This paper aims to analyze the determinants of school enrollment of children age 10–15 whose parents are working in plantation sector, Indonesia. The data for the analysis is obtained from the 2013 National Socioeconomic Survey conducted by Badan Pusat Statistik, Indonesia. The data covers 20,311 children at age 10–15 in the plantation sector. The analysis is carried out using the descriptive and logistic regression models. The result shows that the enrollment rate for children age 10–15 in the plantation sector was high at 93.7 percent. Meanwhile, the logistic regression analysis shows that the economic activity of children (working or not working) was the most influencing factor on the educational enrollment. Working children had 0.085 times less chance to enroll in education than children who do not work. This finding is compounded by the fact that many heads of household only complete primary schooling. That makes it difficult for working children to enroll in schooling. Therefore, the government should improve the quality of education so that the educational benefit will be greater than the forgone earnings. In addition, it is important to increase the household income in order to prevent children from working.

**Keywords:** children age 10–15, school enrollment, plantation sector, Indonesia
INTRODUCTION

Education is an important factor for improvement of the quality of human resources. Therefore, education becomes one of the indicators for measuring the human development index by UNDP (United Nations Development Program) which are: education, income per capita, and life expectancy. Mudyahardjo (2001) argued that education is a learning experience that takes place in every neighborhood and throughout life. Narrowing it down, education can be interpreted as an instruction held in school as a formal educational institution. Tilaar (2002) believed that education and development have a strong bond since the development of a modern society is unequivocally influenced by education. Education is also needed to prepare the fulfillment of labor demand in Indonesia, which, according to Lee and Wie (2013), has experienced a shift from agriculture to trade and services.

The efforts to improve the quality of human resources in Indonesia have been done through compulsory education. The period of time required for the education has been progressively increased from six to nine and currently to twelve years. The six-year compulsory education program in Indonesia is a program that was initiated since the independence of Indonesia in 1945. After a considerable success of implementing a six-year compulsory education program marked with the award from UNESCO in 1993, Indonesia increased its compulsory education to nine years. The nine-year compulsory education, however, could not be considered a success because in 2012 the net enrollment rate for the junior high was still below the target (70.9 percent).

It has long been proclaimed that various problems are the barriers of the implementation of the compulsory education. Those problems have an impact on the failure to achieve the quantitative and qualitative targets of the compulsory education policy in Indonesia, which is also related to various socio-economic factors. Problems also occur in the educational participation from various leading sectors in the area, including the plantation sector in Indonesia.

Being the leading sectors, the plantation sector in Indonesia is a sector which has an important role in the economy, especially when it comes to the number of households and the development of new plantings. Base on analyses of 2013 National Socioeconomic Survey (Susenas) raw data of 581,517 households in agricultural sector, 517,168 (88.9 per cent) were from the plantation households. In the development point of view, over the last 10 years (2003–2013) the number of households in the plantation sub-sector also experienced an increase from 388,999 households in 2003 to 517,168 households in 2013. It means that there was a 32.95 per cent increase in number of households. On the other hand, the number of households in the sub-sectors of food crops, horticulture, fishery and forestry declined.

The role of such great estates cannot be separated from the potential for a more suitable land for plantation crops rather than food crops and other plants, especially for the household income. The Agricultural Census data shows that household income mainly came from plantations, which is greater than food crops and horticulture respectively by 40.21 million, 21.88 million and 33.21 million/year (BPS, 2013).

Despite being the source of livelihood for most farmers in Indonesia, many problems do exist in the plantation. The fundamental problems facing the households are still primarily focused on the number of farmers and plantation laborers who have low productivity due to their condition as self-farmers and casual laborers. In addition, the low income amongst farmers would result in the low participation of education of children inside the plantation. Based on that fact, this study aims to: (1) assess the enrollment rates of children at age 10–15 in Indonesia; (2) assess the factors that influence the enrollment of school children in plantation sector.

