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# CHILD LABOR IN INDONESIA: WORKING OR NOT, WORKING FOR A WAGE OR NOT, AND CHILD LABOR WAGES FUNCTION

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**Abstract:** *This study was conducted to investigate the phenomena of child labor in Indonesia using data from National Socio-Economic Survey (SUSENAS) 2014. First, investigate the impact of household economic condition and supervision of mothers on probability of child's work or not. Furthermore, this study looked at the effects of parents occupation on the probability of child working receive a wage or not. Finally, this study estimates of child labor wage function. The method used is sequential Probit models, where each decision made in sequence according to a binary Probit model, and also used is Ordinary Least Square model. On the first Probit model, a significant association between household economy conditions on the probability of child labor participation is found. Second Probit model, the results shows that parent occupation of agriculture sector will encourage children to work did not receive a wages. The estimated OLS models shows that, the level of education is an investment that is most important for children to increase their income, especially in the future.*

**Keywords**: *Child labor; sequential probit model; sample selection bias; child wage*

## INTRODUCTION

Child labor is not a new problem for developing countries and poor countries (LDC's). In many LDC's, children are forced to work by circumstances, especially economic conditions, or force by parents to work and become labor. These children may be included the labor force as well as not the labor force (aged under 15 years). Working children are generally school-aged children, where they are forced to work for income. Most of the working children are not in school. With limited or less education, of course, reduces the opportunity to obtain adequate prosperity and threaten their future.

By 2014, the number of child labor in the world is about 168 million. This number decreased compared to 2000 which amounted to 246 million. The number of child labor in the world is children who are under the age of 17. In Indonesia, the population of children aged 10-17 years as many as 38 million people in 2014. Of these, 2.7 million children enter the labor market to work, (KPP&PA and BPS, 2015).

Under the circumstances, the Indonesian state has adopted laws to limit the increase in child labor according to standards adopted by the International Labor Organization (ILO). Law no. 20 of 1999 on the ratification of ILO Convention No. 138 of 1973 stipulates that the age of 15 years is the minimum age limit for work according to the compulsory school age of the schoolchild. In addition, Law no. 13 of 2003 Article 69 on employment, concerning 13- to 15-year-olds may work if they are strictly in accordance with strict rules, is not harmful to health, do not affect their attendance and achievement in school, and do light work as long as they do not impede physical development, mental, and social of those children.[1]

Child labor can occur from many side, demand side and supply side. (Usman and Nachrowi, 2004). Supply side can be said as the factors driving the child to work and the demand side can be said as the child's pull factor for work. On the supply side, child labor occurs because of encouragement and parental decisions to make children work. Parents' primary decisions to

[1]In principle in national laws about child labor, businessman who employs children may only be if the children get a permission from parents and only works maximum 3 hours a day(ILO, 2009)

encourage working children are affected by poverty, where income from parent jobs is so low that insufficient to fulfill needs (Basu and Van, 1998; Basu and Tzannatos, 2003). On the demand side, child labor occurs due to a decision by the company to employ child labor services as part of their labor force (Ringdal, 2011).

## LITERATURE REVIEW

Usman and Nachrowi (2004) conducted a research that looked at the family economic conditions based on per capita expenditure; they found that there was a negative and significant relationship between per capita expenditure and child labor. Other research is also explained by Blunch and Verrner (2000) that there was a positive relationship between poverty and child labor. Poor households will send children to work as an effort to increase consumption needs in households.

Besides poverty, children are also encouraged to work based on the traditions and cultures of their area of residence[2] (ILO: 2004). Other factors can also be seen from the ownership of micro-businesses, children whose parents work as self employed can also encourage children to work (Anokhi and Elisabeth, 2005). But, the children who work in these factors will not reduce or disrupt their time for school, because working is only their second activity after school.

Other facts that make children decide to work side by side with their parents, where children can work on family-owned businesses and unpaid, generally work in rural areas, such agriculture, farms, or at home, (Self, 2011), so it is possible that child labor get paid and some are not paid. The type of work performed by children but unpaid usually works in the informal sector. On the other hand, child labor who are paid can work in the formal sector as laborers and may also work in the informal sector such as self-employment, temporary workers, and family workers (ILO, 2013).

In a study conducted by Bhalotra and Heady (2002) explained that unpaid working children mostly work on household enterprises (agriculture and micro-enterprises). They also explain, if there is a fee in this type of work, they are paid in the form of food, clothing and shelter. Similar to rural areas, in urban areas working children are also more unpaid than paid. Due to most of the children working in rural and urban areas generally work as family-owned business.

