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Does Gender Inequality Lead to Income Inequality? Evidence from Indonesia

Lilis Siti Badriah[a,1,*], Istiqomah[b,2]

[a,b] Faculty of Economics and Business,Jenderal Soedirman University, H.R. Boenyamin Street 708, Purwokerto 53122, Central Java, Indonesia
[1]lilissitibadriah@gmail.com*; [2] istiqomahsubechan@gmail.com
* corresponding author

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ABSTRACT

The study purpose is to analyze the effect of gender inequality in education, health, and labor force participation on income inequality in Indonesia. Data from 33 provinces in Indonesia during 2011-2018 were analyzed with panel data regression. The results show that gender inequality in education and labor force participation has a negative and significant effect on income inequality. However, gender inequality in life expectancy does not affect income inequality. The implications are the government should provide free education in poor regions such as by providing a larger allocation of scholarship funds and create employment programs to reduce education as well as income inequality, government. In this case, the government can expand community empowerment programs accompanied by intensive and sustainable assistance and private sector should open the widest possible job opportunities without gender discrimination. This research contributes to development economics, particularly regarding the problem of gender inequality and income inequality where it is found that income inequality is influenced by the occurrence of gender inequality both in terms of education and work participation. Previous studies have examined the relationship between gender inequality and economic growth, while this study analyzes the relationship between gender inequality and income inequality based on provincial data in Indonesia. Apart from gender inequality, this study also analyzes two control variables: government capital expenditure and income per capita.
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1. Introduction

The link between gender inequality and income growth is an interesting study. Several studies relate to this include those by Lagerlöf (2003), Seguino (2008), Klasen & Lamanna (2009), Sitorus (2016), Benjamin et al., (2017), and Vo et al., (2019). Likewise, research on income inequality in Indonesia has been widely carried out including (Leigh & Eng, 2009; Nugraha & Lewis, 2013; Chongvilaivan & Kim, 2016). These studies are more focused on efforts to decompose income between subregions and between subgroups and to measure inequality in a better way.

Based on IndonesiaStatistics (Statistics, 2019), the Indonesian economic growth during 2002-2018 shows fluctuation with an increasing trend with an average annual rate of 5.4 percent. However, during the same period, income inequality is quite high with an average Gini ratio of 0.4. During 17 years (2002-2018), income inequality shows an increasing trend with an average Gini ratio of 0.39 which indicates that income inequality has been moderate and persistent.

The Indonesian Gender Inequality Index (GII) decreased from 0.5 in 2013 to 0.451 in 2018. However, according to Human Development Report 2018, the Indonesian gender inequality index is considered high among ASEAN countries. The Indonesian GII is 0.451 points, higher than the ASEAN average figure of 0.356 points. Indonesia ranked fourth after Cambodia, Laos, and Myanmar.

One of the phenomena of gender inequality in Indonesia is violence against women; the figure was 431,471 cases in 2019 according to the National Commission for Women. In the past 12 years, violence against women increased by 792 percent. This occurs because there is a perception that men are superior to women/patriarki power (Rokhmansyah, 2016). Another form of gender inequality is the difference in wages where women receive less than men. Based on the 2019 Central Bureau of Statistics Economic Report, during 2015-February 2019, the average difference in wage was IDR492.2 thousand per month. Another form of gender inequality is the right to asset ownership. The World Bank reported that Indonesia was ranked 141 out of 187 countries where women in Indonesia only enjoy 64.38 percent of assets as compared to men.

Existing studies have analyzed the association between gender inequality and economic growth. But over 2013-2018 the data illustrate that change in gender inequality points in the same direction as changes in income inequality. Therefore, the authors are interested in examining the effect of gender inequality on income inequality. The latter has been the most interesting topic among economists and policymakers for the last few decades (Munir & Kanwal, 2020).

Research on the relationship between education and income inequality has been conducted among others by Lee & Lee (2018) and Afandi et al., (2017). Human capital is the most determining factor to increase income and economic growth (Connolly, 2004). An increase in the mean years of schooling helps to reduce inequality in income and education (Lin, 2007). Gender inequality has a negative effect on inclusive growth in Nigeria (Matthew et al., 2020). Education has been particularly effective in reducing inequality in Africa (Abdullah et al., 2013). Gender inequality in secondary and tertiary levels of education decreases per capita income (Klasen, 2002; Munir & Kanwal, 2020). Yumusak et al., (2013) find the long-run relationship between gender inequality in education and economic growth. Equal and higher access to education is highly importantto reduce income inequality (O'Neill, 1995; Gregorio & Lee, 2002). Based on the compilation of 248 surveys from 53 countries between 1967 and 2014, Kleven & Landais (2017) conclude gender convergence in education and consider its significant effect on earnings inequality even though less remarkable than the decline in fertility rate.

