DISSIMILARITY INDEX , LABOR SUPPLY AND LENGTH OF SCHOOLING ON WAGE GAP IN INDONESIA

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DISSIMILARITY INDEX , LABOR SUPPLY AND LENGTH OF SCHOOLING ON WAGE GAP IN INDONESIA

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Abstract

Purpose: Analyzing the effect of worker characteristics based on length of schooling, LFPR and dissimilarity in each province on the wage gap in Indonesia 2015-2018.

Research Methodology: The model for estimating the wage gap is a regression equation with panel data, namely the level of wages, length of schooling, Labor Force Participation Rate (LFPR), and the number of male and female workers based on the type of occupation of various provinces in Indonesia in 2015 - 2018. The analytical method used is the OLS (*Ordinary Least Square)* using eviews software.

Results: The wage gap in Indonesia, based on Index D does not significantly affect it and the coefficient is also very small. The most dominant factor affecting the wage gap is the difference in school length.

Limitations: This research does not include other aspects of human capital, namely skills or experience of workers. The wage gap can also be explained more clearly if we look at the economic growth in each province and it will be more comprehensive if all provinces can be analyzed.

Contribution: This research will be very useful to enrich the discrimination of workers in Labor Economics.

Keywords: *Wage gap, Dissimilarity index, length of schooling, LFPR*

1. INTRODUCTION

Gender-based labor market differences have attracted the attention of researchers, policy makers and international institutions. Wage or income gaps exist between male and female workers in both industrialized countries and the transition from agriculture to industry. In America, the female to male wage ratio was between 79 and 81 percent between 2000-2010; in EU countries the wage gap was between 15 and 17 percent during 1994-2006. The wage gap in Italy and Portugal is only one digit but in Cyprus, Estonia and the United Kingdom it is more than 20 percent (Banerjee, 2014). This finding occurs in all countries including Indonesia, where the wage gap in 2015-2018 shows an increasing trend of around 11 percent (BPS, 2019).

In essence, the labor wage gap according to gender is still a topic of discussion and a problem in every country in the world, one of which is Indonesia. The labor wage gap according to sex is the difference in the average wage that occurs between men and women or a difference that shows that the wages of female workers are lower than that of men. Anker (1998) states that women's wages are lower than men in almost all countries in the world, and this wage difference occurs in all wage patterns, both daily, weekly and monthly and occurs in almost all non-agricultural and manufacturing sectors.

This gender wage gap can also have a negative impact on the domestic product of a country. Based on research in Australia it was found that the average impact of the gender wage gap on gross domestic product per capita was -0.507, which means that each 1 percent increase in the average wage gap leads to a decrease in economic growth of 0.507 percent (Cassels et al. 2009).

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There are several characteristic factors that cause differences in wage application between male and female workers. The first factor causing the wage gap is the level of education. According to Jacob (2006), the low wages of female workers compared to male workers are due to differences in human capital, namely education. Education level is one of the factors that influence the quality of human resources and in turn will affect the level of wages received by workers. The higher the level of education a worker has, the higher the wages they receive. For example, a person who has graduated from high school will receive a higher wage than someone who only graduated from elementary school.

Changes in education levels facilitate female's entry into the labor market. The more educated female, the higher the level of participation. In Indonesia, the phenomenon of increasing the level of education of female in 2015-2018 accompanied the increase in men. However, if we look further, it is found that there are differences in the level of education of the male and female population based on the average length of schooling (Table 1). In general, in all provinces, female take 7.35 - 7.72 years of education, which is still shorter than male 8.35 - 8.62 years. This means that the level of education of female in Indonesia is still lower than that of male.

