The Impact of Parents' Education and Senior Secondary School Types to College Entrance

A Research Paper presented by:

Wahyudi Wicaksono

462260ww

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Members of the Examining Committee:

Dr. Robert Sparrow [Supervisor]

Prof. Dr. Peter Van Bergeijk [Reader]

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Table of Contents

List of Tables

List of Figures

List of Acronym

BPS	Badan Pusat Statistik (Bureau of Statistics)
IFLS	Indonesia Family Life Survey
MA	Madrasah Aliyah (Islamic Senior High School)
PODES	Potensi Desa (Village Potential Survey)
SBMPTN	Seleksi Bersama Masuk Perguruan Tinggi Negeri (National college entrance examination)
Seleksi Mandiri	Local college entrance examination
SMA	Sekolah Menengah Atas (General Senior High School/General SHS)
SMK	Sekolah Menengah Kejuruan (Vocational Senior High School/Vocational SHS)
SMP	Sekolah Menengah Pertama (Junior High School/JHS)
SNMPTN	Seleksi National Masuk Perguruan Tinggi Negeri (National non-examination college entrance selection, based on student academic record and non-academic achievement)
UAN	Ujian Akhir Nasional (Final Exam)

Abstract

This paper is about the students' choice after finishing a nine-year primary education in Indonesia. The study will examine the relationship between children's ability, parents' educational attainment, school availability, and senior high school types attended (classified into three categories: general/academic, vocational, religious/MA). Later, we will examine the consequences of different senior secondary types attended to tertiary education entry. This study is motivated by vocational education expansion planning in senior secondary and tertiary education which is initiated by the Government of Indonesia in Ministry of Education's Educational Strategic Planning.

The paper uses cross section data from Indonesia Family Life Survey (IFLS) 2007 and 2014 as primary data and Potensi Desa (PODES) 2002, 2005, and 2008 as supporting data. Multinomial-Logit model is used to examine the senior high school types, Logit and Probit are used to examine the decision on pursuing tertiary education. The main conclusions are (1) parents with high education prefer academic senior high school than vocational high school for their children, (2) the educational facilities availability has a significant impact to the school choice, children who live in a district with vocational school share higher than general school share tend to attend vocational senior high school than academic senior high school, (3) parents' education also has a positive and significant impact to the probability a child attending tertiary education, parents' with higher year of schooling higher possibility to send their children to tertiary education, (4) children who attended vocational senior high school have a lower probability to enrol in tertiary education compared to those who attended general senior high school or MA.

Relevance to Development Studies

This paper concerned about the vocational educational expansion policy and the effect on the children educational choice in senior secondary and tertiary level. This article gives information about the side effect of the vocational education expansion to the tertiary education enrolment. The government needs to consider the side effect whether it is expected or not.

Keywords

Vocational Senior High School, General Senior High School, Social Mobility, Household Characteristics, College Entrance

Chapter 1 Introduction

The discussion about general versus vocational secondary education recently is become a popular research topic in the educational study. This subject is soaring along with the emerging of vocational expansion policies, especially in developing countries. The modern debate is about the comparison return on education between general and vocational secondary education. Return in labor market and income is researched by Bennell(1996), Mane(1998), Chen(2009), Newhouse & Suryadarma (2011), Sohn(2013), Mahirda & Wahyuni (2016), Hanushek, et al.(2017). Few who study the comparison in academic performance and college entry, Chen (2009) compares Indonesia vocational and general graduates in college entrance, and Loyalka et al.(2015) compare working skill and academic performance of general and vocational students of China senior secondary. Another unpopular study is the determinant of people select general over vocational secondary education and vice versa as we know only researched by Chen (2009) and Newhouse & Suryadarma(2011) using Indonesia data.

The study about the comparison between academic and vocational is relevance in Indonesia. Since Government of Indonesia plans to expand vocational education in secondary and tertiary level. The Ministry of Education formalized vocational education expansion planning in its Strategic Planning document year 2005-2009. (Ministry of National Education, 2006). This plan was established in President Susilo Bambang Yudhoyono administration era.

Later, it is continued by President Joko Widodo administration. The President recognizes that the vocational education expansion is a concerted effort and it needs support from all stakeholders. In his administration, President Joko Widodo orders the related ministries and all governors in president order number 9/2016 to support the vocational secondary expansion by giving support and guidance to vocational secondary graduates in facing job market. For example, The President orders industrial ministry to list the working skill that needed by industry to link between vocational education labor supply with industrial labor demand.

In the vocational expansion planning, Ministry of Education sets an ambitious target. The ministry targets are raising the share of vocational student against general senior secondary high school in 2015 by 70:30. As information, in 2004 only 30 percent of students who enrolled in the vocational senior high school and the rest, 70 percent enrolled in general senior high school. The government plans to accelerate the achievement of the targets by increasing the

number of vocational public schools. (Ministry of National Education, 2006).

The transition from junior secondary to senior secondary education is recognized as a critical time for children education because this is "a time when many pupils risk dropping out." (OECD/Asian Development Bank 2015:139). The senior secondary level also significant in the human capital decision because this level acts as a bridge between primary schooling with educational advancement to tertiary education or a direct job market (The World Bank, 2005). Therefore, the government's planning in vocational high school expansion has to deal with children's and parents' preferences. The children's and parent's choices related to the children and parent planning after children finished the senior secondary education, whether directly join the job market or continue to higher education. Goldthorpe and Breen (1997) state that children do not randomly choose between vocational and general senior secondary school tracks. Children want a vocational over a general track or vice versa base on some criterion: the direct and indirect cost of attending the track, the probability of success in that track (usually is measured by previous academic achievement), the outcome of attending an individual educational track, and the plan after completing this level.

