THE IMPACT OF MINIMUM WAGE ON YOUTH EMPLOYMENT

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ABSTRACT

Unlike the previous study in the minimum wage, which focused on total employment and economic sector, this paper examine its effect on one demographic variable (age) by comparing covered youth employment using cross tabulation of the status and type of job and using job status only. The aim of this study is to analyze the impact of minimum wages on youth employment in Indonesia. We analyze the impact on covered youth wemployment and total youth employment. This study contributes to the limited literature on youth employment as the impact of minimum wage in developing countries, especially in Indonesia. Using cross section distric data from the 2015 on OLS method of regression, we find that the districts/cities that have a higher district minimum wage has lower covered youth employment and total youth employment. Cross tabulation used is more representative than job status to show the impact of minimum wage on covered youth employment. Ignoring cross tabulation of the status and type of job used seriously underestimates the size of covered youth emplyoment. The impact of minimum wage on covered youth employment using cross tabulation is higher than job status used. The higher the district minimum wage, the lower the covered youth employment. Surprisingly, the minimum wages reduced covered youth employment significantly more than total employment.

Keyword: Minimum Wage, Youth Employment, Covered Youth Employment

INTRODUCTION

In Indonesia, the study of the effect of minimum wages on aggregate workers is more common than studies that analyze the impact of minimum wages on demographic variables related to the use of demographic bonuses, namely age in this case is young age. This study chose the variable young workers because this group is one group that is more likely to be affected by the minimum wage. This group is usually given less wages than other workers in both the formal and informal sectors (Bechter, 2009; Mann & Wittenburg, 2015; Arabsheibani et al., 2018).

Figure 1. shows that Despite the increase in the percentage of working youth, the proportion of Indonesian unemployed during the observation period was contributed by more than half of young unemployed people who had low qualifications. Indonesia's youth unemployment rate is far higher than the 5 ASEAN countries in the year of observation.
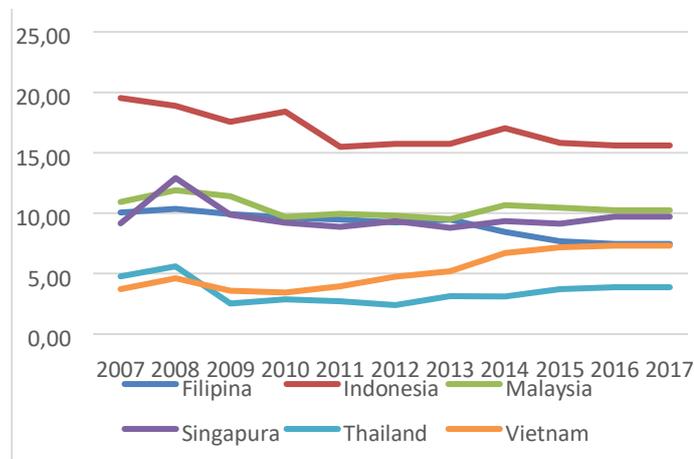

Figure 1. Youth Unemployment Rate In 6 Countries Of Asean

Figure 2. shows that despite working in the covered sector as a worker/employee, over the past 8 years, more than 35 percent of youth people who working in the covered sector are still paid below the minimum. In addition, not only young people work in the informal sector, youth who work in the formal sector are also still paid below the minimum wage.
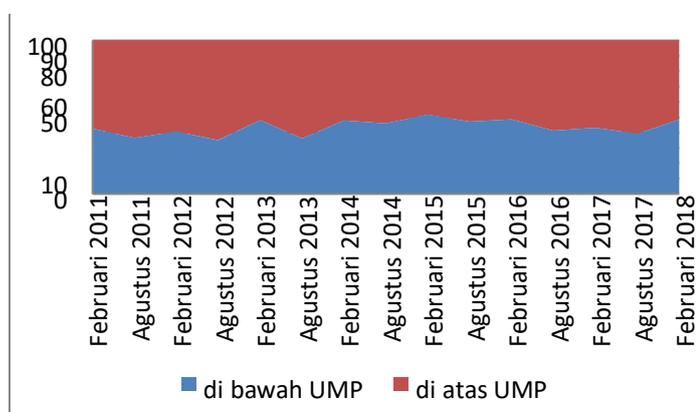