The data used in this paper is from the National Social Economic Survey (Susenas) in 2013 that was conducted by the Badan Pusat Statistik Indonesia. The dependent variable is the children’s school enrollment that was coded as 1 for enroll and 0 for not enroll. The independent variables are sex of the children, the children’s economic activity, the heads of the household’s education, the heads of the household’s job status, the heads of the household’s migration status, the heads of the household’s age, and the number of the household’s members. The description of these variables is provided in Table 1 as follow.
The School Enrollment of Childrens in the Plantation Sector

### TABLE-1. List of Variables In Logistic Regression Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Descriptions</th>
<th>Response categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s school enrollment</td>
<td>The enrollment of children in education at the time of survey. It is divided into (a) enroll and (b) not enroll.</td>
<td>1 = enroll 0 = not enroll</td>
</tr>
<tr>
<td>Sex of Children</td>
<td>Male 0 = female</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children is considered working if (a) during the previous week they worked at least one hour to earn their income or (b) they have permanent job, but they do not work for several time.</td>
<td>1 = working 0 = not working</td>
</tr>
<tr>
<td>Economic activity of children</td>
<td>The educational attainment of the head of the household is the highest educational level graduated.</td>
<td></td>
</tr>
<tr>
<td>Education of the heads of the household</td>
<td>The employment status of the head of the household at the time of survey.</td>
<td></td>
</tr>
<tr>
<td>The heads of the household’s employment status</td>
<td>Migrant status is based on the concept of life time migration. The head of the household is considered migrant if the birth province or birth districts differ from their residence at the time of survey.</td>
<td>1 = migrant 0 = non migrant</td>
</tr>
<tr>
<td>The number of the household’s member</td>
<td>The total number of the household’s members</td>
<td>Numeric</td>
</tr>
<tr>
<td>The heads of the household’s age</td>
<td>The Age of the head of the household</td>
<td>Numeric</td>
</tr>
<tr>
<td>Per capita expenditure</td>
<td>Per capita expenditure/100,000 (IDR)</td>
<td>Numeric</td>
</tr>
</tbody>
</table>

The data in this paper is analyzed using the descriptive and binary logistic regression. The descriptive analysis was used to describe the percentage distribution of the children’s enrollment in education according to some variables. The logistic regression in this research estimated the odd ratio of children’s enrollment in education with the dependent variable of children’s enrollment and the independent variables of sex, children’s economic activity, the heads of the household’s migration status, the heads of the household’s education, the heads of the household’s job status, the number of the household’s member, the heads of the household’s age and per capita expenditure.

### CHILDREN SCHOOL ENROLLMENT IN PLANTATION SECTOR

Indonesia has implemented policies in order to improve the educational attainment of its school children. Since 1945 Indonesia ran a six-year compulsory education program that required all citizens to at least attain the elementary school level. Having been successful, in 1990 it was increased to nine-year compulsory education. In 2013 the government further increased the compulsory of education to 12 years as an effort to prepare a "golden generation" in Indonesia, taking advantage of the demographic bonus of Indonesian momentum as human capital (Handayani, et al. 2014). Although nationwide six- and nine-year compulsory educations
have been completed, there is still a disparity in the enrollment between regions and sectors.

One source of data that contains information about children school enrollment in Indonesia is 2013 National Social Economic Survey (Susenas). The data covers 300,000 households in Indonesia. The age of children for this particular analysis is 10–15 years, represented nine years compulsory school program in Indonesia. Children in the plantations sector in this article are defined as those whose heads of household work in the plantations. The 2013 Susenas data revealed that there were 122,383 children at age 10–15 in Indonesia. Of the numbers, 20,311 (16.6 per cent) children were from the plantation sector and 80.4 per cent of the children were form other sectors.

The descriptive analysis of the children’s enrollment in education is shown in Table 2. In this analysis, children are divided into two age groups, there are 10–12 and 13–15 years of age. Of all the children, approximately 93.7 percent was enrolled in education and 6.3 percent was not. Meanwhile, the school enrollment of children at 10–12 years was 98.0 percent, which was bigger than those at 13-15 years (88.9 percent).

Based on the economic activity of the children at age 10–15, about 1,584 (7.8 per cent) of children worked and 92.2 per cent of children did not work. There was a huge difference in the level of children’s school enrollment regarding to their economic activity. The percentage of children’s school enrollment who did not work was 96.0, which was considerably bigger than the enrollment of working children (66.7 per cent). The difference in the children’s school enrollment by economic activity occurred in both age groups with a significant distinction at the age of 13–15 years. At age 13–15, most of working children (76.6 percent) were no longer registered at school. This fact shows that working children at age 13–15 were less likely to continue their education and were focused more on working instead. The low rate of school enrollment for working children age 10–15 indicated that child labor is one of the major obstacles to the compulsory education program in Indonesia. These things need attention, because many school-aged children work, including in the plantations sector. Shahaluddin et.al. (2011) showed that many school-aged children work in palm oil plantations in Sambas and Sanggau Regencies.