The difference between this study and previous research is this study focus on analyzes the association between gender inequality in education and labor force participation with

income inequality based on provincial data in Indonesia. Apart from gender inequality, this study also analyzes two control variables: government capital expenditure and income per capita. According to World Bank (2012), efforts to achieve equitable distribution of income require redistribution of resources. Redistribution of resources is not just a transfer of income from one community group to another, but rather an investment in increasing the capacity of the community over time and between generations so that people can improve their welfare. Investment in this case is interpreted as an investment to create jobs. One of the requirements in order that employment can be created is an adequate investment both in terms of quantity and distribution. This will be more flexible if it is done by the government as an induced investment. Increasing government capital spending will provide more job opportunities tofacilitate community involvement in the development process. The more people involved, the greater their opportunity to earn income. This is expected to reduce inequality in income distribution.

Apart from government capital expenditure, per capita income can affect income inequality. The higher per capita income will provide great opportunities for investing in human capital. According to Chakrabarty (2008), every household needs to allocate its income for investment and consumption in human capital. The results of Chakrabarty's empirical study show that persistent income inequality in the economy is the result of differences in the level of time preferences. The difference in time preferences is largely influenced by the initial condition of households' human capital. Households with a low initial human capital condition will choose not to invest in human capital, while households with a relatively high initial condition of human capital prefer to invest, even though they realize that it will take a long time to obtain benefit from the human capital investments they make. Investments in education and health will improve the quality of people and determine their level of productivity. Therefore, it is interesting to examine whether gender inequality, government capital expenditure, and income per capita affect income inequality in Indonesia.

2. Literature Review

Gender is a set of roles, activities, behaviors, and attributes that are considered appropriate for males and females. Gender roles and relations can vary widely from one society to another. Gender roles and relationships develop from the interactions that occur between various biological, technological, economic, and other social constraints (World Bank, 2012). Gender equality is the result of non-discrimination based on gender on the basis of opportunity, resource allocation or benefits, and access to services. However, the fact of gender injustice can be seen in the form of marginalization of women, physical differentiation of the conditions of women and men where it is considered that men are stronger than women, there is a difference in the scope of women's roles between public roles and domestic roles so that women's activities become more limited, especially with the existence of women's responsibilities in domestic work so that it further limits women from being able to access various opportunities for activities of higher value. Therefore, gender inequality can be seen in various aspects, including education, health, and job opportunities (The Ministry of Women's Empowerment and Child Protection, 2019).

Gender inequality in education has become the most influencing overall gender inequality. Inequality of educational background between female and male impact gender inequality in the workplace, position, role in society, as well as freedom of opinion.Todaro & Smith (2012) explain the education of women urgent. There is a lot of empirical evidence to show that educational discrimination against women hinders the development economy and exacerbating social inequality. Efforts to reduce gender gaps in education by expanding opportunities for education for women is very profitable economically because four reasons, including (i) in most developing countries the rate of return on female education is higher than male, (ii) increased female education does not only increase productivity on farmland and in factories, but also increases labor participation, slowers marriages, lowers fertility, and improveschildren's health and nutrition of children, (iii) better health and nutrition for children

and better-educated mothers will provide a multiplier effect on the quality of the nation's children for the next generations, (iv) significant improvements in female education can have a significant impact in breaking the vicious cycle of poverty because women bear the greatest burden of poverty in developing countries.

Related to gender inequality in the health sector, Read & Gorman (2010) explain the causes of gender inequality in mortality. The life expectancy of women is higherthan men. The causes of this gap can be classified into threecategories namely, biological, social structure, and behavior. The biological category explains that estrogen helps protect women from disease heart by reducing levels of harmfulness while circulating cholesterol testosterone causes low lipoproteins. Furthermore, womenhave a better immune system because testosterone causes immune suppression. The second category, namely the social structure, explains that this happens reduction in maternal mortality due to improved prenatal care and midwifery. The third category, alcohol, and cigarette consumption behavior tend to be moremale than female. Men are also more likely to get injuredby accident, murder, and suicide. Male and femaletend to be treated differently by the health care system. These differences can result in differences in access and qualityof service received.