Table 1: Average Length of Schooling by Gender in Indonesia

Province	Average Length of Schooling (years)							
	Male				Female			
	2015	2016	2017	2018	2015	2016	2017	2018
Aceh	9.16	9.19	9.36	9.49	8.4	8.54	8.62	8.71
North Sumatra	9.42	9.48	9.55	9.61	8.66	8.78	8.96	9.08
West Sumatra	8.63	8.72	8.86	8.87	8.32	8.49	8.6	8.66
Riau	8.8	8.81	9.02	9.12	8.17	8.36	8.49	8.71
Jambi	8.46	8.5	8.59	8.67	7.44	7.63	7.7	7.77
South Sumatra	8.17	8.18	8.3	8.32	7.37	7.48	7.67	7.68
Bengkulu	8.7	8.72	8.76	8.93	7.89	8.01	8.16	8.28
Lampung	7.92	7.93	8.08	8.14	7.19	7.33	7.49	7.5
Bangka Belitung Islands	7.99	8	8.1	8.17	7.14	7.31	7.48	7.51
Riau Islands	9.86	9.87	10	10.01	9.36	9.46	9.57	9.6
Jakarta	11.21	11.34	11.43	11.46	10.2	10.42	10.61	10.63
West Java	8.36	8.37	8.59	8.6	7.35	7.52	7.69	7.71
Central Java	7.59	7.68	7.79	7.86	6.5	6.65	6.78	6.87
DI Yogyakarta	9.64	9.67	9.74	9.87	8.4	8.6	8.73	8.8
East Java	7.75	7.81	7.93	7.96	6.57	6.69	6.78	6.85
Banten	8.86	8.9	9.07	9.18	7.66	7.82	7.98	8.04
Bali	9.18	9.2	9.35	9.5	7.33	7.53	7.75	7.82
West Nusa Tenggara	7.51	7.54	7.63	7.81	6.02	6.13	6.27	6.36
East Nusa Tenggara	7.27	7.32	7.46	7.62	6.61	6.75	6.87	7
West Kalimantan	7.42	7.49	7.59	7.61	6.43	6.44	6.49	6.62
Central Kalimantan	8.43	8.49	8.62	8.7	7.59	7.73	7.91	8
South Kalimantan	8.29	8.38	8.45	8.46	7.23	7.4	7.52	7.53
East Kalimantan	9.57	9.61	9.75	9.86	8.68	8.82	8.93	9.06
North Kalimantan	9.12	9.14	9.27	9.52	8.25	8.43	8.44	8.69
North Sulawesi	8.9	8.93	9.1	9.24	8.86	9	9.19	9.24
Central Sulawesi	8.27	8.38	8.56	8.76	7.66	7.84	8	8.27
South Sulawesi	7.97	8.08	8.31	8.32	7.34	7.46	7.63	7.76
Southeast Sulawesi	8.79	8.83	8.98	9.13	7.7	7.86	7.95	8.26
Gorontalo	6.76	6.82	6.98	7.14	7.34	7.41	7.56	7.76

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West Sulawesi	7.33	7.4	7.55	7.66	6.71	6.91	7.08	7.28
Maluku	9.42	9.47	9.63	9.75	8.91	9.08	9.17	9.41
North Maluku	8.91	8.99	9.05	9.15	7.8	8.06	8.17	8.28
West Papua	9.79	9.81	9.89	10.09	6.71	6.8	6.9	7.01
Papua	6.85	6.9	7.02	7.26	5.02	5.32	5.44	5.7
Indonesia	8.35	8.41	8.56	8.62	7.35	7.5	7.65	7.72

Source: Sakernas, BPS, 2018

Several recent studies have shown that female's participation in the labor market is increasing. The level of participation in Indonesia shows a fluctuating situation but the trend is increasing (Table 2). In 2018 the LFPR for male was 82.68 percent, increasing slightly to 83.13 in the following year. Meanwhile, the LFPR for female in the same period did not change at 51.88 percent. In general, the LFPR (Labor Force Participation Rate) for male is still much higher than the LFPR for female, where the LFPR for male is higher, around 1.5 times the LFPR for female.