The parents' preference also involves the social-economic status. Chernichovsky and Meesok said that "the relatively wealthy and well-educated (parents) shun vocational training…" (Chernichovsky & Meesok, 1985: iii), sending their children to a tertiary education is the reason why wealthy parent avoid vocational training because they presume attending vocational education will reduce the probability to be accepted in higher education. Foster (1965) in (Ziderman, 1997) stated the reason why parents in Ghana avoided to send their children to vocational high school. According to Foster, the reason is the expectation of benefit from academic secondary schools. "Academic education was seen as pre-eminently vocational in providing access to stable, well-paid clerical and administrative jobs within the growing public sector; at the same time the demand for technical skills was growing slowly." (Ziderman 1997: 356).

The idea of expanding vocational schools in Indonesia is to reduce unemployment among the senior high school graduates. (Ministry of National Education, 2006). Since most upper secondary graduates in Indonesia are not prepared to work otherwise, they are prepared to go to college. While SMK graduates are equipped with various skills needed in labor market, they are expected easier to get a job than the general graduates. Moreover, SMK graduates are projected to get a higher salary than general high school graduates. But this is not always true because some research about the ease of graduate SMK get the work got a mixed result.

Newhouse & Suryadarma (2011) compare the probability of vocational and academic high school graduates being employed in Indonesia. They find women who attend vocational public secondary education have a significantly lower chance to be hired than those who attend othe educational choices. For men, there is no significant difference. In term of wage, vocational graduates earned higher wage in United States (Mane, 1998) especially for men in cohorts 1980 and 1992, and women in all cohorts (1972, 1980, 1992). Bennell (1996: 243) using data from many countries in various years reported vocational graduates got a lower payoff in some countries in different data years, they are in Chile (1992), Indonesia (1983 and 1995), Philippines (1969) and Tanzania (1985). Chen (2009) uses IFLS 2000, and she finds that there is no conclusion whether vocational graduates get higher or lower earnings compared to their peers in general schools. Newhouse and Suryadarma (2011) reported that vocational secondary might only benefit for female graduates because only female vocational secondary graduates who significantly got higher wages than male vocational secondary graduates. Sohn (2013), Mahirda & Wahyuni (2016) found the same conclusion with Chen (2009) and Newhouse and Suryadarma (2011) there is no slightly different in wage between vocational and general graduates.

The vocational senior high school also not a good idea in increasing skill and academic competencies. Even OECD/Asian Development Bank (2015:33) states that "In the SMKs students are subject to a "dumbed-down" curriculum in intellectual terms, yet often not given adequate hands-on learning to develop practical skills relevant to future jobs, technical know-how, adaptability to change and interpersonal skills." Loyalka et. al. (2015) using China data find that attending in computing vocational education does not improve student computing ability, moreover attending vocational education reduce their academic skill especially math. Loyalka et. al. finding in line with Chen's (2009) finding, using data from Indonesia Family Life Survey 2000 she found students who attended vocational senior secondary school in Indonesia get a lower final exam score compared to the general senior secondary students. Because the academic skill is essential for pursuing tertiary education, Chen concluded that attending vocational high school decrease the students probability to continue to higher education.

As discussed before, many researchers have conducted a comparison between general and vocational high school, most of them focus on the outcome of both school concerning employment, yet, very few who study about the determinants student choose vocational or general high school and comparing the result in academic track (college entry). In Indonesia,

as we know only Newhouse and Suryadarma (2011) and Chen (2009) who compared determinant of students choosing general and vocational high school and only Chen (2009) who studied about the outcome of vocational and general in academic advancement (college entrance).

This paper aims to study students' educational decision after finishing a nine-year primary education to fill the gap research in topic. It will include the choice after completing junior high school and later also examine the decision after finishing senior high schools. This study will emphasize on the comparison between academic and vocational senior high school. Then, we will discuss the consequences of academic and vocational senior secondary school to tertiary education entrance.

Chen (2009) studies the same topic and issue with this paper, but she does not consider the difference between public and private senior high school in estimating determinant of attending senior high schools. She also does not include the school availability as a control variable in her paper. While Newhouse and Suryadarma (2011) only examine the determinant of attending general or vocational high school, but they do not discuss the decision in college entrance. Both studies use the data before the government plans to expand the vocational education. This paper used data after the government planned to expand vocational high school.

This study is motivated by the vocational education expansion planning in senior secondary and tertiary education. Another motivation for this study is a prediction of demographic bonus that will happen in 2020-2030. This study will examine the individual respond to the vocational expansion plan and measure the ability of vocational secondary as a milestone in higher education. The focus is comparing between general and vocational senior high school. This research tries to answer the research questions below.

1. *Do parents' education significantly affect senior high school tracks decision and tertiary education entry?*
2. *Do schools availability affect students' choice of senior high school types?* (we use school availability as a proxy of vocational secondary school expansion)
3. *Do vocational graduates have a lower probability to continue to college?*

To investigate those research questions, we will use data from Indonesia Family Life Survey (IFLS) 2007 and 2014 with following the track of junior high school graduates who graduated in 2002 to 2010. In this study, we will use three primary variables, individual characteristics variables, family characteristics variables and educational facility availability variables. We will use category school types as Newhouse and Suryadarma by dividing senior

high school type into general public school, general private school, vocational public school and vocational private, and we add Madrasah Aliyah (MA/religious senior high school). Different from Newhouse and Suryadarma, in this research paper, we will use final exam score as the variable of individual ability instead of the grade repetitions. And also we use school availability as a variable of interest and a control variable to avoid heterogeneity.