Gender inequality in the employment sector can be seen from the phenomenon in the labor market that women earn lower than men and men's and women's jobs are differentiated by gender (World Bank, 2012). The existing phenomenon also shows that there is a tendency for conditions to be more favorable for men, such as more investment in human capital for boys than for girls; the dominant role of women in household domestic affairs; religious and social norms that restrict women from working outside the home and from choosing types of work. This gender inequality in employment affects women's ability to access various opportunities for activities that are more economically valuable, which in turn can affect inequality in their income and welfare.

Furthermore, income inequality indicates an unequal distribution of per capita income between community groups. According to Todaro & Smith (2012) the share of income received by high-income groups is much greater. Besides that, it was also strengthened by a much higher rate of economic growth. This process has caused the rich to become richer, the poor to become poorer. The pattern of distribution of income that is more evenly distributed is more able to act as an indicator of the level of the population's level of prosperity. On the other hand, the pattern of equitable distribution of income without high economic growth is more accurately described as poverty equalization than equal distribution of wealth. Thus, both the factor of high economic growth and an increasingly even pattern of income sharing is very much needed in increasing the welfare of society.

This policy of equitable distribution of development is not easy. In this case, Kuznets (1955) has looked for the association between relative income sharing and the level of per capita income. By using panel data, Kuznets found the relationship between income inequality and the level of per capita income in the form of an inverted U. Initially inequality in income distribution rose as a consequence of urbanization and industrialization. At the end of the development process, income inequality decreases when the industrial sector can employ most of the workforce coming from the agricultural sector.

The trickle-down effect of the construction process being carried out is not all as expected. Investments made in growth centers that generate quite high economic growth are not necessarily followed by equity. The trickle-down effect, which was expected to be in line with high economic growth, did not occur, as a result, growth tended to be followed by high inequality (Myrdal, 1957). According to an empirical study conducted by Suryahadi et al., (2012) that economic growth, particularly the growth of the industrial sector, even though contributes relatively large to the formation of Indonesia's GDP, the impact on poverty reduction is relatively small. A significant contribution to poverty reduction comes from the service sector. The facts strengthen the evidence that there is an imbalance in the distribution of income in Indonesia. This means that economic growth in Indonesia is mostly created by high-income groups of people so that not all Indonesians can benefit from the development process

being implemented. Adam Smith (1776) in Todaro & Smith (2012) says that no society will be developed and happy if most of the people live in poverty and misery.

World Bank (2012) argues that the costs of gender disparities are high because not only do gender disparities reduce the well-being of women but also that of men and children and impede economic development. The low level of education of women causes women's human capital to be low and the quality of services for children is low so that it can reduce the overall quality of human capital. According to Seguino (2008), gender inequality can have a negative impact on economic growth, namely: (i) gender gap in education will hamper the development of the talents of qualified girls high so that will reduce marginal returns of education; (ii) there are positive benefits from education women for a reduction in the fertility rate, child mortality rates, and encourages education better for future generations; (iii) equal opportunity in education and employment for every gender provide a positive impact on abilities competing a country in trade international; (iv) educational provisions and job opportunities in the formal sector which is bigger for the clan women will increase bargaining power they are in the family. Women have greater attention to investing in the health and education of their children so that they can increase the quality of human capital needed to increase economic growth; Several studies have shown that the tendency of working women to commit acts of nepotism and corruption is relatively small compared to men. In line with Seguino (2008), Todaro & Smith (2012) stated that improvements in the role and status of women in both the health and education sectors have a critical effect in breaking the vicious poverty cycle since women endure the greatest burden of poverty and resource scarcity.

The link between gender inequality and economic growth is an appealing study. Several studies related to the decomposition of income between sub-regions and between sub-groups concerning economic growth have been conducted, among others, by Lagerlöf (2003), Seguino (2008), Klasen & Lamanna (2009), Benjamin et al., (2017), Sitorus (2016), Vo et al., (2019). Likewise, research with a discussion focus that is relatively the same as previous research but with research objects in Indonesia has been carried out, among others, by Leigh & Eng (2009), Nugraha & Lewis (2013), and Chongvilaivan & Kim (2016). The link between human capital (educational aspects) and income inequality has also been carried out by, among others, Lee & Lee (2018) and Afandi et al., (2017). Based on some of the existing research, if there is a gender imbalance in relation to opportunities for access to resources and improvement of personal quality, it can also have an impact on the economic benefits they can get. Likewise, the imbalance that occurs in employment opportunities between women and men can cause differences in their involvement in productive activities, which in turn can affect the income they earn.