Table 2: LFPR based on Gender in Indonesia

Gender	August 2018	February 2019	August 2019
Male	82.68	83.18	83.13
Female	51.88	55.50	51.89
National	67.26	69.32	67.49

Source: Labor Market Indicators, BPS, 2019

Based on occupation, women workers dominate in types of work (1) Professional, technician and related occupations; (3) Clerical and related occupations; (4) Sales worker and (5) Services worker. Male workers are more dominant in the type of work (2) Managerial and supervisory occupations; (6) Agriculture, forestry, hunting and fishing workers and laborers; (7) Production workers, operation of machinery workers; and (8) others.

Table 3: Percentage of Workers by Occupation and Gender in Indonesia

Occupation	KBJI Code	Male	Female
Professional, technician and related occupations	1	5.77	10.59
Managerial and supervisory occupations	2	1.95	0.86
Clerical and related occupations	3	5.21	7,18
Sales worker	4	14.53	26.53
Services worker	5	4.22	9.66
Agriculture, forestry, hunting and fishing workers and laborers	6	27.96	24.35
Production workers, operation of machinery workers	7	37.57	20.68
Others	8	2.79	0.15

Source: Labor Market Indicators, BPS, 2019

The dominance of female in this type of work is 2 times more than that of male workers in this type of work (Table 3). The highest percentage of female workers is in the type of work (4) Sales worker, namely 26.53 percent, while male workers are mostly in the type of work (7) Production workers, operation of machinery workers, namely 37.37 percent.

In earlier empirical studies, discrimination in the labor market was calculated by applying the standard decomposition. Oaxaca (1973) studied the gender wage gap in the US labor market. He found that the wage gap between females and males is quite large. In the same year, Blinder (1973) exploited US

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data to explore the gender and race wage gap. He concluded that there is a difference in wages across different genders and races. Both studies focused on the contribution of discrimination to wage differentials in the labor market. Since then, many more empirical studies have applied the Blinder-Oaxaca decomposition analysis to explore various aspects of discrimination. Coelli (2014), the main finding of this investigation is that occupational differences do contribute to the gender wage gap in Australia when occupation is defined at an appropriately disaggregated level. Joonmo Cho & Donghun Cho (2011) finds out that the wage differential between the formal and the informal sector found among female workers does not appear in the group of male workers. Based on this empirical result, their study speculates that the dual labor market structure aggravates the overall gender earning gap, as female workers are penalized more by locating themselves in the informal labor market than are male workers.

The main objective of this research is to find out whether the characteristics of provinces, especially the characteristics of workers based on length of schooling, LFPR and dissimilarity in each province are the causes of the wage gap in Indonesia 2015-2018.

2. LITERATURE REVIEW

Human capital per worker *h* usually uses a measure average years of schooling of the population of working age (age at over 15 or under 65 years). This measure is considered the most appropriate because *human capital is* reflected of the exponential function of mean years of schooling (Savvides, 2009). Moreover, these parameters can be used to see *the return of schooling* from micro studies. This study was conducted to see the effect of increasing school years to an increase in individual wages.

Muhyiddin (2018) states that differences in wages paid to workers arise because there are differences in *human capital* and differences in types of work. In addition to wages, many companies impose compensation *non-wage* or *fringe benefits* or *benefits in kind*. Wage and non-wage compensation are analyzed in theory *hedonic*. Philosophically, *hedonic* comes from the hedonian concept which hypothesizes that the population pursues utility and rejects disutility. The size of the wages is determined by labor market conditions. The difference in the amount of wages is due to differences in *human capital*, namely workers who have a certain education and as compensation, these workers will get wages that are not the same as workers who have other education.

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The equation Ln (W_0) or log income is a constant function of Ln (W_0) and S is the length of *schooling*. Income can vary according to work experience or age. The *life cycle* wage pattern has an inverted U pattern, so the equation becomes:

$$\mathrm{LnW}_0 = \beta_0 + \beta_1 S + \beta_2 A + \beta_3 A^2 + \varepsilon \qquad (1)$$

Where:
LnW_0 = Log Wage
β_0 = LnY coefficient
β_1 = School coefficient

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S = length of schooling (years)
β_2 = Work Experience Coefficient
A = Work Experience
β_3 = Work Experience Coefficient Quadratic
A^2 = Work Experience Squared

Mincer Model is known as the Mincer *wage equation (mincerian wage equation)*. According to Mincer's model of time in education is used as the main determination to increase income (Mincer, 1958).