From our empirical analysis, we found (1) Parents' education has a positive and significant effect in promoting their children to enroll in general high school, especially in attending general public high school. Well-educated parents tend to avoid sending their children to vocational education. (2) The school availability has a significant effect in influencing children educational decision. The increase in the proportion of vocational secondary to general senior high school facilities increase the probability a child to enroll in vocational high school, yet it also increases the probability a child does not enroll in senior high school. The proportion of private school also has the same impact as the proportion of vocational high school. Increasing proportion of private senior high school to public senior high school also increases the likelihood a child to enrol in private senior high school. Increase in the proportion of private to public senior high school will significantly decrease the chance a child enrols to senior high school. (3) Parents' education also has a positive and significant effect on the probability a child attends tertiary education. (4) Attending vocational senior high school decreases the probability a child attends tertiary education.

This paper will be structured as follows: the first chapter is an introduction, the second chapter is theoretical framework and literature reviews, the third chapter is education background in Indonesia, the fourth chapter is data and method, the fifth chapter is analysis, and the sixth chapter is the conclusion.

Chapter 2 Theoretical Framework and Literature Review

In this session, we discuss the theoretical framework of constructing children's and parents' educational decision and the probability of class differentials, then we continue to discuss the result of earlier empirical research on this topic, and the last we will construct the hypotheses base on the research questions and literature reviews.

2.1 Educational decision

Human capital accumulation is a product of individual decision. One of the individual decision is choosing the educational tracks. Some researchers try to explain this model by introducing some theoretical frameworks, Breen & Goldthorpe (1997) propose rational action theory, and Esser (1999) in Becker (2003) introduce subjective expected utilities. Breen and Goldthorpe (1997) try to explain the difference in educational choice among people using rational action theory. According to their theory, people will rationally act when they are deciding an educational track. Individuals in this case parent and children are assumed to know about the cost, benefit, and consequences for every choice. Modify an option later is costly. Therefore, in choosing two alternatives, they need to compare the cost and benefit of every decision, assessing the success possible, and measure the available source to finance the choice.

Breen and Goldthorpe (1997) propose three main factors to consider in selecting educational tracks. First is the cost. The cost will include direct cost and the opportunity cost of selecting one educational track. The second factor, the probability of children being successful in the chosen educational track. Children ability is a standard proxy to measure the likelihood of children being successful in an educational path. The last factor is the outcomes of the educational path. The outcome of an educational path is a belief about the chance of a path having access to certain social classes. Or in another word, the outcome is the ability a track gives access to children aspiration or expected social-economic status. Breen and Goldthorpe assumed that decision of entering an n level of education is affected by the expectation of gaining access to level n+1.

Rational action theory by Breen and Goldthorpe (1997) is almost similar to Esser's (1999) subjective expected utilities in explaining the process of making the educational decision. Both theories compare between cost and benefit of every choice and choose the most favourable outcome. Subjective expected utilities also consider about "intergenerational class maintenance." (Becker 2003:4). Breen and Goldthorpe (1997) explain the "intergenerational the class maintenance" using a class differential mechanism, they call it as "relative risk

aversion." Both relative risk aversion and intergenerational class maintenance try to explain about the parent effort in preventing social status declining.

2.2 Family's role

After understanding the process of making educational decision choice, later we need to define the family role in making the decision. A family has an important part in the human capital accumulation. Children's dependency is one important factor that makes the role of the family so important to the human capital accumulation. The role of the parent in children education includes financial support, giving guidance and motivational support for their children education.

Sawitri et al. (2014:176) explained the parent influence on the children education track through parental career expectation and adolescent career development. In their empirical research, they find that the parent contributions to children career development via developing children efficacy and fostering children's career aspirations. Parents contribute to their kids education by helping the kids to choose their educational tracks.

Breen & Goldthorpe (1997) explain that the family's social class also affects children educational decision. Effect of family's social class raises class differential in the educational decision. The class differential can be derived from three primary mechanisms: relative risk aversion, differences in ability and expectations of success, and differences in the resources. The first mechanism in the class differential is through relative risk aversion. In this assumption, parents expect their children get higher social-economic status than what they are or at least at the same level with them. With this assumption, parents with a particular level of education do not expect their children obtain educational attainment less than what they achieved. The class different happen when parents with lower-level education are not as ambitious as the higher-level education in promoting their children education. From this assumption, we expect that children from lower education attainment family will get a lower probability to enter higher education vice versa.

The second mechanism is through differences in ability and expectations to succeed in the educational path. Different ability may become one important factor that decides the difference in the level of education. Even though the access to education is open for all pupils, but only students who passed a certain quality have access to the education. Only students who finished the one lower level of education can continue the higher education. As explained before, the difference in educational attainment is affected by two main effects, primary effect, and secondary effect. The individual ability is one factor that can diversify education level and

school track. Pupils with higher ability have higher chance to enter higher education or better school than their colleagues. (Breen & Goldthorpe, 1997). According to Breen and Goldthorpe (1997), the ability also becomes the factor to measure the expectation of success. A pupil with higher ability has a higher probability of success in pursuing education. Prior exam score can stand for the students' ability.