3. Research Method

The purpose of this study is to explore the association between gender inequality and income inequality in Indonesia. This study uses panel data by combining secondary data from 33 provinces in Indonesia during 2011-2018.The data consist of income inequality and gender inequality in education, health, and labor force participation as the main variables, and government investment and per capita income as control variables. Data were obtained from the publication of the Central Bureau of Statistics.

Gender inequality in education is measured bythe female to male ratio of mean years of schooling (MYS). This indicator has been used by Klasen & Lamanna (2009) as one of the determinants of economic growth. Gender inequality in health was measured by the female to male ratio of life expectancy (LE). Dollar & Gatti (1999) used this indicator as a determinantof economic growth. This study adopts these two variables that are supposed to affect income inequality because these can affect labor productivity and thus income. Gender inequality in employmentwas measured by the female to male ratio of labor force participation rate (LFPR). UNDP included the LFPR ratio in measuring gender inequality.

This study uses two-panel data models. The first model includes three main variables of gender inequality and the second model is an extension of the first model by adding control variables of government capital expenditure and income per capita. Government capital expenditure is used as an economic approach from the supply side, while income per capita is used as an economic approach from the demand side. The greater the government capital expenditure, the greater the opportunity to improve the quality of education, health, and job opportunities that are expected to have an impact on increasing community productivity thereby reducing inequality in income distribution.An increase in income per capita increases purchasing power and demand. Increasing demand will encourage supply that can absorb labor so that more people are involved in productive activities and ultimately can reduce inequality in income distribution.

The two models can be written as follows:

Model 1

$$GR_{i,t} = \alpha_0 + \alpha_1 MYS_{i,t} + \alpha_2 LE_{i,t} + \alpha_3 LFPR_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots (3.1)$$

Model 2

$$GR_{i,t} = \beta_0 + \beta_1 MYS_{i,t} + \beta_2 LE_{i,t} + \beta_3 LFPR_{i,t} + \beta_4 Ln\_GI_{i,t} + \beta_5 Ln\_PI_{i,t} + \varepsilon_{i,t} \quad (3.2)$$

Where GR = Gini ratio, MYS = ratio of mean years of schooling, LE = ratioof life expectancy, LFPR = ratio of labor force participation rate, GI = Government Investment, PI = income per capita, ε = error term.

Table 1. The Description of Variables and Hypothesis is Present in.

Symbol	Variable	Description	Expected Sign/Hypothesis
GR	Gini Ratio	A number that shows the level of income inequality in 33 provinces in Indonesia (index)	
MYS	Female to male ratio of mean years of schooling	A comparison of mean years of schooling between female and male (percent)	Negative
LE	Female to male ratio of life expectancy	A comparison of life expectancy between female and male (percent)	Negative
LFPR	Female to male ratio of labor force participation rate	A comparison of female and male labor force participation rates (percent)	Negative
GI	Government capital expenditure	The value of government capital expenditure (thousand rupiahs)	Negative
PI	Income per capita	The value of national income at constant 2010 prices divided by the total population (thousand rupiahs)	Negative

To get a valid model for using panel data, a Chow test is performed to determine the correct model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). If the results refer to FEM, then proceed with the Hausman test to get the right model between the Random Effect Model (REM) and the Fixed Effect Model (FEM). Furthermore, to determine a regression model that is the Best Linear Unbiased Estimator (BLUE), the model is tested for normality, multicollinearity, autocorrelation, and heteroscedasticity.

4. Results and Discussion

The Chow test results for models 1 and 2 are presented in Table 2.

Table 2. Result of Chow Test

Model	Probability of Cross-section Chi-square	Criteria
Model 1	0.000	< α = 0.05
Model 2	0.000	< α = 0.05

Source: Processed Data, 2020.

Based on Table 2, for both model 1 and model 2, the probability of the Chi-square cross-section value is 0.0000. A probability value that is smaller than α (0.05) indicates that the correct model is FEM. Furthermore, the Hausman test is carried out to determine the better model between FEM or REM. The Hausman test result is presented in Table 3.