Children working in the formal sector such as companies will get lower wages compared to adults, because their education level is relatively low, beside that tend to have different or lower employment status than adults, where children is generally worked as apprentices, cleaning service, and housekeepers, (Elson, 1982).The economic value of higher education is a valuable asset for higher income. From the explanation above, it shows that not only the type of work that can determine the child's wage, but also the level of education obtained by the child. Ray (1998) explains that education is a key factor in increasing labor income.

Given the large number of child labor in Indonesia and the presence of research findings in several countries about the relationship between economic conditions of a family and the activities of working mothers to child labor, it is interesting to do this research in Indonesia. In addition, the determinants of a child's choice about paid and unpaid work may also be examined. Then the information is used to determine the wage function of children to prove whether education significantly affects the wages of children.

## METHOD

The data used are data of child labor aged 10-17 years at National Socio-Economic Survey (SUSENAS) in West Sumatera Province, because at that age is the vulnerable age of children who need energy to help parents increase income for survival, as well as the age limit of child labor in SUSENAS data collecting data of child labor aged 10 years and over.

To estimate the probability of a child's decision to work, this study uses a sequential probit model. The first stage (first probit) is to determine the probability of participation of

[2] This condition can be seen in rural areas , where it has become a regular issues when children work in agricultural works at a very young age , aid in the work of households .(ILO, 2004 )

children that can be seen from household economic conditions and working mother. And the second stage (second probit), working children will be divided into dummy variables that is the value of 1 if the child is paid and the value 0 if the child unpaid. The main variables used in this second phase estimate are the type of maternal employment and the type of father's employment. This second stage is also a link to obtain results in the third stage estimate (last stage). The final estimate, this study will look at how the income equality function of child labor uses the corrected Ordinary Least Square (OLS) method using the Heckman Selection Model.

Sequential probit model is used to modeling the results of dichotomous or binary variables. In general the latent variable of the probit model (Wooldridge, 2012) is as follows:

$$y^*_{tj} = \beta_j + x_t\beta_j + e_{tj}, \qquad y = 1\,[y^* > 0] \qquad (1.1)$$

Noted $y^*_{tj}$ is the latent variable, $X_t$ is the independent variable, and $e_{tj}$ is the normal distributed error term. Notation 1 [y *> 0] to determine the result of the binary variable. The function 1 [y *> 0] is also an indicator function, if the value 1 is true and the value 0 is false. Therefore, y is 1 if y *> 0 and y is 0 if y * ≤0.

In estimating the relationship between the variables X and Y, this study will estimate the two dependent variables Y1 and Y2 are observed sequentially using sequential probit model. This method is also used to analyze discrete selection issues (Amzat and Adeosun, 2014).

Estimating the wage equation model, it will generally find that there is a problem of selectivity bias because the information obtained is only for child labor receiving wages. In fact child wage information is not available for all child labor, so wage estimation using the Ordinary Least Square (OLS) method will allow for selectivity of bias. Therefore, in solving the problem of bias on the wage equation, then we can make corrections using the Heckman Selection model, this model explains the probability of individual work participation based on individual wage characteristics. Using the basic selection model as follows:

$$Z_i^* = x_i\gamma + u_i \qquad (1.2)$$

where Zi* is an unobserved and continuous variable. While the observed $z_i$ are valuable as follows:

$$Z_i = \begin{cases} 1 \text{ jika } Z_i^* > 0 \\ 0 \text{ jika } Z_i^* \leq 0 \end{cases} \qquad (1.3)$$

$Z_i$ is worth 1 if the individual work has a wage and Zi is worth 0 if the individual is looking for work or work but has no wages.

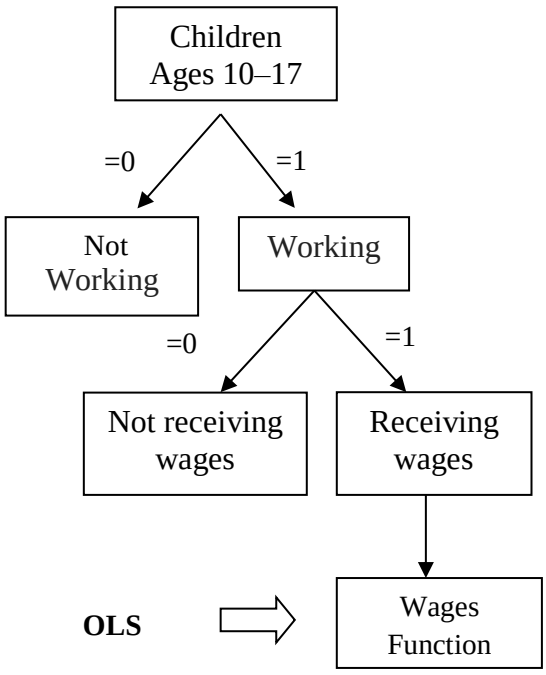
From the above equation if each observation in the sample using probit equation model, then obtained inverse value Mill's ratio (λi) as follows:

$$\lambda_i = \frac{\phi(Z_i)}{1-\Phi(Z_i)} \text{ dan } \delta_i = \lambda(Z_i)\,[\,\lambda(Z_i - Z_i)] \qquad (1.4)$$

noted φ ($Z_i$) is a probability density function, and Φ ($Z_i$) is a cumulative distribution function of $Z_i$ having a normal distribution.

From the estimation method above, the structure in the estimation of model in this research are:

**Sequential Probit Model**




Picture 1.1. Structure of Estimation Method

The function of equation of child wage by using Ordinary Least Square that has been corrected with Heckman Selection model is

studied not only to know how big influence characteristic owned by child, but also want to know how much influence of education to income received by child.

## RESULTS AND DISCUSSION

### 1. Participation Rate Aged 10-17 Years

The first stage in estimating by using sequential probit is to determine the relationship between expenditure per capita on the participation rate of children aged 10-17 years. the equation's result of the children's participation aged 10-17 years is described in table 1.1.

In the empirical equation's results, there is positive value of marginal effect and significant with dummy variables such as working mother, working father, sex, and micro credit which indicates higher probability of the increased in the child labor's participation. On the other hand, there is negative value of marginal effect and significant with dummy variables such as, expenditure per capita, mother employment (secondary and tertiary), Mother's education in years of schooling, father's employment (secondary and tertiary), Fathers education in years of schooling, scholarships, and region which indicates a smaller probability of the increased in the child labor's participation in Indonesia. If we see from continuous variable, it will the positive value of the marginal effects and significant such as age of the children indicates that the older the child, the higher probability of the child to work. Conversely, negative value of the marginal effects and significant of the continuous variables such as mother's age and father's age, indicates that the addition of these variables will reduce the probability of the child to work.

The estimation results show that expenditure per capita (proxy of income) negatively affect the participation rate of children aged 10-17 years. Household decisions on food and non-food consumption depend on the total income per capita in the household 1

**Tabel 1. Sequential Probit Model for Children's Probability of Work**

| Variable | dy/dx | Standard Error |
|---|---|---|
| Expenditure per capita (ln) | -0.0093*** | 0,0013 |
| Working mother (working=1) | 0.0387*** | 0,0014 |
| Child's age | 0.0213*** | 0,0003 |
| Sex (male=1) | 0.0104*** | 0,0013 |
| Mother's age | -0.0002* | 0,0001 |
| Mother employment (secondary =1) | -0.0132*** | 0,0021 |
| Mother employment (tertiary =1) | -0.0088*** | 0,0019 |
| Mother's education in years of schooling | -0,0029*** | 0,0001 |
| Father's age | -0,0006** | 0,0001 |
| Working father (working=1) | -0,0385*** | 0,0014 |
| Father's employment ( secondary =1) | -0,0046** | 0,0022 |
| Father's employment (tertiary =1) | -0,0185*** | 0,0019 |
| Father's education in years of schooling | -0,0015*** | 0,0001 |
| Micro credit (yes=1) | 0,0225*** | 0,0027 |
| Scholarships (yes=1) | -0,0028* | 0,0016 |
| Region (urban=1) | -0,0181*** | 0,0016 |
| --- | | |
| Number of obs | 80.795 | |
| Prob > chi2 | 0,000 | |
| Pseudo R2 | 0.1747 | |
| Log likelihood | -18657.585 | |

Notes : ***) Significant at 1%, **) Significant at 5%, *) Significant at 10%

percent increase in expenditure per capita on food and non-food consumption will reduce the probability of a child to work by 0.93 per cent.

This result is supported by research conducted by Ray (2000); Usman and Nachrowi (2004). if the total income per capita in the household is large enough, households will tend to increase spending to provide the best facilities for the survival of children by providing higher education to their children. It means that economic factors proved to be a reason for children to work, these results are also supported by BPS (2009). Nachrowi (1998) also explained that households with low expenditure per capita, will suffer high opportunity cost of sending their

children to school, because children are needed to earn extra income to meet household consumption (Usman and Nachrowi, 2004).

