



## **Analysis of Decision to Work of Female Workers in Indonesia**

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### **Abstract**

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This study analyze the influence of demographic, social, and economic characteristics which include wage, age, level of education, status in the household, work experience, and residential area on the decision to work of female workers in Indonesia. Based on the data of the National Labor Force Survey (Sakernas) August 2017, this study is conducted by using multinomial logistic regression method to achieve the objective. The result shows the characteristics of demographic, social, and economic have significant effect on the decision to work of female workers in Indonesia. Female workers tend to work in the tertiary sector than in the primary sector. This finding is in line with the trend of increasing female workers in the tertiary sector which is one of the factor that influence the shift in economic structure in Indonesia. Another finding is that the increase of wage reduce the probability of female workers to work in the secondary sector. This condition is probably related to the existence of rules of minimum wage and work contract which bind female workers in the secondary sector, especially in the large and medium industrial sectors.

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## INTRODUCTION

One of the success of human resources development in Indonesia is marked by increasing the role of women in the field of employment. Women have the same rights and opportunities as men to participate in economic activities (Melis, 2017). The enhancement of the level of women's education is one of the factors that influence participation in work (Conteras and Pozada, 2010; Ragoobur et al., 2011). The increase in the role of women in the economy was illustrated by the growth of female's labor force participation rates (LFPR) that tend to rise. Over the past 4 (four) years, female's labor force participation rate in Indonesia increased significantly, while male's LFPR tend to decline.



**Figure 1.** Indonesian Labor Force Participation Rate in August 2013-2016  
Source: Statistics Indonesia (2017)

The results of the National Labor Force Survey (Sakernas) conducted by Statistics Indonesia (BPS) showed that LFPR in August 2016 in Indonesia reached 50.77 percent, which increased when compared to August 2013 which was only 50.28 percent. While male's LFPR continued to experience a downward trend from August 2013 which reached 83.58 percent to 81.97 in August 2016. Referring to this data, there was a gap between the participation of the male and female labor force in Indonesia. This shows the low participation of women in the labor market. Even though it is expected that equality between men and women will occur in the labor market.

The enhancement of female's LFPR was related with the improvement of female's education and gender equality in the labor market. Women are no longer considered to only take care of the household. However, women have equal opportunities with men in helping to improve the household economy. The role of women is not only limited to domestic roles in the household as a housewife, but also as public roles in the labor market. It can be interpreted that responsibility and access in the labor market do not depend on gender. This is in line with one of the goals of sustainable development known as the Sustainable Development Goals (SDGs), which is achieving gender equality and empowering women.

Married women are identical to their roles as housewives and caring for children, while the role of married men is identified as household head and breadwinner. Married women provide labor as part of the production factor in economic activities, while in household they are responsible for doing housework and caring for children. Khan et al. (2009) stated that the increase in working hours of currently married women in the labor market was influenced by development in science and technology, reduced differences between men and women in the wage structure, and changes in social views towards married women who working outside the home.

The decision to work related to the allocation of time which available to work or leisure, to maximize utility. If the individual decides to work, the individual will determine how long it will work and what type of work (Borjas, 2010). In the decision to work, women are assumed to have several utility level for each alternative choice, then they will choose the type or sector of employment that offers the highest utility (Atieno, 2006). In the theory of time allocation, allocation of time in the labor market depends on the individual and household characteristics that is in accordance with the characteristics of the labor market (Becker, 1965). In the labor market, two things are decided by individuals, namely the decision to work and the decision on how much time is allocated when

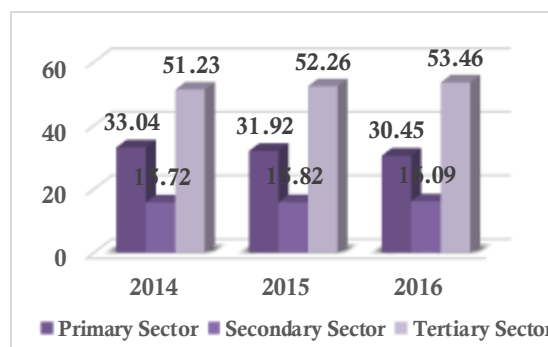
deciding to work. Theory of time allocation stated that women will allocate their time in the labor market and work at home with the aim of gaining satisfaction. Sayyida and Ismaini (2011) used the theory of time allocation in their research, the results of which stated that women in Indonesia tend to work in the non-agricultural sector.