The third mechanism is different in resources. In this assumption, Breen and Goldthrope (1997) suggest that the differences in educational choices may as the effect of the differences in family's resources. Because education is not costless, and different track of school have different incurred cost. With this assumption, the family will only send their children to school if their available resources are higher than the cost incurred during the education period. Family with the lower resources tend to send their children to the school track with the most affordable for them.

Besides the difference in resources, Becker (1993) considers the parent effect in term of parent preferences. In this point of view, the difference in resources is not the only factor children have different school attainment, but also the difference in the way how the family spends their resources. Parents with better education are assumed to have a better awareness of their children education by giving a bigger proportion of their income to devote to the children education and motivating their children to pursue higher education and taking some necessary training.

Breen and Goldthrope (1997) only consider the family welfare as the resources. From our point of view, differences resources among families should not be the only consideration in the educational choice differential. Newhouse and Suryadarma (2011:298) find that location of residence is one important factor that "could influence whether a student chooses one track over other the other track." The difference in the resources and facilities availability could promote difference choice and inequality in access to education among children. The distribution of school facilities among region is not even in Indonesia. More populated areas have more education facilities and the distance among that facilities is not so big as less populated regions. Children from rural or less populated region will have less choice in educational services than their peers in the urban or dense area.

This paper will focus on vocational and academic track after finishing junior high school and relate it to their decision in a college entry. This study is in line with Breen and Goldthorpe's rational action theory. In their article, Breen and Goldthorpe (1997) warn about the condition of rational action theory. According to them, this rational action theory only

applies to the educational choice that has significant differences in educational structures and consequences. They use vocational and academic senior high school in the USA as an example. The vocational and academic high school in America have different effects on continuing to the higher education and labour market. Indonesian vocational and the academic senior high school also have different consequences in the educational continuation and the market acceptability.

2.3 Literature Review

2.3.1 Vocational education decision

Some empirical researchers only study about relationship parent education to the probability of children enroll in higher education. Very few who studied the relationship of parent education to different of education track (academic or vocational), Chen (2009) and Newhouse & Suryadarma (2011) who investigated the relationship between parental education and children type of senior secondary school using Indonesia data. Chen and Newhouse & Suryadarma compare the decision differently; Chen only uses two options vocational or academic senior high schools. Newhouse and Suryadarma compare the vocational and academic senior high schools and also consider the school operators whether public or private institutions.

Chen (2009) investigates the probability a child attending vocational senior high school after completing junior high school. She uses IFLS data year 1997 without including those who not attending upper secondary school as an option. She also does not divide between private and public school. She uses some characteristics, includes individual characteristics, family characteristics, and community characteristics. Individual characteristics include gender, age, and junior high school final exam score. From three individual characteristics, only final exam score affects the decision of attending vocational high school. She finds a child with higher final exam score has a lower probability of attending vocational senior high school. Chen divides family characteristics into household head education, household income, and the number of siblings. She finds that the number of siblings does not affect the school choice, while family income and head of household education affect male and female children differently. On the one hand, head of household education only affects male child educational choice and does not affect female child educational choice, head of household with high education tend to avoid vocational school for their sons. On the other hand, household income only affects female child educational choice. High-income family tends to send their daughters to academic senior high schools. Community affects children's high school decision. Chen

finds that children who live in the rural area have a lower probability to attend vocational high school compared to their peers in the urban area. Another community characteristics used by Chen is the percentage of individuals in children community who graduated from the vocational high school. Chen finds that higher proportion of people who graduated from vocational high school in children community higher probability the children enroll in vocational education.

Newhouse & Suryadarma (2011) who studied the relationship between parental education and children type of senior secondary school. They find that parents with higher education have greater tendency to send their children to general senior high schools. Father with vocational education tend to send their son to vocational public school but tend to send their daughter to private vocational school.

Location of residence may affect the school tracks by considering the difference in the school facilities among locations. Chernichovsky & Meesok (1985) not specifically refers to vocational or academic schools' availability, they find that "availability of services promotes school attendance and educational attainment." (Chernichovsky & Meesok, 1985:26).

2.3.2 Tertiary education entrance

Becker & Hecken (2009) examine the educational choice of high school graduates in Germany using data from Saxon graduates in period 2000–2006, they find that class differentials happen in the decision enroll to tertiary education in Germany. Children from working-class parents tend to not enroll in higher education because of their educational achievement. Meanwhile, children from higher class tend to enroll in tertiary education. This class differential in line with Breen & Goldthorpe (1997) relatively risk-aversion theory and Esser (1999) status maintenance theory, according to those argument parents do not want their children education or state achievement are lower than what they achieved. Thus, higher parent class status more top children educational expectations. Another factor is the differential in resources, children from a parent with lower status have greater resources constraint, therefore thus parent will invest fewer resources in their children education. Because vocational education is cost less than higher education, thus parents with lower economic status tend to send their children to vocational education instead of higher education.

Chen (2009) in her research also investigates the outcome of attending vocational high school. She compares the results regarding employment and college entrance. She estimates the college entrance decision using instrumental variable vocational education and senior high school score. She finds that senior high school score has a positive and significant impact on

the probability of children entering higher education. She conclude that attending vocational high school could reduce the chance to enrol in tertiary education. Chen argues that attending vocational education does not have a direct effect in reducing the probability to enroll in tertiary education. But attending vocational secondary education gives an adverse effect on the score achievement, later affect the higher education enrolment. Parent education, household income, children age, rural dummy, and gender are used as control variables. Parent education, household income, and rural dummy have a significant effect to the decision, other control variables such as age, gender do not have to the tertiary education enrollment decision. According to Chen, parent education has a positive and significant effect to the possibility of children attending tertiary education. Rural dummy only affects decision when the senior secondary score is not controlled. Rural dummy has a negative effect to the probability attending tertiary education. Household income has a positive impact on the probability a child attending higher education.