### 2. Child's Choice of Work: Receiving Wages or Do Not Receive Wages

The next stage of the research is to determine whether the working receiving wages or do not receive wages, generally working children can receive wages and also do not receive wages. In this estimation result, the parental employment variables are divided into three types of variables, including parents working on formal sector agriculture, parents working in the informal sector agriculture, and parents working in non-agriculture sector[3]. Parents working in formal sector agriculture sector are the basis of dummy variables for employment. Table 2.1 shows the estimation results of dummy variables from the participation of working children.

The variables of mothers working in the informal agricultural sector have a negative effect on the probability of children receiving wages. This means that the probability of working children but not receiving wages is less if their mothers work in the informal agricultural sector compared to mothers working in the basic sector (formal agriculture sector) and in the non-agricultural sector (formal and informal). If a mother's works in the informal agricultural sector, she tends to encourage their children to help them work on the same type of job, where most children will not receive wages.

**Tabel 2. Sequential Probit Model For Child's Choice of Work: Receiving Wages or Do Not Receive Wages**

| Variable | dy/dx | Standard Error |
|---|---|---|
| Mother employment (informal sector agriculture =1) | -0,3714*** | 0,0177 |
| Mother employment (non-agriculture =1) | -0,2191 | 0,0196 |
| Father employment (informal sector agriculture =1) | -0,0748*** | 0,0124 |
| Father employment (non-agriculture = 1) | -0,0016 | 0,0154 |
| Child's age | 0,0284*** | 0,0028 |
| Region (urban=1) | 0,0544*** | 0,0137 |
| Sex (male=1) | 0,0152 | 0,0105 |
| Micro credit (yes=1) | -0,0604*** | 0,0153 |
| School participation (still in school=1) | -0,1626*** | 0,0112 |
| --- | | |
| Number of obs | 10.311 | |
| Prob > chi2 | 0,0000 | |
| Pseudo R2 | 0.1026 | |
| Log likelihood | -6.410.66 | |

Notes : ***) Significant at 1%, **) Significant at 5%, *) Significant at 10%

Working mothers will also encourage their children to help them work as housekeepers, especially for girls. These results supported by research conducted by Bhalotra and Heady (2000).

The same results can also be seen in the variable of fathers working in the informal agriculture sector, it has smaller effect on the probability of children receiving wages, compared to the basic and non-agricultural sectors. While the mother and father variable working in the non-agricultural sector (formal and informal) are insignificant on the probability of children working to receive wages and do not receive wages, because parents who works in this sector generally earn a relatively large income, so parents do not encourage children to work either who receive wages or do not receive wages.

[3] Categories of agriculture sector: rice cultivation and palawija, horticulture, plantation, fishery, livestock, forestry and other agriculture. Non-agricultural categories: mining and quarrying, processing, electricity and gas industries, construction / building, trade, hotel and restaurant, transportation and warehousing, information and communication, finance and insurance, and services.

### 3. Estimation's Function Of Child Wage

The wage equation uses Ordinary Least Square (OLS) method corrected by using the Heckman two-step procedure. In the first stage estimation result (Y1) we get the value of inverse Mills ratio 1. The inverse Mills ratio 1 value is used to replace the observation of a non-working child. Furthermore, on the result of second stage (Y2) we will get the result from Inverse Mills Ratio2. The inverse value Mills ratio2 is used to overcome the bias in the selection of samples on the data of working children but not receiving wages, because most of the working children do not receive wages, while the wage data is obtained from child labor who receive wages.

In table 3.1, we see that the coefficient value of the educational[4] variables such as elementary school graduates, junior high school graduates, high school graduates, age, school participation, imr1, and imr2 significant and positive affecting the wage function of children. While the coefficient value of variable child sex and the region does not significant affect the wages earned by the child.

From the table above, compared to children who have never attended school (base group), the coefficient of elementary school, junior high and high school children have a significant and positive effect on the wage function of children. This means that the difference in income from non-school child workers (basic groups) with primary school children is 29.77 percent, 26.73 percent with junior high school and 41.41 percent with high school. The higher level of education that has been taken by child labor, will increase the income earned by them. Because education is an important factor for companies that will employ children even if children are employed with lower wages compared to adult labor. So from these results we can say that the importance of improving education for children for greater revenue in the future.