Figure 2. Covered Youth Employment Paid Bellow & Above Minimum Wage (Percent)

LITERATURE REVIEW
Youth Worker Theory

The theory of impact of minimum wage on youth employment (the two secto model) was First introduced by Welch (1974). There was only uncovered and covered sector in the economy and perfect mobility applied. Increasing minimum wages not only reduced employment, but also predicted to be able to shift workers from the covered to the uncovered sector. Increasing wages above excessive market standard rates will ultimately reduce workers who work in the covered sector due to increases in business productivity figures. The reduction workers in covered sector will force those who are unemployed to enter the uncovered economy. As another option, youth who have a choice can use their time to continue to higher education (school enrollment) by dividing the time to be part time worker. When minimum wages are enacted, the wages of workers in the first class will increase so that the company will reduce the use of substitution effects of labor use to increase the use of machinery (Kaitz, 1970).

In Figure 3, assumed that picture (a) and (b) are labor markets with minimum wages and the equilibrium while (c) is labor demand without minimum wages. The balance of wages is shown by w0 while c represents the proportion of labor in the covered sector. The existence of a minimum wage causes wages in the covered sector increase to wm($\dot{w} = wm \underline{\quad\quad} ^{-}w0$) and labor in the covered $w0$ sector also decreases. The supply of labor in the uncovered sector is the supply of aggregate labor minus the demand for labor in the covered sector (Su = S-Dc). But when labor is reduced in the covered sector, the labor in the uncovered sector will increase. W1 describes the shifting from Su to S´u, which means that wages decrease from W0 to W1 so that the labor supply in the uncovered sector increases from Su to S´u created the residual supply of uncovered labor is S´u = S-Dc (wm) . If someone who look for a job with a wage equal to Wm can find a job then the labor supply becomes S (wm) but Wm is the wage in the covered sector work, at this wage level, the workforce is only Dc (wm).
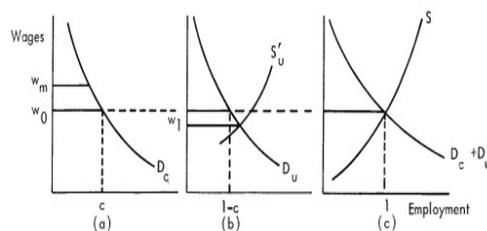

Figure 3. Minimum Wage & Demand For Covered And Uncovered Labor

Economic Model

When the minimum wage increases, the supply of youth labor will increase but the demand for youth labor decreases so unemployment occurs. Youth unemployment rate will increase along with the increase in minimum wages. The

economic model can explains the effect of minimum wages on labor demand and supply that causes unemployment as follows:

$$\frac{'}{MW} = (1 - UR)\, ns - nd)\, UR$$

UR is unemployment rate, MW is the minimum wage while ns is the supply elasticities and nd is demand elasticities of labor. UR 'is a derivative of youth unemployement rate related to the increase in minimum wages where the value of UR is less than 1 (<1), the minimum wage is positive, ns is positive and nd is negative which means when the minimum wage increases the demand for labor decreases and labor supply increases so unemployment increases (Kaitz, 1970).

Empirical Studies & Novelty

Research conducted by Sturn (2018) on OECD countries proves that the long-term impact of rising minimum wages on workers with low skills in both women and especially youth workers will cause a substantial increase in unemployment for the group with low estimates of labor elasticity. Mixon & Stephenson (2016) found that the main cause of the loss of youth jobs in the summer in Kato, United States is the increase in minimum wages while increasing the participation of adult labor force (senior), cyclical macroeconomic factors, decreasing manufacturing employment has a small impact loss of youth jobs during the summer. Using the two sector model developed by Welch (1974), Coomer et al. (2013) states in the study that the effect of minimum wages in the covered sector is greater than its influence in all sectors of employment. The increase in minimum wages decreases the use of youth workers in the covered sector and increases the number of youth workers in the uncovered sector. This is in line with reducing the workforce with low skills in the covered sector, especially youth people who have no work experience. The study states that ignoring the shift of employment from the covered sector to the uncoveredl sector by youth workers means overriding the effect of minimum wages on overall labor demand.