The theory of human capital stated that the relationship between education and labor is highly correlated (Ismail and Sulaiman, 2014). The linkage of the theory of human capital with this research is on the level of education variables with the decision to work female workers. Tansel (2002), conducted research on economic growth and female labor participation in Turkey, stated that high economic growth and education levels increased participation of female workers.

The condition of the structure of women's labor is very closely related to changes in the structure of the economy. As an example in the United States, there was an increase in female labor participation in the service sector during the period 1950-1990. While female labor participation declined in the agricultural and industrial sectors (Akbulut, 2011). Goldin (2006) in his research stated that along with the increase in the service sector, female workers prefer to work in the service sector compared to the type of work in the industrial sector. World Bank Statistics and Wage Indicator Survey in 2012 show that more women work in the service sector compared to the agricultural and industrial sectors (Tingrum, 2016).

In Indonesia, changes in the structure of the economy are characterized by increasing value added, job creation, and labor productivity. According to Kariyasa (2011), changes in the structure of the Indonesian economy can be seen from the shifting role of the primary sector (agriculture, mining, and excavation) to the declining Gross Domestic Product (GDP), followed by the increasing role of the secondary sector (manufacture industry, electricity, gas, water, and construction) and tertiary sector (trade, hotel, restaurant, transportation, finance, communication, leasing, and services). The shift in the role of the primary, secondary, and tertiary

sectors that influence the structure of women's labor in Indonesia is also indicated by the results of Sakernas in 3 (three) years, 2014-2016, where the percentage of female workers in primary sector tends to decrease by 2.59 percent while the secondary and tertiary sectors tend to increase by 0.37 percent and 2.23 percent respectively.



**Figure 2.** Percent of Female Workers by Sector in Indonesia in 2014-2016

Source: Statistics Indonesia (2017)

Empirical studies about female workers have been carried out by many previous researchers in the world, but in Indonesia, there is still necessary for more research as the material for consideration of policy making. An empirical study about female workers has been done by Akbulut (2011) which discusses the growth of the service sector with an increase in female workers in the United States. The result stated that the increase of growth in service productivity affected the increase of female workers. Olivetti and Petrongolo (2014) in their study stated that countries which have a relatively small service sector tend to have small female workers. Tingrum (2016) stated that age, number of household members, and tertiary education have a significant and positive effect on female workers to choose to work in the service sector. Whereas marital status shows the decline of the possibility of female workers to work in the service sector. Many households choose to work in the non-agricultural sector, which age variable has a positive influence. Women tend to be less productive in the non-agricultural sector than men (Nagler and Naude, 2017). The sex of household head is not significantly effect, while

the level of education and wage have significant and positive effect on the decision to choose to work in the non-agricultural sector. Bratti (2003) stated that education has a significant effect on the participation of currently married female workers, even when they start having children, married female workers who have a higher education level tend to continue to participate in the labor market.

The participation rate of married women workers is also affected by the location of their residence (Sefiddashti et al., 2017). Sayyida and Ismaini (2011) in their study stated that women living in urban area tend to choose to work in the non-agricultural sector. Similarly, the status of the household also influences the decision of women to work according to employment.

Referring to this, the motivation of this study arises from the increase of female labor force participation (LFPR) and change in the structure of the economy of Indonesia from primary sector to secondary and tertiary sector. This study was conducted to analyze the decision to work of female workers in Indonesia.