**Tabel 3. Estimation's Function of Child Wage**

| Variable | Coefficient | Standard Error |
|---|---|---|
| Education (SD=1) | 0,2977*** | 0,0993 |
| Education (SMP=1) | 0,2673*** | 0,1014 |
| Education (SMA=1) | 0,4141*** | 0,1124 |
| Child's age | 0,0535*** | 0,0154 |
| School participation (still in school=1) | -0,2418*** | 0,0554 |
| Sex (male=1) | 0,0074 | 0,0363 |
| Region (Urban=1) | 0,0132 | 0,0366 |
| Mills lambda 1 | 0,1341*** | 0,0451 |
| Mills lambda 2 | 0,1318*** | 0,0474 |
| Constanta | 12,6547 | 0,3041 |
| --- | | |
| Number of obs | 5.284 | |
| F-stat | 294.91 | |
| Prob > F | 0,0000 | |
| R-squared | 0,3348 | |

Notes : ***) Significant at 1%, **) Significant at 5%, *) Significant at 10%

These results are consistent with studies conducted by Patrinos and Psacharopoulos and are incompatible with research conducted by Ray (2000). but, Ray (2000) supports the results of this study by looking at the effect of children's school participation on the wage function of children. The results explain that child who goes to school will earn a lower wage up to 24.18 percent. Because children that combine school with working have less time to work compared as the children who time used only to work.

The interesting thing about this estimation is that the wages of children with elementary and junior high graduate are not much different. These two groups of child labor differ by only 0.29 from uneducated children. Wages will increase for those with high school graduate. It means, the 9 year basic compulsory education policy (SD and SMP) will not improve welfare because wages or income earned does not increase. it is expected that the government's policy on 12-year compulsory education can be well realized so that children with 12-year education graduates can earn higher wages in the future compared to 9-year graduates.

[4] The highest education have children are being followed .Dummy for a child who never school as its base

**REFERENCES**


Amzat, K. T. dan Adeosun, S. A. (2014). On A Sequential Probit Model of Infant Mortality in Nigeria. *International Journal of Mathematics and Statistics Invention (IJMSI)*, Vol. 2, Issue. 3, March, pp.89-94.

Anokhi, Pa. dan Elisabeth, S. (2005). The Effect of Parents Occupation On Child Labor and School Attendance in Brazil. *Department of Agricultural and Resource*

Basu, K. dan Van, Pham, H. (1998). The Economics Of Child Labor. *The American Economic Review,*Vol. 88, No. 3, Juni, pp. 412-427.

Basu dan Tzannatos, (2003). The Global Child Labor problem: What Do We Know and What Can We Do?. *The world bank economic review,* Vol.17, No.2, 147-173.

Bhalotra, S. dan Heady, C. (2000). Child Farm Labour: Theory and Evidence. *Discussion Paper*. No. DEDPS, 24.

Elson, D. (1982). The Differentiation of Children's Labour in the Capitalist Labour Market. *Development and Change.* (SAGE, London and Beverly Hills), Vol. 13, 479-497.

International Labor Organization. (2004). Gender Equality and Child Labour: A Participatory tool for Facilitators. International Labor Organization. (2013). *Penurunan Pekerja Anak di Dunia.* 23 September.

Kementerian Pemberdayaan Perempuan dan Perlindungan Anak (KPP&PA) dan Badan Pusat Statistik. (2015). *Profil Anak Indonesia 2015*.

Ray, Ranjan. (2000). Child labor, Child Schooling, and Their Interaction with Adult Labor: Empirical Evidence for Peru and Pakistan. *The International Bank for Reconstruction and Development.* Vol. 14, No.2: 347-67.

Ray, R. (1998). Analysis of Child Labour In Peru and Pakistan: A Comparative Study. Australian Research Council Large Grant.

Ringdal, Charlotte. (2011). Small Hands Should Play, Not Work: A Theoretical Analysis of Interventions in Child Labor. *Thesis University of Bergen,* Department of Economics.

Self, Sharmistha. (2011). Market and Non-market Child Labour in Rural India: The Role of the Mother's Participation in the Labor Force. *Oxford Development Studies*, Vol. 39, No. 3, September 2011.

Usman, H. dan Nachrowi, Nachrowi. D. (2004). *Pekerja Anak di Indonesia: Kondisi, Determinan, dan Eksploitas*. PT. Gramedia Widiasarana Indonesia.

Wooldrige, Jeffrey, M. (2012). *Introductory Econometrics: A Modern Approach 5th Edition.* Michigan State University.South-Western, Cengage Learning.