Hanushek (2020) and Ahmad (2015) say that the production function of education is closely related to the labor market and as a determinant of workers' wages. The reason is because by following the education process it will increase knowledge, skills and expertise. Likewise, Azhar *et al*. (2018), Megasari and Purnastuti (2016) who concluded that education level has an effect on income, and income has an effect on work experience. The higher the level of education, the greater the return on investment in education received. Toutkoushian & Paulsen (2016) and Psacharopoulus and Patrinos (2004), argue that investment in education behaves with investment and physical capital, where there are positive and considerable financial benefits from education.

Differences in income and / or occupation are due to differences in human capital investment (Becker, 1993). Similarities in human capital will lead to similarities in occupation and income. When differences in occupation and income exist, is it due to different attributes of human capital, for example formal education, age, health, residence, presence of children and age, and marital status. Characteristics such as family attitudes and preferences (household utility), family income, national origin, or primary language are also important factors of human capital (Becker, 1993, Bloomquist, 1990, Kidd and Shannon, 1994).

The analysis of the difference in wage compensation can be explained in two ways; The market for risky jobs and the hedonic wage function. Suppose there are two types of jobs in the job market. Some jobs offer a very safe environment so that the chance of injury on this job is equal to zero. Other jobs offer a permanent risk environment so that the chances of injury in this job are equal to one.

It is assumed that workers have perfect information about the level of risk at each job. In other words, the worker knows whether he is working in a safe or risky job. As workers decide whether to accept job offers from risky companies or from safe companies, a company must also decide whether to provide a risky or safe work environment for its workers. The workers' decisions are indicated by their utilitarian function whereas the firm's choice will depend on the profit function.

Market compensation differentials equalize supply and demand and provide the necessary gratuities to attract the last worker hired by the company at risk. The difference in wage compensation and the number of workers working in risky jobs is determined by the intersection of the market supply and demand curves. The supply curve is ascending while the demand curve is decreasing. If the wage differential exceeds the equilibrium level, more people will work for the firm at risk than are demanded, so the wage compensation gap will fall. Likewise, if the wage differential is below the equilibrium level, too few workers will want to work in jobs at risk relative to demand, and the wage compensation differential will increase.

Now, through the hedonic wage function, it is assumed that workers do not like risk and suppose that there are many types of firms. The odds of injury on the job will be various values between 0 and 1. Different workers have different preferences for risk indicated by

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indifference curves. The slope of the indifference curve shows how much wages must be increased to make voluntary workers change jobs more risky. To explain how a company chooses the type of environment it offers for its employment, it is shown with an isoprofit curve. This curve is ascending and concave in scope. Different companies have different isoprofit curves.

The job market marries risk-averse workers with firms that provide a safe environment; Workers who do not think about the risks will run into companies that find it difficult to provide a safe environment. This relationship between wages and job characteristics is called the hedonic wage function. Because workers do not like risk and because it is expensive to provide a safety factor, the hedonic wage function is an upward slope. The slope indicates the increase in wages offered by a slightly more risky job.

The key implications of this theory are summed up easily: As long as everyone in the population agrees on whether a particular job characteristic is "good" or "bad", good job characteristics are associated with low wage rates and bad job characteristics are associated with high wage rates. . For example, a job that is physically demanding may be more unpleasant than other jobs, and is therefore expected to pay a higher wage rate.

His theory, however, suggests that markets compensate for wage differences measuring what is needed to make marginal workers accept certain jobs. If marginalized workers happen to like being hired in risky jobs or being told what to do at that job, the market wage differentials will go in an apparently wrong direction (Borjas, 2013).