Table 3. Result of Hausman Test

Model	Probability of Cross-section Random Chi-square	Criteria
Model 1	0.045	< α (0.05)
Model 2	0.042	< α (0.05)

Source: Processed Data, 2020.

Based on Table 3, for both model 1 and model 2, the probability of the Cross-section Random Chi-square is 0.0449 and 0.0423, respectively. A probability value that is smaller than α (0.05) indicates that the correct model is FEM. The result of the normality test using the Jarque-Bera is presented in Table 4.

Table 4. Test for Normality

Model	Jarque-Bera Value	Probability	Criteria
Model 1	3.682	0.159	> α (0.05)
Model 2	3.084	0.214	> α (0.05)

Source: Processed Data, 2020.

Based on Table 4, the probability of Jarque-Berra in the two models is greater than α (0.05). This shows that the data used in the two models are normally distributed. The use of the panel data model is to anticipate multicollinearity between independent variables because the number of observations is greater. However, the multicollinearity symptoms in the model can be seen through the correlation matrix value between the independent variables. When the correlation value is greater than 0.8, it is assumed that the model is free from multicollinearity (Gujarati & Porter, 2012). The multicollinearity test result is presented in Table 5.

Table 5. Correlation Matrix

Variables	MYS	LE	LFPR	LN_GI	LN_PI
MYS	1.000	0.084	-0.439	-0.204	-0.146
LE	0.084	1.000	-0.085	-0.059	-0.023
LFPR	-0.439	-0.085	1.000	-0.047	-0.214
LN_GI	-0.204	-0.059	-0.047	1.000	0.591
LN_PI	-0.146	-0.023	-0.214	0.591	1.000

Source: Processed Data, 2020.

Based on Table 5, there is no multicollinearity in the model because the value of correlation for all variables is less than 0.8. Heteroscedasticity and autocorrelation are problems that often occur in the use of panel data. Therefore to overcome these problems, panel data estimation in this study takes the Feasible Generalized Least Squares (FGLS) method, which can minimize the weighted sum of squared residuals in meeting the ordinary least squares assumption (Gujarati & Porter, 2012). The model estimation is presented in Table 6.

Table 6.Estimation of Regression Models

Dependent Variable	Coefficients	Coefficients
	Model 1	Model 2
Constant	0.585370***	0.630635***
	(11.77487)	(10.38097)
MYS	-0.001835***	-0.001853***
	(-3.236217)	(-2.700725)
LE	3.45E-05	3.42E-05
	(1.067436)	(1.056021)
LFPR	-0.000939***	-0.000917***
	(-2.823834)	(-2.740143)
LN_GI		0.001981
		(0.755928)
LN_PI		-0.008285*
		(-1.747524)
Adjusted R-squared	0.833007	0.833622
F-statistic	38.48324***	36.61465***
	(0.000000)	(0.000000)

Note: *** significant at α = 1%, ** significant at α = 5%, * significant at α = 10%
Source: Processed Data, 2020.

Table 6 show a relatively high adjusted R^2 value with the explanatory variables which are significant at α = 1% and α = 10%. The F-statistic is also significant at α = 1%. Model 1 consists of three gender inequality variables from the aspects of education, health, and employment, while model 2 is an extension of model 1 by adding control variables of government investment and per capita income.

Based on Table 6, in both models, the gender inequality variables are robust, where the ratio of female to male mean years of schooling and the ratio of female to male labor force participation has a significant negative effect on income inequality at α = 1%. Meanwhile, the ratio of female to male life expectancy does not have a significant effect on the income inequality in the two models.

The gender inequality in education (MYS variable) is measured by the female to male ratio of mean years of schooling. If the ratio value is getting higher, it indicates a gender equality in education. Based on Table 6, the variable of gender inequality in education has a significant negative effect on α = 1%. That is, if there is an increase of 1% in the ratio of MYS between females to males, the income inequality will decrease by 0.0018 units in Model 1 and 0.0019 in Model 2. This indicates that the higher the gender equality in education, the lower the income inequality. The gender inequality in employment is measured by the female to male ratio of labor force participation rate. If the ratio value is greater, it shows a gender equality in labor force participation. Based on Table 6, the variable of gender inequality in employment has a significant negative effect at α = 1%. This means that if there is a 1% increase in the LFPR ratio of females to males, the income inequality will decrease by 0.0009 units in both models. This also indicates that the higher the gender equality in employment, the lower the income inequality.