Ogawaa & Iimuraa (2010) examine determinants of college entry using IFLS (Indonesia Family Life Survey) data year 2007. Different with Chen, Ogawaa and Iimuraa do not consider the effect of different senior secondary types in affecting the tertiary education enrollment. In examining the determinant of college entry, Ogawaa and Iimuraa use individual's choices after graduating senior high school as a dependent variable, which is categorized into three categories, not attend tertiary education, enroll in bachelor's degree, and enroll in diploma degree. And they divide independent variables into three main characteristics; individual's characteristics, family's characteristics, and regional characteristics. Ogawa and Iimura find that family characteristics, head of household education and family income have a positive and significant effect to children for attending tertiary education both for urban and rural children. Yet head of household spouse's education and individual's test score only give a significant and positive effect for those who live in the urban area. Head of household age and the number of siblings do not show a significant effect on the probability of children pursuing tertiary education.

2.4 Hypotheses

According to the earlier research and theory, we can conclude that parents' years of schooling affect children education track preferences and probability to continue to the tertiary education. According to rational action theory, individuals do not choose one educational path over others educational path randomly. They want the track that most favourable to increase the likelihood of success in higher education or labor market. In this research, we propose two

hypotheses related to the senior secondary school track and the comparison of tertiary education entry between academic and vocational secondary, as follows:

H1: Parent with higher educational attainment will tend to send their children to academic secondary over the vocational high schools.

This hypothesis will be tested using multinomial logit. We will compare the outcomes using three types of high schools: academic (general) high schools, vocational high schools, and MA (Madrasah Aliyah/senior Islamic secondary).

H2: Parent with higher educational attainment will tend to send their children to tertiary education.

This hypothesis will be tested using probit and logit model. With the outcome is probability a child enrols to college.

H3: *School availability have a positive influence in senior secondary school choice. The proportion of vocational school has a positive and significant effect for children to attending vocational senior high schools.*

This hypothesis will be tested using multinomial logit model by considering the significance and the coefficient variable proportion of vocational senior high schools.

H4: Children from vocational secondary school have lower probability to enrol to the tertiary education compare to their peers from the others secondary school types.

This hypothesis will be tested using logit and probit model to know the sign and the significance

Chapter 3 The Case of Indonesia

3.1 Indonesia Human Capital and Challenge

Demographers predict Indonesia will experience demographic bonus in 2020-2030. The demographic bonus is a moment when "the share of the population in working ages will be at its highest level, and the potential for increasing output per capita and hence more productive investment will be at its peak." Oey-Gardiner & Gardiner (2013:481). According to United Nations Population Fund (UNPFA, 2014) as cited by OECD/Asian Development Bank (2015). the population in working ages in 2020-2030 is around 60 percent. It means dependency ratio at that period only 40 percent; this figure is similar to China dependency ratio in 2012. Increasing the number of working ages will increase the labor supply and increase productivity per capita. Because the dependency ratio is low, saving is expected increase and investment increase. The combination of increasing productivity, saving, and investment are expected increasing the economic growth lift Indonesian economic status from middle-income economy to high-income economy.

However, there is no certainty that Indonesia will get benefit from the demographic bonus. It very depends on some qualities, one of them is Indonesian human resources quality. Tahkur (2012) in Oey-Gardiner & Gardiner (2013:482) warns that demographic bonus could be disastrous if Indonesia cannot manage its human resources. "Even it can be a disaster when in it could even turn out to be a 'curse' if the country is faced with a large cohort of young unemployed." Indonesia has to make sure in the demographic bonus period the unemployment is also low by preparing the job opportunity and working skill for the young generation.

Indonesia also need to prepare its human capital facing global competition. Indonesia has signed some agreements regarding free trade, one of them is AFTA (ASEAN Free Trade Area). AFTA agreement not only covers trade sector, but it also includes labor market area. Agreeing AFTA, Indonesia also agrees to open its labor market to the global labor force. The free labor market will raise the competition in the domestic labor market. When local labor forces are not ready to enter the competition, it can increase domestic unemployment and worsen the national economy. Indonesia need to increase its labor force competitiveness by preparing them with sufficient working skill and knowledge.

The human capital index is one of indicator for country competitiveness. According to World Economic Forum (2016), Indonesian human capital index in 2016 ranks number 72 from 130 countries. It places Indonesia in just under China which is rank 71. In ASEAN region,

Indonesian human capital index ranks number 6 out of 9 countries. Indonesia human capital index is lower than Singapore (13), Malaysia (42), Thailand (48), Philippines (49), and Vietnam (68). Word Economic Forum divides human capital index into 5 age group: 0-14, 15-24, 25-54, 55-64, 65+. For the youth in age 15 to 24, World Economic Forum assesses several factors "such as higher education and skills use in the workplace." (World Economic Forum 2016:2). Base on the human capital index age group of 15-24, Indonesia human capital index ranks number 64. In ASEAN, Indonesian position is lower than Singapore, Malaysia, Thailand, and Vietnam. For the group of 25-54, World Economic Forum calls it as age group pillars because this group is the group of labour force. The human capital index in this group are assessed with several factors one of them is the tertiary education enrolment. For the group of age 25-54, Indonesian human capital ranks number 73, in ASEAN, Indonesia still ranks number 6 of 9 countries.