The wage gap between male and female may arise due to gender differences in the assessment of certain aspects of work. Several empirical studies provide evidence that female prefer to work in certain jobs and firms, because they are associated with lower investment in job-specific training (Becker, 1971), less competitive environment (Niederle and Vesterlund, 2007), depreciation rate of human capital. lower levels (Gorlich and de Grip, 2009, and Polacheck, 1981), and more pleasant and family-friendly working conditions (Bender, Donohue, and Heywood, 2005; Budig and England, 2001). For this desire, the non-cash job characteristics of women seem willing to accept lower wages.

Ismail and Jajri (2012) in their observations in Malaysia found that differences in wages or income received by workers were caused by race, human capital and job characteristics, saying that workers who received training, had higher education, should be able to receive a higher salary. high when compared to workers who do not attend school as well as people who have more work experience for the various sectors of work they do. Likewise, Tanzel and Bircan (2010) show that the employment sector has an influence on the gap in determining the income received. In the case that occurred in Turkey, it shows or explains that someone who works in the public sector will receive much greater rewards in the form of money compared to someone who works in the private or special sector.

3. RESEARCH METHODOLOGY

This research uses secondary data obtained from the 2018 National Labor Force Survey (Sakernas). The data used are the level of wages, length of schooling, Labor Force Participation Rate (LFPR), and the number of men and women workers based on types of occupation of various provinces in Indonesia in 2015 - 2018.

A dissimilarity index was built to measure occupational segregation (Duncan and Duncan, 1955). First, the percentage of all workers in each province where each occupation group is calculated. This index is then half of the absolute total value of the difference between the specific locations of the distribution,

$$ID_{ij} = 0.5 \sum \left| F_{ij} / F_j - M_{ij} / M_j \right| \quad (2)$$

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Where ID is the Dissimilarity index; F_i is the number of female workers in occupation i, M_i is the number of male workers in occupation i; F_j is the number of female workers in j province; M_j is the number of male workers in the province j.

The absolute value of the sum of the difference between the percentage distribution of males and females in each occupation is halved (because there are two groups of males and females) to produce values that range in the index from 0 (perfect integration) to 1 (perfect segregation). Then the multiple regression equation used in this study is:

$$L_nWG_{it} = \alpha + \beta_1 ID_{it} + \beta_2 LS_{it} + \beta_3 LFPR_{it} + \mu_{it} \quad (3)$$

where: WG is the difference in income; ID is the Dissimilarity Index; LS is the length of school; LFPR is the level of labor force participation; i is the province; t is the year (2015-2018) and μ is the error rate.

Equation (3) is a general form of the panel data regression equation. The analytical method used is the OLS (*Ordinary Least Square*) using eviews software. The use of panel data has several advantages, among others (Baltagi, 2005); able to control individual heterogeneity; provides more information, is more varied, reduces collinearity between variables, increases degrees of freedom, and is more efficient; Better for decision-making studies; able to identify and measure effects that simply cannot be obtained from *cross section* puredata or puredata *time series* ; and can test and build more complex behavioral models.

The existing research model will be estimated using 3 approaches, namely the *Common Effect, Fixed Effect* and the R*andom Effect approach*. To find out whether the wage gap is influenced by dissimilarity, length of schooling and LFPR, a model specification test was conducted.

In order to choose the most appropriate model to use from the three models above, several tests can be carried out, including the Chow test; Breusch-Pagan test or LM test; and the Hausman test. (1) Chow test is a test to determine *Common Effects* or *Fixed effects* model that is most appropriate to use in estimating panel data; (2) LM test used to test whether *Common Effects* or *Random Effects* are most appropriate for estimating panel data; (3) The Hausman test is a statistical test to choose whether themodel *Fixed effects* (FEM) or *Random Effects* (REM)is most appropriate to use in estimating panel data. The difference between the two is the presence or absence of a correlation between the individual effects and the independent variables. The Hausman test aims to find out whether there is a correlation as mentioned above. The null hypothesis is that there is no correlation between individual effects and the independent variables. In the absence of this correlation, REM estimators are consistent and efficient. While the FEM estimator is consistent but inefficient. If there is a correlation, the FEM estimator is consistent and efficient but the REM estimator is inconsistent. In addition to the test method, model selection can also be done by testing standard errors. The model with the smallest standard error value is selected. All tests are carried out using the Eviews program (Richard, 2013).