Both of these make sense because the more equitable education between females and males, the better the quality of human resources so that men and women have the same job opportunities with higher levels of productivity. Khusaini et al., (2020) found the improvements in population education will reduce educational inequality and will affect better job structures.

A higher level of productivity will result in a higher wage rate. Under the efficiency wage theory, companies will prefer to pay higher wages to maintain the quality and productivity of their workers so that it will provide high efficiency for the company (Mankiw, 2007). The contributions of educated women in an economy are threefold: 1) increased level of human capital and thus lower fertility rate, 2) lower infant mortality rate, and 3) improved level of next generation. The empirical results indicate that there is a long-run relationship among these variables (Yumusak et al., 2013). Equal access and higher education play a significanteffect to reduce income inequality (O'Neill, 1995; Gregorio & Lee, 2002).

The results of this study support the findings of Klasen & Lamanna (2009) that economic growth is reduced by gender inequality in education and employment. There is large convergence in male-female earnings as a result of female participation in the labor force and wage rate (Kleven & Landais, 2017). Branisa et al., (2013) identifies inequality in social institutions as an obstruction and emphasizes the need to promote ways to reduce gender inequality in such institutions.

Gender inequality in health with the indicator of the female to male ratio of life expectancy at birth (LE) has no significant effect on income inequality. This study also found that government investment does not affect income inequality. Government investment, among others, is used to encourage the development of the supply side. However, the impact of investment on production and productivity generally requires a relatively long time and requires the support of a quality workforce that can adapt more quickly to the capital deepening process. Badriah et al., (2019) show that the capital deepening process at the micro-level industry requires a longer time.

Per capita income has a significant negative effect on income inequality at $\alpha = 10\%$. That is, if there is an increase in the per capita income of IDR 1,000, the income inequality will decrease by 0.0083 units. An increase in per capita income will increase the demand side. An increase in demand will push up prices and in turn, encourage the development of the supply side. This is consistent with the New Keynesian Theory (Mankiw, 2007). The development of the supply side will increase the absorption of labor, which in turn can reduce income inequality. The higher per capita income will also provide a great opportunity for someone to be able to invest in human capital to get better job opportunities and reduce income inequality. The results of this study support the findings of Chakrabarty (2008) and Khusaini et al., (2020).

To find out the difference in the characteristics of the inequality of income distribution of each province, it can be seen from the value of the cross-section effect, as shown in Table 7.

Table 7. Cross Section Effect of Research Model

Provinces	Model 1		Model 2	
	Effect	Difference	Effect	Difference
C	0.5854		0.6306	
Aceh	-0.0349	0.5504	-0.0388	0.5918
Sumatera Utara	-0.0385	0.5469	-0.0391	0.5915
Sumatera Barat	-0.0263	0.5591	-0.0275	0.6032
Riau	-0.0118	0.5736	-0.0058	0.6248
Jambi	-0.0331	0.5522	-0.0317	0.5989
Sumatera Selatan	0.0055	0.5909	0.0052	0.6358
Bengkulu	0.0004	0.5858	-0.0016	0.6290
Lampung	-0.0280	0.5574	-0.0297	0.6009
Bangka Belitung	-0.0808	0.5046	-0.0789	0.5517
Kepulauan Riau	0.0087	0.5940	0.0165	0.6472

Jakarta	0.0489	0.6343	0.0565	0.6871
Jawa Barat	0.0241	0.6094	0.0248	0.6555
Jawa Tengah	0.0020	0.5874	-0.0014	0.6293
DI Yogyakarta	0.0716	0.6569	0.0696	0.7002
Jawa Timur	0.0105	0.5959	0.0095	0.6402
Banten	0.0084	0.5937	0.0083	0.6389
Bali	0.0336	0.6190	0.0340	0.6647
Nusa Tenggara Barat	-0.0105	0.5749	-0.0153	0.6153
Nusa Tenggara Timur	-0.0010	0.5845	-0.0082	0.6224
Kalimantan Barat	-0.0153	0.5710	-0.0169	0.6138
Kalimantan Tengah	-0.0285	0.5569	-0.0283	0.6024
Kalimantan Selatan	-0.0214	0.5640	-0.0230	0.6077
Kalimantan Timur	-0.0355	0.5499	-0.0273	0.6033
Sulawesi Utara	0.0360	0.6214	0.0367	0.6673
Sulawesi Tengah	-0.0003	0.5851	0.0004	0.6310
Sulawesi Selatan	0.0493	0.6346	0.0491	0.6798
Sulawesi Tenggara	0.0258	0.6112	0.0261	0.6567
Gorontalo	0.0770	0.6624	0.0760	0.7066
Sulawesi Barat	-0.0072	0.5781	-0.0090	0.6216
Maluku	-0.0127	0.5727	-0.0175	0.6132
Maluku Utara	-0.0530	0.5324	-0.0564	0.5742
Papua Barat	-0.0004	0.5850	0.0035	0.6341
Papua	0.0373	0.6227	0.0404	0.6710