The issue that Indonesia needs to face regarding human capital improvement is the presence of inequality in educational access. Two things cause the inequality, first poverty and the second geography. The World Bank (2013) reports significant differences in access to education between the poor and the rich. The government admits the the inequality problems in the Ministry Education strategic 2010-2015 draft. As the follow-up, the government launch some policies to mitigate the inequalities. One of them is school operational assistance (BOS), this assistance aim is to encourage the children of the poor to participate in education. The government distributes a broad range of assistance to the poor in the form of BOS and BSM. However, the assistance only cover elementary and junior high school age. BOS and BSM do not include senior secondary education and tertiary education.

The second constraint relating to access to education is the inequality that is caused by geographic location. Children in the urban area will get more education services than those in the rural areas. Moreover there are differences in island levels between islands in the population (Java, Sumatra and Bali) with sparsely populated areas. The people in Java, Sumatra, and Bali are more benefited than those outside the three islands because access to education on the three large islands is relatively easier and evenly in comparison with areas outside the three regions.

3.2 Education System in Indonesia

According to Law number 20/2003, Indonesian education level is categorized into three levels: primary, secondary, and tertiary education. Primary education consists of two main school levels: elementary school and junior high school. Elementary school is a six years education and junior high school is a three years education. Secondary education is a three

years education consist of two curriculum track, vocational and academic. Tertiary education consists of diploma degree, bachelor degree, magister, specialist, and doctorate.

Education in Indonesia is under oversight of two ministries, Ministry of National Education (now Ministry of Education and Culture/MOEC) and Ministry of Religious Affairs (MORA). MOEC has a responsibility to oversight the secular base education and MORA has a responsibility to monitoring education with religious affiliation. Since decentralization era, primary and secondary education under MOEC oversight are managed by the local governments, while the primary and secondary education under MORA are still centralized and administered by MORA. Tertiary education is still centralized under two ministries MORA and MOEC.

There are two key players in education provision, state and private sectors. State and private institutions run both secular and religion affiliation education. The state has a dominant role in elementary schools provision, OECD reports that the number of state/public elementary schools is about 80 percent of total elementary schools (2009/2010 period). The private sector has a dominant role in secondary and tertiary education provision. In junior secondary level, private sectors start to dominate by possessing about 57 percent of total junior secondary schools (2009/2010 period). (OECD/Asian Development Bank 2015:103). In senior secondary levels, according to PODES 2011, about 68 percent of senior secondary schools are private institutions.

The government of Indonesia concerns about the citizen right in obtaining the education. In1994, the government launched a-nine years compulsory basic education that covers elementary and junior high school level. The compulsory education is restated in Law no 20/2003 article 6 paragraph 1 “Every citizen aged seven to fifteen years must attend basic education.” The government highly subsidizes the compulsory education level, one of them through “school operational assistance” (BOS) which is launched in 2005 to prevent students from low-income family from drop-out by abolishing their school fees. (Sulistyaningrum, 2016). Before that government also established social safety net (JPS) to reduce the effect of 1998 crises with almost the same mission with BOS. (Sparrow, 2007).

Based on PODES data, Indonesia is still experiencing an uneven distribution of schools. In Java, we can find SMA in almost every sub-district, but outside Java island, it might be different. In total there were around 20.27 percent sub-districts that do not have senior high school in 2002, in 2011 the number was decreasing became around 14.09 percent. Thus, children in the area with no senior high school must go farther just to gain access to education.

That may be a barrier for the children in that area to continue their education.

3.2.1 Secondary Education

Secondary education in Indonesia as in other countries consists of two levels junior and senior secondary levels with the length of study is three years at every level. In terms of policy arrangement, secondary education based on Law number 20/2013 is only senior high school. The government classifies junior high school as part of primary education. Since 1994, junior secondary school and elementary school is included into government program of a-nine years compulsory education.

Different from junior secondary and elementary schools, senior secondary level is not subsidized as much as junior secondary school and elementary school. In this level of education parents contribute higher share of the education cost than in the lower level, moreover when parents send their children to private school. As a result, the participation rate of children from low-income family is very low compared to their participation rate in primary education or to the participation rate of children from higher income family (The World Bank 2013a).

Other than in the cost-sharing, the senior secondary level also differs from the lower education in terms of the education track. In the lower level, education is only single track, in this level, there are dual tracks: general (academic) and vocational track. General and vocational tracks differ in term curriculum. General education highly focuses on academic to prepare the students enter the tertiary level of education, while vocational focuses on training of specific skills to prepare the students enter labour market. General senior secondary schools usually offer three primary majors: natural science, social science, and language. Vocational senior secondary school offers very extensive skills such as business management, agriculture and forestry, tourism; technical; health care; aviation; and art. Vocational and general senior secondary education only share a small portion of the curriculum such as Citizenship, English and Bahasa Indonesia. (Ministry of Education, 2013).