In this study, the meaning of the decision to work of female workers in Indonesia is married women choosing to work in the primary, secondary, tertiary sectors. The influence of economic, demographic and social characteristics on the decision to work of female workers in Indonesia will be analyzed based on the probability of female workers to choose to work in primary sector, secondary sector, and tertiary sector. The aim of this study is to analyze the influence of demographic, social, and economic characteristics on the decision to work of female workers in Indonesia.

## RESEARCH METHOD

This study uses a quantitative approach using multinomial logistic regression to analyze the influence of economic, demographic, and social characteristic variables which include wage, age, level of education, status in the household, work experience, and residential area toward the decision to work of female workers in Indonesia.

This study is based on National Labor Force Survey (Sakernas) August 2017 which conducted by Statistics Indonesia (BPS). The number of samples enumerated in Sakernas August 2017 was 716,700 individuals. Filtering and cleaning data of Sakernas are carried out for research purposes. The unit of analysis used in the study was female workers who were married and worked according to the sector or business field based on wage characteristics, age, level of education, status in the household, residential area, and work experience.

Filtering dependent variable data is done by sorting out individuals based on gender, marital status, business field. Therefore the data obtained from the dependent variable of this study are married women who work according to the sector or business field. Then filtering the independent variable data is done in the form of variables of wage, age, level of education, status in the household, work experience, and residential area of married women who work. The next process is cleaning data to check the consistency between variables. Therefore, the variables used in this study were obtained. The results of the filtering and cleaning data of Sakernas August 2017 were obtained an eligible analysis unit of 100,618 individuals.

$$\ln\left(\frac{\text{secondary sector}}{\text{primary sector}}\right) = \beta_{10} + \beta_{11}\ln\_WAGE + \beta_{12}AGE + \beta_{13}EDUC1 + \beta_{14}EDUC2 + \beta_{15}EDUC3 + \beta_{16}HOUS + \beta_{17}EXPR + \beta_{18}RES + \varepsilon_1$$

$$\ln\left(\frac{\text{tertiary sector}}{\text{primary sector}}\right) = \beta_{20} + \beta_{21}\ln\_WAGE + \beta_{22}AGE + \beta_{23}EDUC1 + \beta_{24}EDUC2 + \beta_{25}EDUC3 + \beta_{26}HOUS + \beta_{27}EXPR + \beta_{28}RES + \varepsilon_2$$

where,  
 $\ln\left(\frac{\text{secondary sector}}{\text{primary sector}}\right)$  : probability of female worker to work in the

		secondary sector compared to the primary sector
$\ln\left(\frac{\text{tertiary sector}}{\text{primary sector}}\right)$	:	probability of female worker to work in the tertiary sector compared to the primary sector
ln_WAGE	:	natural logarithm of wage
AGE	:	age
EDUC <sub>1</sub> , EDUC <sub>2</sub> , EDUC <sub>3</sub>	:	level of education
HOUS	:	status in the household
EXPR	:	work experience
RES	:	residential area
$\beta_{i0}$	:	constant, ( $i=1,2$ )
$\beta_{ij}$	:	regression variable, ( $i=1,2$ ; $j=1,2,\dots,8$ )
$\varepsilon$	:	error term

The dependent variable in this study is the decision to work of female workers. The female workers refer to married women according to the economic sector, namely the number of working-age female (15 years and over) who are married and worked in the primary, secondary, and tertiary sectors. By using multinomial logistic regression analysis, the research model of the decision to work of female workers in Indonesia is written as follows:

The independent variables used in this study include economic, demographic, and social variables as follows:

Wage (ln\_WAGE) is the average reward received by an individual during the past month from the main job in the form of money or goods, measured in units of rupiah.

Age (AGE) is individual age and measured by year.