Source: Processed Data, 2020.

Based on Table 7, in both model 1 and model 2, 15 provinces have a constant value higher than the provincial average value. This means that when gender inequality and the control variables are zero, the income inequality in the 15 provinces is higher than the average income inequality of all provinces. The highest difference between the average value of inequality and the actual value is in Gorontalo Province, namely 0.6624 (in model 1) and 0.7066 (in model 2). Meanwhile, the other 18 provinces have income inequality scores that are lower than the provincial average. The lowest difference between the average value of inequality and the actual value is in Bangka Belitung Province, which is 0.5046 (in model 1) and 0.5517 (in model 2). The description shows the initial condition of income inequality in various provinces in Indonesia. This picture also shows the characteristics of income inequality between regions. Differences in the characteristics of income inequality between regions can be caused by differences in regional characteristics and various factors that influence it.

One of the benefits of using panel data with Fixed Effect Model (FEM) is that it is possible to obtain information related to differences in the characteristics of the studied dependent variable in initial condition in each cross-section. It can be influenced by differences in the characteristics of each region. It can be important information to be taken into consideration in determining policies that are in accordance with the characteristics of each region.

Based on Table 7, the two models of income inequality in the Java and Bali regions are higher than the average scores for all provinces, with the largest difference being in the Province of DI Yogyakarta. This means that the inequality of income distribution in the DI Yogyakarta Province is the highest in the Java and Bali regions. On the island of Sumatra, the Provinces of South Sumatra and the Riau Archipelago have income inequality scores that are higher than the provincial average. On the island of Sulawesi, almost all regions have income inequality scores that are higher than the provincial average. Based on this description, relatively high-income inequality is more prevalent in the western part of Indonesia, where most of these regions, especially in Java, are characterized as relatively more developed regions with a relatively large population. The availability of employment that demands certain qualifications cannot be

sufficiently matched by the available workforce so that in the end many of them work in the informal sector with low productivity and low incomes.

5. Conclusion

Gender inequality in education and employment has a negative and significant effect on income inequality in Indonesia. It means that the more equitable the level of education between women and men has an impact on reducing income inequality in Indonesia. Likewise, more equal employment opportunities for women and men also have an impact on reducing income inequality in Indonesia. However, gender inequality in life expectancy between women and men does not affect income inequality in Indonesia. Government investment and per capita income as control variables in the model shows different effects on income inequality in Indonesia. Government investment does not affect income inequality, while per capita income has a significant negative effect on income inequality in Indonesia. Based on the differences in the characteristics of each province in Indonesia, the income inequality of the population in the western part of Indonesia is higher than that in the eastern part of Indonesia.

The implications of this research are that the government should provide free education in poor regions, such as by providing a larger allocation of scholarship funds for these regions. The government also should create employment programs to reduce income as well as educational inequality, the government can expand community empowerment programs accompanied by intensive and sustainable assistance. While to remove gender inequality in education it is necessary to provide equal access to education for boys and girls. Government has to launch online education programs to expand education at all levels. Likewise, job providers, including the government and private sector should open the widest possible job opportunities based without gender discrimination. With equal opportunities for men and women to work and earn income, it can be a solution in overcoming income inequality. The government also needs to pay attention to equitable development in all regions of Indonesia and provide the widest possible opportunity for the community to actively participate in the development process so that the benefits of development can be enjoyed equally.

This study only accommodates indicators of gender inequality from the aspects of education, health, and job opportunities. It is expected that future research expands the gender inequality indicators from the level of wages, adolescent fertility levels, and the proportion of men and women in parliament to obtain a more comprehensive picture of the study.

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