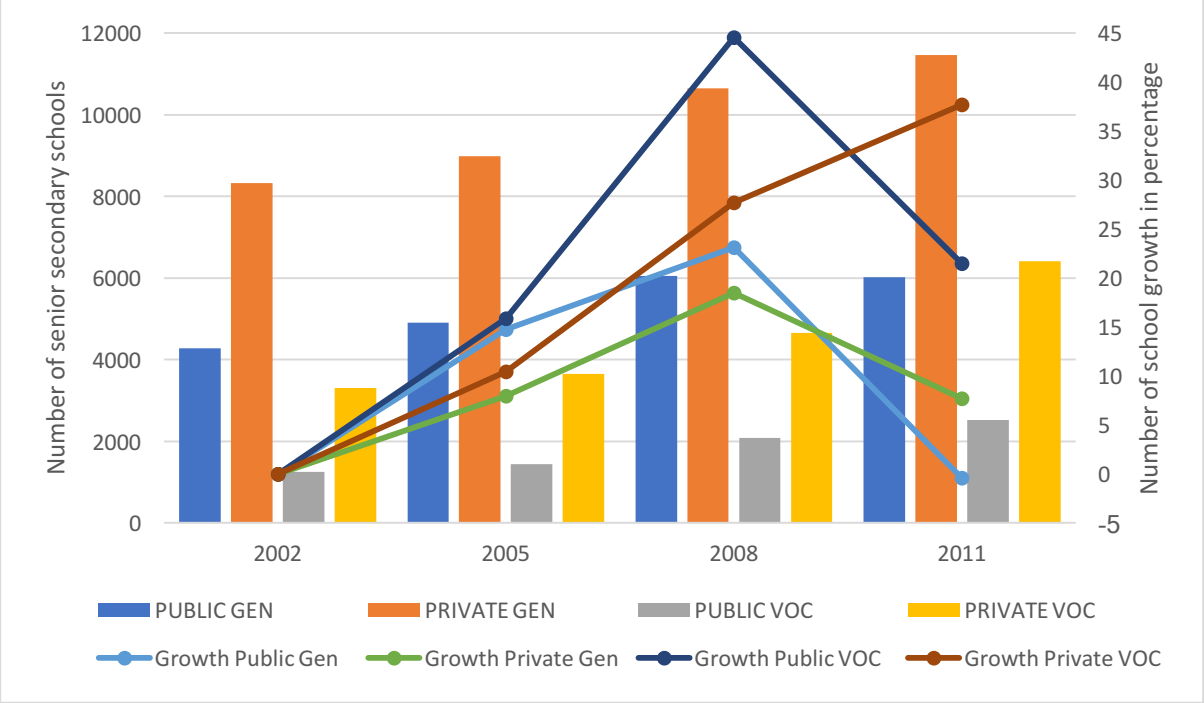
Every student in primary and secondary level need to sit in a national final exam. The government sets a certain score threshold to decide whether a student pass or fail. This final exam score is not only used to determine the student's passing, but also used as the instrument for higher secondary education to select the candidate of the new student. Higher final exam scores a greater chance to be accepted in high quality school. In many cases, general public secondary schools requires the candidate to have higher final exam score than vocational public or private schools.

General secondary schools are still dominant in Indonesian education. According to

BPS in 2011, the number of senior secondary school is 26,408, and only 8,930 schools are vocational senior secondary schools and the remaining are general senior secondary schools. Private institutions still dominant in school provision from the total of 26,408 schools, private institutions own 17,860 schools. From the number of schools, vocational secondary school shows gradual expansion. The total of vocational senior secondary schools in 2011 is 97 percent higher than their number in 2002, while for the total of senior secondary schools in 2011 are 54 percent greater than their number in 2002. (PODES, 2011).

Figure 1 Trend in the number of senior secondary schools by types and operators, shows that the vocational public and private schools' growth sit in the first and second position in the period 2008 and 2011. From the graph we also can see, though from the number general public secondary school is still much higher than vocational public secondary school, but during 2008-2011 the number of general public school shows stagnant figure, while vocational public secondary schools show an increase in the number of school units. From that figure, we can see the government's commitment to expanding vocational secondary education.

Figure 1 Trend in the number of senior secondary schools by types and operators, 2002-2011



Source: Author calculation PODES 2002, 2005, 2008, 2011 (BPS)

The government has a strong commitment to reduce inequality in access to education by building school infrastructure. Evidence from the PODES (Potensi Desa), a survey of community facility that conducted by BPS every three years, from year to year we found that although the number of districts is increasing, the number of districts that do not have access

to senior secondary school is decreasing. In 2002, Indonesia has 367 districts and six districts did not have access to senior high schools or 1.36 percent of districts. In 2011, the number of districts became 487 but only two (0.41%) districts that did not have access to senior high school.

The government also shows a strong commitment to vocational expansion. It can be seen from the decreasing percentage of districts without vocational school access. In 2002 the proportion of districts with no vocational schools was about 4.63 percent or 17 out of 367 districts did not have vocational high schools. In 2011, 12 districts out of 487 districts did not have vocational high school or became 2.46 percent. The number vocational senior public school also increased from 1242 vocational high schools in 2002 become 2526 vocational high school in 2011 or increase by 103 percent in 8 years. But the sharing vocational public school to entire vocational public school only increase by 1 percent from 27 percent in 2002 become 28 percent in 2011. It means that private schools grow as fast as public schools, so the percentage remains the same.