Level of education (EDUC) is the last level of education based on the highest certificate owned. In this study, level of education variable

are used 3 (three) dummy variables. The base category in the level of education is female workers who have not education. The first dummy variable is EDUC<sub>1</sub> for completed education in primary education (elementary school and junior high school). EDUC<sub>1</sub>=1, if graduated from primary education, EDUC<sub>1</sub>=0, if other. Second dummy variable is EDUC<sub>2</sub> for completed education in secondary education (senior high school/vocational school). EDUC<sub>2</sub>=1, if graduated from secondary education, EDUC<sub>2</sub>=0 if other. The third dummy variable is EDUC<sub>3</sub> for completed education in tertiary education (Diploma, Bachelor degree, Master degree, and Doctoral). EDUC<sub>3</sub>=1, if graduated from tertiary education; EDUC<sub>3</sub>=0, if other.

Status in the household (HOUS) is the relationship status among household members. HOUS=1, if head of household; HOUS=0, if not head of household.

Work experience (EXPR) is the condition of a person who is either working or not working, but that person has stopped working before. EXPR=1, if have work experience; HOUS=0, if not.

Residential area (RES) is classification of residential area, RES=1, if living in urban area; HOUS=0, if living in rural area.

## RESULT AND DISCUSSION

By using Stata 13.0 software, the decision to work of female workers in Indonesia is estimated. The results of multinomial logistic regression will be presented in the form of marginal effects. The marginal effects value can measure the effect of changing one unit of a certain independent variable on the probability of the  $j$  category (Cameron and Trivedi, 2005). By using marginal effects, the reference category on the dependent variable can also be estimated. Marginal effects shows how the dependent variable change when certain independent variables change, which the other independent variables are considered constant.

**Table 1.** Descriptive Statistic of Wage, Age, and Level of Education

Variable	Wage		Age		Level of Education			
	Mean	Standar Deviation	Mean	Standar Deviation	No School	Primary Educaton	Secondary Education	Tertiary Education
Primary Sector	912,257	451,538	43.51	11.81	65.63%	44.16%	16.41%	1.76%
Secondary Sector	1,365,024	1,305,796	40.65	11.09	10.21%	16.02%	15.76%	3.54%
Tertiary Sector	2,190,674	2,021,223	40.68	10.52	24.16%	39.82%	67.84%	94.70%

Source: Sakernas August 2017 (author's calculation)

Table 1 shows the highest average wage of female workers in the tertiary sector, which is equal to 2.190 million rupiah. While the average wage of female workers in the primary and secondary sectors were 1.365 million rupiah and 9.122 thousand rupiah. Based on the average wage data, the primary sector is the sector that has the lowest average wages compared to other sectors, so that this sector is not attractive to female workers. The low rate of wages received by female workers in the primary sector has an effect on shifting employment from the primary sector to the secondary and tertiary sectors. The shift in employment of female workers is one of the reason for the shifting economic structure in Indonesia.

The largest percentage of female workers who decide to work in the secondary sector has the lowest average age of 40.65 year, while the largest percentage of female workers who decide to work in primary sector has the highest average age of 43.51 year. This is possible for those who are older tend to work in the primary sector. The participation of female workers in the labor market is also influenced by the level of education. The largest percentage of female workers who decided to work in the primary sector is the female worket who have not

education (65.63 percent), while the largest percentage of female workers who decided to work in tertiary sector was at the secondary education (94.70 percent). This shows that female workers who have not education are more likely to be workers in the primary sector compared to those with primary, secondary and tertiary education, because generally the types of job in the primary sector do not require education level qualification.

Based on status in the household, female workers both as household head and not household head tend to choose to work in the tertiary sector. This is likely related to higher wage received in this sector compared to other sectors. The highest percentage of female workers who work in the tertiary sector are female workers who are household heads. This is related to his responsibility in fulfilling household needs. Based on the area of residence female workers who live in rural area tend to work in the primary sector, while female workers who live in urban area tend to work in the tertiary sector.