4. RESULTS AND DISCUSSIONS

The selection of the first best regression model was carried out by using the Fixed Effect method significance test Chow test. The following table is the result of the Chow test:

Table 4: ChowResults

Effects Test	Statistic	df	Prob.
Cross-section F	2.015967	(26.78)	0.0095

Source: processed data

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Chow test which is shown in Table 4 gives the conclusion that the hypothesis choosing the model is *Common Effect* rejected. This conclusion is based on the value of the probability of cross section F smaller than alpha 5 percent (0.0095 <0.05). Thus, based on the Chow test, the best model used to analyze in this study is themodel*Fixed Effect*.
Second, the significance test of the Fixed Effect method and the Random Effect method. Based on The Hausman test in Table 5 shows that the probability value of *random cross section* is 0.6163, this means that it is greater than 5 percent alpha, so Ho is not rejected and the model chosen is *random effect*.

Table 5: HausmanResults

Test Summary	Chi-Sq.statistics	Chi-Sq. df	Prob.
Cross-section random	1.793775	3	0.6163

Source: processed data

Third, because the Chow and Hausman tests give inconsistent results where Chow and Hausman estimates show differences in the results of selecting the best model, so the best model is determined using the LM test.

Table 6: LM Test Results

Null(no rand. Effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	1.275788 (0.2587)	0.700678 (0.4026)	1.976466 (0.1598)
Honda	-1.129508 (0.8707)	0.837065 (0.2013)	-0.206788 (0.5819)
King-Wu	-1.129508 (0.8707)	0.837065 (0.2013)	0.429299 (0.3339)
GHM	- -	- -	0.700678 (0.3774)

Source: processed data

Estimated results from the *Breusch-Pagan test* show that the value *Prob.Cross-section one-sided* greater than the significance level α (0.2587> 0.05) that H_0 is not rejected, which means that the best model according to the LM test is the Common *Effect Model*.

Based on the Chow, Hausman and LM tests, it can be seen that there are differences in results, the Chow test chooses the *Fixed Effect Model* as the best model while the Hausman test chooses the *Random Effect Model* as the best model. So for the final stage of selecting the best model using the LM test which selects the *Common Effect Model*. Thus the final model selection chooses the *Common Effect Model* as the best model.

The choice of the model must be supported by statistical results, based on statistical model comparisons showing that the *Fixed Effect Model (FEM)* is a model that can be interpreted statistically because almost all variables are partially significant, in contrast to the *Common Effect*

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Model (CEM) and *Random Effect Model (REM)* which statistically cannot be interpreted in the discussion because all variables are declared partially insignificant, so that through consideration of these statistical results in order to be interpreted perfectly both in theory and in effect, the model chosen is the *Fixed Effect Model (FEM)*.

The estimation results of panel data using the model *fixed effect* based on Table 7 can be written as follows:

Ln WG = - 0.000789 * ID - 1.125065 * LS - 0.012293 * LFPR + 14.63319 + [CX = F]

Table 7: Estimation Result of Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.63319	0.603029	24.26615	0.0000
ID?	-0.000789	0.011155	-0.070733	0.9438
LS?	-1.125065	0.232033	-4.848728	0.0000
LFPR?	-0.012293	0.004104	-2.995425	0.0037
Fixed Effects (Cross)				
_ACEH - C	0.151367			
_NORTHSUMATERA - C	-0.170948			
_WESTSUMATERA - C	-0.848893			
_RIAU - C	-0.251767			
_JAMBI - C	0.314680			
_SOUTHSUMATERA - C	-0.239398			
_BENGKULU - C	-0.017785			
_LAMPUNG- C	-0.475383			
_BANGKABELITUNGISLANDS - C	0.300465			
_RIAUISLANDS - C	-0.198176			
_JAKARTA - C	0.562013			
_WESTJAVA - C	-0.708122			
_CENTRALJAVA - C	0.475494			
_YOGYAKARTA - C	-0.053245			
_EASTJAVA - C	0.151386			
_BANTEN - C	0.481071			
_BALI - C	0.266304			
_EASTNUSATENGGARA - C	-0.516302			
_WESTKALIMANTAN - C	0.831807			
_NORTHSULAWESI - C	-1.124913			
_SOUTHSULAWESI - C	0.216644			
_GORONTALO - C	-1.509741			
_WESTSULAWESI - C	0.076998			
_MALUKU- C- C	-0.807663			
_NORTHMALUKU - C.	0.228275			
_WESTPAPUA--C	2.135759			
_PAPUA - C	0.730073			