Educational participation by gender shows that the school enrollment rate of girl age 10–15 was higher than boys, respectively by 98.3 percent and 97.8 per cent. It occurred at both age group (10–12) and (13–15). This situation shows that women in Indonesia already enjoyed equal opportunity to gain education, But the difference of school enrollment rate of boys and girls less than 10 years is still the same, whereas at age 10–15 years, this difference was quite large. It occurred at both age group (10–12) and (13–15). This difference shows that boys in Indonesia already enjoyed equal opportunity to gain education.
especially at primary and secondary levels. This result differs with children schooling in Pakistan. Ali (1999) found that the enrollment of school children is delayed and even worse for girls, proving the existence of gender inequality.

The school enrollment for children whose heads of household were migrants (97.9 per cent) is relatively equal to children whose heads of household were non-migrants (98.3 per cent). This fact shows the equal opportunity to attend school for children of both non-migrant and migrant parents in plantation sector in Indonesia. The unequal opportunity was probably caused by other factors, such as household income and children working status.

The percentage of the children’s school enrollment increased in line with the improvement of the heads of household’s education level. The enrollment of children whose heads of household are highly educated (secondary school and above) was 99.5 per cent. It was higher than the children whose heads of household are from elementary education, which was 88.3 per cent. The higher the education level of the head of household, the higher the level of the children’s school enrollment due to the high awareness of parents on the importance of children education. In addition, highly educated parents generally had high level of income which led to the ability to maintain their children at school. This finding is in line with a study by Ali (1999), that the heads of the household’s education significantly increased the ratio of overall child schooling and greatly affects boys’ schooling while at the same time having very little effect on girls’ schooling. The parental education significantly increased child schooling as well, with the households with high income and large ownership of asset increased the probability of school attendance.

Meanwhile, the school enrollment of children whose heads of household were self-employed was 98.5 percent. This proportion was quite similar to casual workers, employees and other types of employment status. This implies that the school enrollment of children in the plantation sector was not affected by the employment status of the heads of household. Households in plantation sectors tended to send their children to school if they had a good income and social economic backgrounds.

**THE DETERMINANT FACTORS OF CHILDREN SCHOOL ENROLLMENT**

The problem of the school children’s enrollment is caused by some determinants that have been discussed largely in many countries. Olanliyan (2011) analyzed the relationships between the children’s enrollment in education with age, cohort, parental education, household income and geographical zone. This study found that the socio-economic background of the children was one of the significant determinants of children schooling in Nigeria. Among the variables, the education of parents was the most significant. A study by Baluch and Shahid (2008) found some factors that contribute significantly to net of children’s enrollment in the primary school level in the District of Lahore. Those variables were family size, dwelling ownership, expenses on education, literacy ratio and dependency ratio. The analysis also concluded that the accessibility to school was not a very significant factor towards the impeding of school attendance.

Gonsch (2010) studied the determinant of the primary school enrollment in Haiti and The Dominican Republic. The independent variables in this research are the individual characteristics (child age, sex, and younger siblings), the household characteristics (education, age, and sex of the heads of household, number of the household members, number of mature children) and the community characteristics. This research marked the age of children and family wealth as some of the most important explanatory variables of children’s enrollment in education.

The relations between mother’s education expectation and children’s enrollment in rural China have been studied by Zhang (2011). The research found that mother’s expectation, child expectation, sex, and father’s education have significant impacts on the children’s enrollment. Children of a wealthy family had a much better chance to stay in school when the mothers shared with them the same college dream, or when mothers hold expectations higher than their own. In the meantime, children had a high risk of dropping out if they come from impoverished families or if they struggle academically. The study concluded that children would benefit most from the positive impact and the mothers’ influence that became stronger as the children advanced in their schooling.

Deng et.al. (2012) studied the relationships of household assets, school enrollment and parental aspirations for children’s education in rural China. The first study compared the responsiveness of boys’ and girls’ enrollment to the improvement of the
household assets, which was measured as liquid assets and net worth, relative to family income. The multivariate regression analysis further detected the effects of household assets on both boys’ and girls’ school enrollment and parental aspirations for children’s future education by the child’s gender. The statistical results showed that compared to the family income, the household assets mattered more for girls’ schooling than for boys’. In addition, the household net worth was significantly associated with the parental aspirations for their children’s education regardless of gender. This study, albeit exploratory, shed light on child’s welfare and education policies in rural China.

