016 (Indonesian Chamber of Commerce and Industry, 2016). The fact shows that the existence of SMEs cannot be neglected and that government needs to work to foster their growth and progress.

5 Conclusions and recommendations

We investigated the effect of FI on IE and EG by adding SMEF into this study model as contingency factors that strengthening the alignment of both. We used panel data for all provinces in Indonesia, following the INPRES (Presidential Instruction) on sustainable development issued by the government regulatory body.

Statistically, we found that SMEF could significantly strengthen the effect of FI both on IE and on EG. This is because SMEs made up the largest economic sector in Indonesia regarding the quantity of contribution. SMEs sector has been proven to have a significant role in the Indonesian economy, both in moving the real sector and elevating overall EG. Furthermore, SMEs also plays the part a role in distributing income in Indonesia.

Based on this study, the government is recommended to increase the capacity and allocation of funding for the SMEs sector. This will contribute to solidifying the influence of FI policy in improving IE. A simplified financing program and regulation, especially for SMEs, from financial institutions, is expected to be able to improve productivity and Indonesian products competitiveness against foreign products. As such, products produced by SMEs can have a competitive edge, through good quality and affordable prices and thereby a capability to compete at the international level. Government's regulations toward financial institutions should be urged not only to increase profitability but also to support the provision of products that would positively affect the welfare of the overall community, not only to certain groups. The results of this study can be used as a reference for a further study on FI associated with banking

products which are currently on the rise, such as banking by use of cellular phones, a practice which has penetrated all layers of the community and will certainly generate significant EG in the future.

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