This is due to the flexibility of work in the tertiary sector, especially informal employment, which allows female workers to do two jobs at once, namely earning income and managing the household.

**Table 2.** Descriptive Statistic of Status in The Household, Residential Area, and Work Experience

Variable	Status in The Household		Residential Area		Work Experience	
	Not as Household Head	Household Head	Rural	Urban	No	Yes
Primary Sector	36.69%	32.82%	56.48%	10.38%	38.82%	31.20%
Secondary Sector	12.81%	15.44%	10.36%	16.20%	11.47%	16.29%
Tertiary Sector	50.50%	51.74%	33.16%	73.42%	49.71%	52.51%

Source: Sakernas August 2017 (author's calculation)

This is in line with the research conducted by Hakim (2011). In this section the empirical result of the multinomial logistic regression model are detail presented and interpreted.

The result of multinomial logistic regression shows that the value of count R-squared is 0.398. It can be said that demographic, social, and economic characteristics of female workers as the independent variables are able to explain the dependent variable that is the decision to work of female workers in Indonesia that is equal to 39.8 percent, while the others are influenced by other variables outside the model. In the first model, all of the independent variables give significant effect on the probability of female workers to choose to work in secondary sector. The variables of wage, age, secondary and tertiary education level have negative affect on the probability of female workers to work in the secondary sector.

Other variables, namely primary education, status in the household, work experience, and residential area have positive effect on the probability of female workers to work in this sector. In the second model, the result shows that all of independent variables give significant and positive effect on probability of female workers to choose to work in this sector, except age variable. All of independent variables have positive effect on the probability of female workers to work in the tertiary sector than in the primary sector.

Assuming that all other variables in the model considered constant so that each variable in Table 3 can be interpreted. In the first model, for every 1 percent increase in wage, female workers in secondary sector is expected to decrease by 0.3 percent.

This condition is probably related to the existence of rules of minimum wage and work contract which bind female workers in the secondary sector, especially in the large and medium industrial sectors. This result is in line with the research conducted by Liao and Paweenawat (2018).

Different results are shown in the second model. Every wage increase of 1 percent, the probability of female workers to work in the tertiary sector increased by 0.96 percent. The increase in the number of female workers in the tertiary sector is likely influenced by the high average wages in this sector compared to other sectors. This result is in line with the research conducted by Rendall (2014).

The age variable in the first model significantly determines the decision to work of female workers in secondary sector. Every 1 year increase in age will reduce the probability of female workers to work in the secondary sector as much as 1.50 percent compared to work in primary sector. It can be said that the age variable has negative effect. This result is in line with the research conducted by Del Carpio et al. (2015).

**Table 3.** The Result of Multinomial Logistic Regression

Variable	Coefficient	Marginal Effects
Primary Sector	(base)	
Secondary Sector		
ln_WAGE	0.317*** (29.86)	-0.049*** (-26.85)
AGE	-0.016*** (-14.84)	-0.002*** (-12.14)
EDUC		
EDUC <sub>1</sub>	0,663*** (22,64)	0.018*** (4.90)
EDUC <sub>2</sub>	1.308* (34.69)	-0.018*** (-4.37)
EDUC <sub>3</sub>	2.234*** (27.60)	-0.130*** (-48.85)
No School	(reference category)	(reference category)
HOUS		
Head of Household	0.447*** (6.46)	0.025*** (2.78)
No	(reference category)	(reference category)
EXPR		
Have Work Experience	0.529*** (22.37)	0.035*** (12.27)
No	(reference category)	(reference category)
RES		
Urban	2.044*** (83.25)	0,059*** (23.15)
Rural	(reference category)	(reference category)
Constant	-6.156	
Tertiary Education		
ln_WAGE	0.958*** (68.01)	0.199*** (69.90)
AGE	-0.006*** (-6.90)	-0.0001 (0.50)
EDUC		
EDUC <sub>1</sub>	0.722*** (31.93)	0.108*** (20.86)
EDUC <sub>2</sub>	1.813*** (60.57)	0.251*** (49.12)
EDUC <sub>3</sub>	4.408*** (65.35)	0.482*** (150.05)
No School	(reference category)	(reference category)
HOUS		
Head of Household	0.361*** (6.10)	0.038*** (3.25)
No	(reference category)	(reference category)
EXPR		
Have Work Experience	0.369*** (18.76)	0.035*** (8.71)
No	(reference category)	(reference category)
RES		
Urban	2.158*** (104.69)	0.297*** (81.10)
Rural	(reference category)	(reference category)
Constant		
Count R <sup>2</sup>	0.398	
Prob > chi <sup>2</sup>	0,000	
Number of observation	100,618	