In Thailand, Jampaklay (2006) studied the parental absence and children’s school enrollment. This analysis found the negative impacts of parental absence on the school enrollment of the children left behind (i.e. who do not follow the migrating parents). The long-term absence of mothers appeared to reduce the chances of education for the children left behind, whereas the long term absence of fathers do not. The results suggest that a mother’s roles could not easily be replaced by other family members. The study also showed the contrasting roles of remittances as a contribution to the education of the children left behind and as a motivation for children who have already left school to migrate as well.

Children school enrollment is also associated with gender and age. Wells (2009) analyzed gender and age-appropriate enrollment in Uganda. This study showed that the secondary school enrollment in Uganda historically favored males over females. Recently, however, researchers have reported that the secondary enrollment gender gap has significantly diminished, and perhaps even disappeared in Uganda. While gender parity has broadly been achieved for school enrollment, there may still be a gender gap concerning the age-appropriate school enrollment. Unfortunately, there is yet sufficient information about what individual, family and regional factors that influence the age-appropriate enrollment.

The school enrollment of children in plantation sector in Indonesia is also affected by several factors (Table 3). The logistic regression shows that sex and children’s economic activity have a significant effect on the school enrollment in the plantation sector. Among the determinants, the logistic regression shows that the working status of children has the highest effect on the children enrollment in education. Working children were 0.085 times less likely to enroll in school than children who did not work. In contrast, the opportunity for children who did not work to enroll in education is 11.8 times higher than the working children. Although the number of child workers in Indonesia was relatively small (7.8 percent), still, they are part of the Indonesian children that have the right to education as it should be. Therefore, child labor as minorities continues to require the attention of the government. The attention to child labor at the national level has become urgent due to its large number. Based on the BPS data in 2009, there were 58.8 million children ages 5 to 17 years with approximately 4.05 million (6.9 per cent) was the working children. To note, child labor was composed of 68 percent children age 15–17, 15.4 percent age 13–14 and 16.6 percent aged 5–12 (BPS and ILO, 2009).

The logistic regression also shows that the opportunity for boys’ age 10–15 to enroll in education was lower than girls (Table 3) which was 0.866 times less. The opportunities were similar for children at age 10–12 and those at age 13–15. These facts indicate that boys tended to engage early in paid work than girls at similar age. This result differs from the research conducted by Kintamani (2013) that the gender participation index in elementary and secondary schools in Indonesia was equivalent; this could not be said for the higher education.

The opportunity of school enrollment of children whose heads of household were migrants was almost the same with the non-migrants. It showed that the migration status of the heads of household did not cause a difference in the children’s enrollment in education. This fact indicates that children from the migrant and non-migrant families received equal rights for education in Indonesia.

The level of the heads of household’s education significantly affected the children’s enrollment in education. Children whose heads of household were from secondary school had 2.715 times greater opportunities to attend school than those from elementary school or lower. Furthermore, the opportunities of children whose heads of household were from high level of education were 10.990 times more than those from elementary or lower. This is because the higher level of the heads of household’s

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1This figure comes from the odd ratio: working children = 0.085 x children do not work, so (1000/85=11.8)x working children = children do not work. It means that the opportunity of children do not work to enroll in education is 11.8 time higher than working children
education will be followed by the higher awareness and hope for their children to attend school. This fact is consistent with researches that have been done in many other countries which concluded that the education of parents, especially head of household, brought real impact on the children's participation in education (Deolalikar, 1997; Zhang, 2011, Jampaklay 2006; Olaniyan, 2011).

At the same level of the heads of household’s education, the odd ratio of children at age 10–12 was higher than children at age 13–15. When the heads of household’s education was secondary school, the odd ratio of children at age 10–12 and 13–15 were 3.287 and 2.558, respectively. This fact shows that the educational level of the heads of household had little effect on the participation of elementary school age children, but at the same time had a lot of effect for secondary and tertiary school age children. Hence, children at the elementary school age had a better chance to go to school than those in the secondary school age. This situation occurred because higher level of education was usually followed by higher level of expenditure. Therefore, it was not easy for most of households to finance their children's education. Moreover, at the age of 10-12, most children did not have occupations to supplement their household incomes.