However, on the contrary, Giuliano (2013) in his study found that a mandatory increase in minimum wages would reduce overall employment in the United States but an increase in minimum wages in the United States instead led to a significant increase in youth workers, especially youther and better qualified workers. So that the increase in minimum wages can increase youth workers in the United States. Card & Krueger (2015) in his study entitled "Myth and measurement: The new economics of minimum wage" examined the total impact of minimum wages on youth workers, youth workers in the retail trade industry and youth people working in fast food restaurants who found that wages the minimum does not affect youth workers in total youth, retail trade youth and fast food restaurants.Gorry (2013) found that an increase in minimum wages caused an increase in unemployment of youth aged 15 to 24 by 2.8 percent.

Card & Kruger (1994) conducted a study related to the impact of minimum wages on workers at 410 ready-to-eat restaurants through interview methods because fast-food restaurants in Penysilvania are the sectors that absorb the most

workers with low wages and low requirements to prove whether wages minimum true impact on low-skilled and low-wage workers. the results of the study prove that labor in the fast food sector was not affected by the increase in minimum wages but the increase in unemployment caused workers to decline in the sector. The impact felt by the restaurant is that the increase in minimum wages has caused the price of cheap food and commodities to increase, while the opening of new businesses has diminished with the increase in minimum wages. It was concluded that statistically there was no effect on fast-food restaurants caused by the increase in minimum wages.

Compared with the previous studies, in this study there are several differences with previous studies.If empirical studies used cross tabulation of status and type of work or only used employment status to form formal young worker variables, to see the comparison of research results, this study will adapt both divisions the formal worker is the division of formal workers based on cross tabulation of status and type and division of formal workers based on employment status only. The effect of the minimum wage on the aggregate of workers is more often found than research that analyzes the impact of minimum wages on demographic variables related to the use of demographic bonuses, namely age in this case young age so that this becomes the second difference with previous studies that do not see the impact of minimum wages on demographic variables.

In the previous stusy, the different treatments were based on the type of young age in the country analyzed but using the ILO concept, this study used ages 15 to 24 as young compared to previous studies in this study that used ages 15 to 30 as a young age. The third difference is that literature studies related to the impact of minimum wages focus mostly on specific workers in certain sectors such as manufacturing, retail and food whereas in this study, certain sectors are not taken into account because they will only focus on overall formal and total young workers. Furthermore, most literature studies examine the effect of minimum wages with a focus on the national level but this study will use the district / city analysis unit because the purpose of this study is to look at the impact of minimum wages at the regional level.

METHODOLOGY

Data

The data used in this study are cross section data from the 2015 National Labor Force Survey (NLFS) and 2015 District/City Minimum Wage data by Indonesia Ministry of Labor. The previous study states that time series or panel data is believed to provide time variations in research so that the variation is able to get a strong test in the hypothesis or provide a more complete estimate of the impact but it must be believed that the cross section data and time series are equally capable of impacting the variables consistent workers (Kalachek, 1969; Katz, 1973; Najmul et al., 1991; Freeman, 1970; Welch & Cunnigham, 1978; Vazquez et al., 2013; Muravyey & Oshchepkoy, 2007; Kai-Uwe, 2012; Meyer & Wise, 1978; Linneman, 1973). The unit of analysis in this study is districts/cities in 34 provinces, namely there are 511 districts / cities in 2015 NFLS from 514 districts / cities in

Indonesia. The sample in this study is the youth workforce at the district / city level defined by the International Labor Organization (ILO), namely the workforce aged 15 to 24 years.