Source: processed data

Based on the regression result equation, the average value of the (random error component random error component) is 14.63319. The Dissimilarity Index (ID), the difference in length of schooling (LS) and the difference in LFPR show a negative effect on the income differences between male and female workers (LNWG) in Indonesia. Of the three determinants of gender income differences, Index D does not significantly influence it and the coefficient is also very small. It can be stated that this variable has a very small and insignificant effect on the difference in income statistically.

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The ability to explain the gender income gap by these three variables is 48.34 percent. The proportion of variations in income differences that can be explained by these 3 variables is less than 50 percent. More than 50 percent of the determinants that affect differences in income should be explained.

Referring to the regression coefficient value of each independent variable in the estimation result equation, it can be explained that assuming other factors are constant, the dissimilarity index coefficient of -0.000789 means that each increase in the index score by 1 percent will reduce the worker's income gap by 0.000789 percent. If the difference in length of schooling for male and female workers increases by 1 percent, it will also reduce the worker's income gap by 1.125065 percent. Each increase in the difference between men's and women's LFPR by 1 percent will reduce the income gap for workers by 14.63319 percent. So, the factor that most dominantly affects the income gap is the difference in school length. In the case of the length of school coefficient being negative, this is due to the influence of factors that are not statistically observed. When the education level of male workers is higher than the education of female workers it causes the income gap to decrease, this is because there are other important factors that are not observed such as continuous working years and age of workers.

The findings in this study contradict studies which show that occupational segregation is a major contributor to the gender wage gap (Blau and Kahn 2007; England, Hermsen, and Cotter 2000). At the same time, the decline in occupational segregation was the main factor contributing to the increase in real income for women during the last period of the decade. Hsieh et al. (2010) estimate that between 1960 and 2008 about 60 percent of growth in real wages for black women, 40 percent for white women, and 45 percent for black men could be attributed to a decrease in the rate of occupational segregation; during the same time they estimated a 5 percent decrease in real wages for white males as a result of changes in occupational composition by gender. Just as Hori (2000) found, the gender wage gap can be explained by occupational segregation of only 5.1 percent, likewise Sorensen (1990) shows that in the United States 15-30 percent of the gender wage gap can be explained by occupational segregation.

Based on Table 7, it can be calculated the percentage of worker wage gap for each province, as shown in Table 8. The wage gap getting closer to zero means that the wage gap is low and vice versa if the average wage gap is close to 100.So, overall provinces in Indonesia are not experience a significant labor wage gap. West Papua and Papua are provinces with the highest average wage gap, namely 16.77 and 15.36; while Gorontalo and North Sulawesi were provinces with the lowest income differences, namely 13.12 and 13.51. More than half of the provinces in Indonesia (51.85 percent) show that the difference in the income of male and female workers exceeds the difference in the national average (14.63).