The working status of the heads of household has a significant influence on the children's school enrollment. The chance of children whose heads of household were employees were 0.674 times smaller than the heads of household coming from another employment status. Furthermore, fewer opportunities also occurred among children whose heads of household were casual workers, which was 0.609 times. This indicates that casual workers at the plantation sector in Indonesia had a lower level of welfare compared to the self-employed and others. In addition, casual workers and plantation employees often lived in the field so that they had a relatively limited time to meet their families and take care of their children. This condition often made the children to receive less attention, including the some aspect concerning their schooling.
Based on the 2103 Susenas data, the average household expenditure in plantation sector was 485.803 IDR per month. About 23 provinces had household expenditure under the national average and 10 provinces actually had higher. Per capita expenditure significantly effects the children’s school enrollment as well. The greater the number of per capita expenditure, the higher their chances for participating in schooling. This is because the increase in the number of the per capita expenditure will increase the household’s spending on health, education and other needs. If the per capita expenditure is lower than the poverty line, the households will be more inclined to send their children to the labor market to help in earn a living instead of enrolling them in school. This result is in line with Chernichovsky and Meesook (1985), that education in Indonesia, especially beyond the primary level, was very much an income-related phenomenon.

THE CONCLUSION AND RECOMMENDATIONS

The plantation sector in Indonesia has highly contributed to the livelihoods of the population, as proved by the overall number of children in Indonesia which was 16.6 percent of their heads of household worked in the plantation sector. The analysis shows that the school enrollment rate of children in plantation sector were still lower than gross enrollment rate in national level. The average of gross enrollment rates of primary and junior secondary schools in Indonesia in 2012/2013 were 115.88 percent and 100.16 percent respectively (Ministry of Education and Culture, 2013). These facts suggest that the school enrollment in plantation sector is still part of problem for education in Indonesia.

The lower rate of school enrollment in plantation is significantly caused by child labor, household income, head of household education and gender. Among those, child labor is the most significant factor that caused the lower rate of children school enrollment. Therefore, schooling at palm oil plantation area needs attention as the children prone to engage in child labor and school dropping out due to the need to contribute to family income. Child labor is important because there are many child labors in Indonesia. In 2009, ILO predicted that more than 200 million children of various nationalities between the age of 7 and 14 were working, at least 2.3 million of whom were Indonesians. The majority of these child labors in Indonesia were concentrated in the rural areas of eastern Indonesia. While child labors constituted approximately 1 percent of Jakarta’s population, the ILO estimates that they make up 8.9 percent of the population in eastern Indonesia. The attention to child labor does not mean that children should not be working at all to help their parents. The introduction of children to work in their environment is still required, but these activities should not interfere their schooling. The introduction of children to the work needs to be done as a direct learning so that children can get to know and understand the work in their environment.

Poor quality of education and a general low regard for education (as consequences of under educated parents) compounded by low family income were potentially contributing factors to push children into working in plantation sector. This can keep children and their families locked in a cycle of poverty. Therefore, improving the quality of education is very important and urgent to be done by the various stakeholders of education. Free education through the smart card is not enough to increase enrollment of children in plantation sector. Therefore, improving the quality of education that has greater benefit than forgone earnings is a solution that should be done.

On the other hand, increasing the household income remains an inseparable part of increasing the children enrollment in schooling in the plantation sector. Parents will not send their children for working if they have decent income. For this purpose, it is needed to be focused on province that have the lowest household income and province that provide the biggest share of children on the plantation sector. Based on the 2013 Susenas data, province that have the lowest household expenditure in plantation sector are East Nusa Tenggara and South Sulawesi. Monthly household expenditure in both provinces were 307.631 and 337.603 IDR respectively. On the other hand, provinces that provide the largest share of children in the plantations are North Sumatra, South Sumatra and Riau.

REFERENCES


Gonsch, Iris. 2010. Determinants of Primary School Enrollment in Haiti and the Dominican Republic, JEL-Classification: C19, I21, O12, O15


Kintamani, Ida (ed). 2013. Statistik dan Indikator Pendidikan Berwawasan Gender Tahun 2011/2012 (Statistics and Indicators of Education from the Gender Perspective Year 2011/2012). Kementerian Pendidikan dan Kebudayaan Pusat Data dan Statistik Pendidikan