Econometric Model

By using the model in this multiple regression method it will be able to show the size of the elasticity of youth workers to the minimum wage and other variables, namely the percentage change in youth workers due to changes in minimum wages and other variables through the slope $\beta2$ in the model below. This means that if variable Y states covered youth workers (model 1) and total youth employment (model 2) and X declares minimum wages and other variables then $\beta2$ denotes the minimum wage elasticity and other variables of youth workers. The models formed in this analysis are:

$$\text{Model 1: } \ln Ect = \beta0 + \beta1\ln MW + \beta2nnststat + \beta3\ln educ + \varepsilon$$

lnEft = log of youth workers in the covered sector at year t; $\beta0$ = constant; $\beta1, \beta2, \beta3$ = coefficient value; lnWM = minimum wage log set in each district / city; marstat = youth marital status; educ
= youth education level; ε = error

$$\text{Model 2: } \ln Ett = \beta0 + \beta1\ln MW + \beta2nnststat + \beta3\ln educ + \varepsilon$$

lnEt = total log of youth workers at year t; $\beta0$ = constant; $\beta1, \beta2, \beta3$ = coefficient value; lnWM = log of the nominal minimum wage set in each district / city; marstat = youth marital status; educ
= youth education level; ε = error. In the log-log model, the elasticity coefficient between X and Y is always constant meaning that in this study if ln X changes 1 unit then the change is always the same even though the elasticity is measured in any ln X. So this model is called constant elasticity. Elasticity is defined as $\frac{\partial \ln Y}{\partial \ln X} = \beta2$; constant which means if X increases by 1 percent then Y will decrease by $\beta2$ percent ($\beta2 < 0$) (Nachrowi & Usman, 2002).

RESULT & DISCUSSION

To ensure the BEST model of regression, classical OLS assumption consist of heteroscedasticity, multicollinearity, autocorelation, linearity and normality test has been conducted. Based on the classical model assumption test, it can be concluded

that the model in this study is proper to be applied because it has been free from interference in multiple linear regression. The classic assumption test results can ensure that the econometric model used in this study has been BEST howevert the results of testing classical assumptions are not included in this paper.

Formal young workers based on cross tabulation in districts / cities in Indonesia in 2015 ranged from 6.00 to 69.71 percent and 1.55 to 42.94 percent if based on employment status while total young workers ranged from 45.14 percent to 98.4 percent. An interesting fact is that when using cross tabulations on the status and type of work, formal workers are formed higher than the use of employment status alone to form formal young workers. This descriptive analysis informs that there has been a significant and high increase even counted overestimated in the increase in formal workers based on cross tabulation of status and type of work. The overestimated difference is further proven in the results of the regression analysis on inferential discussion.

Table 1. Descriptive Statistic

Variable	Mean	Minimum	Maximum
Covered youth employment by status & type of jpb cross tabulation (percent)	27,78	6,00	69,71
Covered youth employment by status only (percent)	16,91	1,55	42,94
Total youth employment (percent)	79,95	45,14	98,54
Regional Minimum Wage (rupiah)	1.743.382	1.100.000	2.987.000
Education level (percent)	51,57	6,22	91,71
Marital status (percent)	79,07	27,43	98,36

We obtain model 1 for formal workers based on cross tabulations of the status and type of work as follows: Ln_ Formal Young Worker = 4,304 -0,278 Ln_umk + 0,600 Ln_educ + 0,123 Ln_marstat

While for formal workers based job statuses is obtained as model 1 as follows, sourced from Table 3: Ln_ Formal Young Worker = 4,115 -0,135 Ln_umk + 0,022 Ln_educ + 0,262 Ln_marstat.

Table 2. Coefficient Of Regresion Model 1 (Covered Youth Employment By Cross Tabulation)

Model	Unstandardized B	Coefficient Std. Error	Sig
(Constant)	4,304**	1.781	0,016
Ln_umk	-0,278**	0,114	0,015
Ln-educ	0,600***	0,064	0,000
Ln_marstat	0,123	0,198	0,533

Table 3. Coefficient Of Regresion Model 1 (Covered Youth Employment By Job Status)

Model	Unstandardized B	Coefficient Std. Error	Sig
(Constant)	4,115**	2,135	0,025
Ln_umk	-0,135**	0,136	0,013
Ln-educ	0,022***	0,076	0,000
Ln_marstat	0,262	0,237	0,270