Table 8: Fixed Effect Model Estimation Results

province	coefficient	wage gap (percentage)
Aceh	14.784557	0.151367
North Sumatra	14.462242	-0.170948
West Sumatra	13.784297	-0.848893
Riau	14.381423	-0.251767
Jambi	14.947870	0.31468
South Sumatra	14.393792	-0.239398
Bengkulu	14.615405	-0.017785
Lampung	14.157807	-0.475383
Bangka Belitung Islands	0.300465	14.933655
Riau Islands	14.435014	-0.198176
Jakarta	15.195203	0.562013
West Java	13.925068	-0.708122

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Central Java	15.108684	0.475494
Yogyakarta	14.579945	-0.053245
East Java	14.784576	0.151386
Banten	15.114261	0.481071
Bali	14.899494	0.266304
East Nusa Tenggara	14.116888	-0.516302
West Kalimantan	15.464997	0.831807
North Sulawesi	- 1.124913	13.508277
South Sulawesi	0.216644	14.849834
Gorontalo	13.123449	-1.509741
West Sulawesi	14.710188	0.076998
Maluku	13.825527	-0.807663
North Maluku	14.861465	0.228275
West Papua	16.768949	2.135759
Papua	15.363263	0.730073
average		14.633190

Source: Data processed

Table 9: Nominal Wage Differences Workers by Province in Indonesia 2015- 2018

Province	Wage Gap (Rp)				Average
	2015	2016	2017	2018	
Aceh	1,002,464	582,564	712,490	544,204	710,431
North Sumatera	844,372	599,922	585,212	549,069	644,644
West Sumatera	620,180	327,265	591,634	801,449	585,132
Riau	1,032,413	605,644	639,699	599,981	719,434
Jambi	588,780	450,017	669,987	536,224	561,252
South Sumatera	1,496,190	655,792	564,731	604,642	830,339
Bengkulu	914,886	631,520	350,410	856,546	688,341
Lampung	808,998	566,908	567,248	299,731	560,721
Bangka Belitung Islands	1,512,321	796,169	668,827	488,003	866,330
Riau Islands	153,218	1,391,348	873,680	1,098,945	879,298
DKI Jakarta	1,064,557	891,246	915,571	1,007,456	969,708
West Java	1,049,078	533,054	704,700	603,505	722,584
Central Java	926,833	619,514	586,338	732,473	716,290
Yogyakarta	803,330	533,910	489,031	523,958	587,557
East Java	917,228	652,833	587,910	618,126	694,024
Banten	1,489,075	471,750	491,007	574,116	756,487
Bali	1,049,851	747,964	910,302	898,011	901,532
East Nusa Tenggara	616,711	219,894	446,324	388,226	417,789
West Kalimantan	1,069,901	542,567	608,225	711,810	733,126
North Sulawesi	434,966	179,343	415,312	224,640	313,565
South Sulawesi	897,384	613,974	1,089,388	1,167,344	942,023
Gorontalo	1,003,115	357,962	431,212	430,263	555,638
West Sulawesi	799,098	383,069	756,186	1,015,684	738,509
Maluku	724,040	242,576	511,752	287,784	441,538

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North Maluku	915,912	641,719	573,700	751,673	720,751
West Papua	332,000	409,228	29,370	778,648	387,312
Papua	739,971	1,052,037	809,963	874,620	869,148

Source: Data processed

Observing what is shown in Table 9 in nominal wage gap of workers in line with the data on Table 8. North Sulawesi Province is an area with a low income difference category, as well as a region showing a high category, namely DKI Jakarta, South Sulawesi and Bali.

5. CONCLUSION

The Dissimilarity Index (ID), length of schooling (LS) and LFPR show a negative effect on the income differences between male and female workers (LnWG) in Indonesia. Of the three determinants of gender wage gap, Index D does not significantly influence it and the coefficient is also very small.The most dominant factor affecting wage gap is the difference in length of schooling. In the case of the length of schooling coefficient being negative, this is due to the influence of factors that are not statistically observed.

LIMITATION AND STUDY FORWARD

This research still does not include the factors that determine the wage gap from other aspects of human capital, namely the skills or experience of workers. The wage gap between provinces in Indonesia can also be explained more clearly if we look at the economic growth in each province. Another limitation is that not all provinces can be analyzed due to the unavailability of data for several provinces in the years observed. The division of regions based on islands can also be an alternative for the analyzed area data. Subsequent research can also measure dissimilarity in the form of horizontal and vertical segregation.

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