\*, \*\*, \*\*\* indicates significance level at 90%, 95%, 99%, respectively  
value of z in parentheses



The level of education also contributes to the decision to work of female worker Indonesia. The level of primary education tend to increase the probability of female workers to work in the secondary sector, while the level of secondary and tertiary education tend to be negatively correlated with the probability of female workers to work in the secondary sector. But in the second model, all of education levels are significant and have positive effect on female workers to work in tertiary sector. The biggest probability is at the tertiary level of education, which every female worker with tertiary education has a greater probability to work in the tertiary sector than uneducated female workers. Therefore, level of education has significant impact on female workers (Atieno, 2006, Ragoobur et al., 2011; Sefiddashti et al., 2017)

The next variable is status in the household. Variabel of status in the household are significant and have positive effect on all of models. Female workers who have the status of household head tend to increase the probability to work in both the secondary and tertiary sectors. The biggest probability is for female workers as household head who work in the tertiary sector. This condition may be influenced by the responsibility of being household head in fulfilling the household economy. This result is in line with the research conducted by Atieno (2006); Sayyida and Ismaini (2011).

Based on work experience variable, female workers who have work experience tend to work in secondary and tertiary sectors than work in primary sector. Female workers who have work experience have similar probability both to work in the secondary sector or tertiary sector that is equal to 0.35, compared to female workers who work in primary sector. This is due to the fact that working in the primary sector, especially in the traditional agriculture and mining sectors, does not require certain qualification and work experience because work in this sector is identical to manual labor.

The last variable is residential area. Residential area variable are significant and have positive effect on female workers to work in both secondary and tertiary sectors. However,

probability of female workers who live in urban area and work in the tertiary sector are higher than the probability of female workers living in urban area and work in secondary sectors. This condition is likely due to the narrowness of agricultural land in urban area and the rapid development of industries and services. Female workers who live in urban area tend to work in non-agricultural sector (Atieno, 2006; Sayyida and Ismaini, 2011).

## CONCLUSION

Based on the result of multinomial logistic regression model, the characteristics of demographic, social, and economic which include wage, age, level of education, status in the household, work experience, and residential area have significant effect on the decision to work of female workers in Indonesia. Wages have an important role in the decision to work of female workers according to economic sector. The high average wage in tertiary sectors increases the number of female workers compared to the primary and secondary sectors.

The level of education also contributes to the decision to work of female worker in Indonesia. The level of tertiary education of female workers is the most influential variable among the other variables on the decision to work of female workers in the tertiary sector. Highly educated female workers have a greater chance to work in the tertiary sector compared to work in the primary and secondary sectors. As a household head, female workers also tend to have a greater probability to work in the secondary and tertiary sectors.

This study finds that female workers tend to work in the tertiary sector than in the primary sector. This finding is in line with the trend of increasing female workers in the tertiary sector which is one of the factors that influence the shift in economic structure in Indonesia. Another finding is that the increase of wage reduce the probability of female workers to work in the secondary sector. This condition is probably related to the existence of rules of minimum wage and wage contract which bind female workers in

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