***=p<0.01; **=p<0,05; *=p<0,1

The main independent variable in the results of model 1 shows that the district / city minimum wage has a significant influence on formal young workers for formal workers based on cross tabulation of status and type of work with a negative relationship direction. Formal young workers (if adapting cross tabulations of status and type of work to form formal worker variables) will decrease by 0.27 percent and and 0.13 percent (if adapting the employment status only to form formal worker variables) if in that area have a higher minimum wage of 1 percent. This shows a negative influence between the district / city minimum wage on young workers. This result is not only in accordance with the theory of young workers proposed by Welch (1974) in the two sector models that the minimum wage causes formal young workers to be lower but also in line with the results of research by Sabia, Burkhauser, & Hansen (2012), Neumark, & Wascher (2007), Jardim et al., (2017), Congressional Budget Office (2014), Deng (2018), Ni, Wang, & Yao (2011), Sturn (2018), Mixon & Stephenson (2016), Coomer et al., (2013).

The impact is stronger on formal young workers by using cross tabulations on the status and type of work compared to using employment status only. Explanation related to this can be explained that there has been a positive increase and is highly valued in formal young workers in a descriptive analysis of the average sample which has a difference of 10.87 percent between formal young

workers with cross tabulation and employment status. A professional worker medical doctor by doing his own work, for example, will become a formal worker while if he uses a job status, the doctor will become an informal worker. It can be considered how much the percentage of informal workers is due to the positive high-rated increase in formal young workers with the phenomenon when a professional who opens his own business without being assisted by paid workers will be included in the large percentage of informal worker groups used only by using status.

An example of this analysis is still in one job status, namely a professional. There are several occupational statuses which if cross tabulated become formal workers, namely legislative officials, high officials and managers as well as administrative staff who are self-employed and become formal workers when cross tabulated otherwise become informal workers when only using employment status. The types of work of professional staff, legislative officials, high officials and managers as well as administrative personnel become formal workers if cross tabulated with the status of free workers free workers on agriculture and in non-agriculture otherwise, all professional staff and high officials and administration become informal workers if use job status only. This analysis will be an important consideration for presenting the actual state of formal workers. This magnitude of difference becomes a statistical picture in the results of regression analysis which states a greater influence if using formal workers based on cross tabulation.

Then, other findings in this study indicate that other independent variables namely higher education levels (high school and above) have a significantly positive effect on formal young workers. Formal young workers (if adapting cross tabulation of status and type of work to form formal worker variables) in an area will increase by 0.60 percent and and 0.02 percent (if adapting work status only to form formal worker variables) if young workers are educated High School and above in the region is 1 percent higher. Youth who have a higher level of education tend to work in the formal sector whereas youth who have lower levels of education tend to have informal sector jobs.

Explanation related to the increasing formal workforce with higher education status, namely the senior high school and above is that young people with lower education than senior high school tend to have employment status in the informal sector due to inability to enter formal employment with higher rated qualifications compared to low or high school job qualifications on the contrary, highly educated youth tend to work in the formal sector because young people with senior high school education and above are considered capable of entering formal work because the qualifications they have are better than those with high school education down (ILO, 2012; Shannon, 2011; Noh et al., 2016; Lahire et al., 2011; Gunatilaka et al., 2010; Gray et al., 2014; Kemple & Willner, 2008; Marimpi & Koning, 2018; Pecora et al., 2006; UNESCO, 2011) so that this causes young workers absorbed in formal work are young people with higher education status. The other independent variable is marital status where in this study the marital status variable has a positive slope but is not statistically significant.

Based on the results of multiple linear regression in Model 2, it was found that the overall independent variables had a statistically significant effect on total

young workers. The direction of the relationship and the percentage of changes shown through the coefficients of all the independent variables on the dependent variable are presented in Table 4. Based on the results of processing the data presented below, model 2 is obtained as follows:

Ln_ Total Young Workers = 6,547-0,055 Ln_umk - 0,121 Ln_educ - 0,209 Ln_marstat

Table 4. Coefficient Of Regresion Model 2 (Total Youth Employment)

Model	Unstandardized B	Coefficient Std. Error	Sig
(Constant)	6,547***	0,397	0,000
Ln_umk	-0,055**	0,025	0,029
Ln-educ	-0,121***	0,014	0,000
Ln_marstat	-0,209***	0,044	0,000

***=p<0.01; **=p<0,05; *=p<0,1

Districts / cities that have district minimum wages of 1 percent higher have total young workers of 0.05 percent lower than districts / cities that have lower minimum wages assuming cateris paribus or other factors considered equal. This shows a negative influence between district / city minimum wages on total young workers that the higher the district / city minimum wage, the lower the total young workers in the district / city. The next findings show that the other independent variables, namely higher education levels (high school and above) have a significant influence negatively related to the total young workforce. In a district / city that has young workers who have higher education is above 1 percent higher then having young workers is 0.12 percent lower than the districts / cities that have lower formal education workers assuming cateris paribus or other factors are considered the same.

The higher the level of education of the youth the lower the total young workers. Borjas (2016) states that the high level of education can only give a signal to the world of work and not necessarily be able to determine the high absorption of labor based on education level. This analysis indicates that the high level of educated unemployed people in Indonesia is associated with high wage reservations set by young people who are willing to work. Educated unemployed tend to choose jobs until they find jobs that are considered appropriate to the wages that are expected to be equivalent to the level of higher education owned by the individual so that time is sacrificed to find jobs that are expected to cause the individual to become educated unemployed (Borjas, 2016).

Marriage status variables have a positive slope and are statistically significant. In a district / city that has total young workers who are married 1 percent higher having total young workers 0.20 percent lower than districts / cities that have lower total young workers assuming cateris paribus or other factors considered equal. The higher the number of unmarried working youths are followed by the lower the total number of young people working in other words, regardless of

whether the employment sector is formal or informal, the more unmarried youth, the fewer youths who work. This suggests that unmarried youth tend to have a high chance of choosing employment compared to married youth so that the young man uses the time to keep looking for work that is considered to be in accordance with his choice compared to married youth who have a family burden (Gorry, 2013; Allegretto, Dube, & Reich (2011); Heras, & Carcedo (2011).

The results of this study can prove the traditional argument in Welch's (1974) theory of young workers which can still be presented today which states that minimum wages affect certain groups including young workers, especially young workers who have lower levels of education. Statistical results confirm that the negative coefficients of formal young workers are higher (0,278) than the total coefficient of young workers (-0,055) so that the impact caused by district / city minimum wages is higher for formal young workers than total young workers. This study has confirmed that the impact of the minimum wage on young workers in Indonesia is very strong because it is evident that even the effect on formal youth is higher than the total. This can be proven in the econometric analysis with a difference in impact of 0.223 percent so that the impact of the minimum wage on formal young workers is five times the impact of the minimum wage on total young workers.

This is in line with research conducted by Coomer & Wessels (2013) which states that the decline in formal young workers is four times higher than the decrease in total young workers. These differences indicate a positive and high increase in informal young workers. Youth who are not absorbed in formal work make considerations between job search, job suitability and unemployment. Youth who are not absorbed in formal workers choose to work in the informal sector rather than being unemployed due to the availability of jobs in the informal sector.

CONCLUSION

There has been a positive increase and highly valued in the percentage of formal young workers when the status and type are cross tabulated. To meet the representative needs of formal young workers formed in Indonesia, it can be stated if the use of cross tabulation is better used than the formation
of young formal workers based on employment status because ignoring the use of cross tabulation status and type of work can cause underestimation in the percentage of formal young workers. This analysis will be an important consideration for presenting the actual state of formal workers. The categorization of formal workers in Indonesia is better to use cross tabulations between status and type of work than using employment status only. Regarding the comparison of the impact on total and formal young workers, it was concluded that the effect of minimum wages on formal young workers was in fact even higher than the total number of young workers.
It is suggested that further research uses other variables such as macro variables, namely economic growth (GDP) or other individual variables such as wages and areas of residence, which of course can be done if data for the district / city level

is available and the ease of obtaining and processing data for district / city level young workers. Government assistance related to easier access to data for the district / city level for researchers is expected to be realized in research related to this topic in order to produce more complete research in future studies

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