Table 1 Areas lack of senior high school facilities, 2002-2011

LEVEL	YEAR	NUMBER OF DISTRICT/SUB-DISTRICT			
		TOTAL	WITHOUT VOCATIONAL HIGH SCHOOL	WITHOUT PUBLIC HIGH SCHOOL	WITHOUT HIGH SCHOOL
DISTRICT	2002	367	17	6	5
	2005	438	23	4	3
	2008	465	10	0	0
	2011	487	12	2	2
SUB DISTRICT	2002	4656	2953	1934	944
	2005	5255	3157	1843	927
	2008	6425	3573	1965	1083
	2011	6637	3041	1735	935

Source: Author calculation PODES 2002, 2005, 2008, 2011

The table below is the comparison ASEAN secondary school gross enrolment rate for the year 2000 to 2015. Indonesian secondary enrolment rate shows a consistent increasing trend. In 2005, the gross enrolment rate was only 60.13 percent; this achievement is lower than Brunei, Malaysia, Philippines and Thailand performance. Ten years later in 2015, Indonesia secondary gross enrolment rate is already in 85.84 percent or increase 25 percent from 2005. This achievement places Indonesia secondary gross enrolment higher than Malaysia, but still below the Thailand and Brunei achievement.

Table 2 ASEAN Countries Secondary Education GER, 2000-2015

Country Name	**2000**	**2005**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Brunei	86.22	97.64	99.24	101.08	105.71	104.35	99.12	96.08
Indonesia	**55.10**	**60.13**	**76.54**	**79.21**	**80.41**	**82.49**	**82.47**	**85.84**
Cambodia	17.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lao PDR	34.21	43.59	46.12	44.90	47.83	51.74	57.24	61.70
Myanmar	36.30	44.31	48.14	N/A	N/A	N/A	51.30	N/A
Malaysia	66.16	68.72	66.88	66.51	69.61	69.74	77.75	77.57
Philippines	N/A	82.85	N/A	N/A	N/A	88.39	N/A	N/A
Thailand	N/A	71.56	83.62	87.44	87.12	86.21	127.73	129.00
Timor-Leste	N/A	53.55	67.46	70.64	71.82	70.78	73.07	76.76
Vietnam	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: World Bank country education indicators (no data for Singapore) and ASEAN (2015)

3.2.2 Tertiary Education in Indonesia

Indonesia classifies tertiary education institution into university, institute, college, academy, and polytechnic. The university consists of various knowledge disciplines and faculties. The Institute has many faculties, but only in one area of science, for example, Bandung Technology Institute has specialization in engineering, Bogor Agricultural Institute specializes in agriculture. College, Academy, polytechnic offer diploma degree or applied bachelor degree.

Regarding admissions, state universities and institutes usually perform three entrance channels: non-test channel, national written test, and local selection test. The non-test channel is based on the candidate's academic and non-academic record during high school. This selection not only assesses the candidate's academic performance, but also considers the quality of senior high school where the candidates studied. Since 2014 the non-test path is called SNMPTN (National Selection of State University Entrance).

The second channel is a national written test in, since 2015 it is called SBMPTN (Seleksi Bersama Masuk Perguruan Tinggi Negeri). In this method, all candidates need to sit in the national written exam to compete for a limited seat in the state universities/institutes. The candidates need to choose one over three majors: natural science, social and humanities, and mix. The natural science major is for prospective students who want to study in the faculty of natural science. The social major is for those who want to study in faculty social and humanities. While the mix for those who want to try both types of faculty. The subject tested on the written exam depends on the major. Attending vocational high school gives disadvantages for the students at this national written exam because some subjects tested in the

exam are only taught for academic high school students. Some subjects in the written exam are not taught in vocational high school because they are substituted with the special working skills.

Some universities also conduct university written test (Seleksi Mandiri) for prospective candidates who failed the national written exam. This kind of written written examination is conducted by the university after the national examination. College, Academy and polytechnic usually organize their selection because they have different requirement from the state universities and institutes.

Private tertiary education institution becomes the last resort for those who failed in the public tertiary education selections. Private tertiary education institutions have important role in Indonesia, they can fulfill the gap between supply and demand in higher education level. According to Direktorat Agama dan Pendidikan Bappenas (2010) in 2007 about 96 percent of tertiary education is private institution and about 68 percent of tertiary education student is enrolled in the private tertiary education institution. The budget of private university is tuition driven, usually the private university charge higher tuition fee than the public university.

Some public universities also act as private tertiary education by conducting non-regular program. The non-regular program is not subsidized by the government as much as the regular program, therefore the students need to pay higher tuition fee than those who in regular program. The non-regular program is provided for those who failed in the regular selection but still want to study in the state universitis. In Indonesia state university is still presumed to have better quality than the private tertiary education.

Ogawaa & Iimuraa (2010:7) state "To be admitted to public universities, students must score high marks on an entrance examination, which often requires prior access to a quality high school, or the ability to pay for extra tuition." This statement is very relevance with the Indonesia condition, for those who want to pursue tertiary education they need to have at least one of two qualities, the first is the academic competences and the second is ability to pay .

In terms of tertiary education enrolment rate, Indonesia also shows the advancement. In 2005, tertiary education enrolment rate in is only 17.26 percent and in 2014 become 31.10 percent or increase by 80 percent in nine years. In 2005, Indonesian tertiary education enrolment rate was lower than Malaysia, Thailand, Philippines. In 2014, Indonesian tertiary education enrolment rate is higher than Malaysia, but still lower than Philippines and Thailand and in the same level as Brunei and Vietnam. Thailand tertiary education enrolment rate is still the highest in ASEAN (no data for Singapore), in 2002 the tertiary enrolment rate is 34.89

percent and in 2014 is 52.51 percent.

World Bank reports tertiary education enrolment rate in all ASEAN countries for year 2015 is decreasing compared to 2014. Indonesia's tertiary education gross enrolment rate experienced dramatic drop by 7 percent, back to its position in 2010. Indonesia's tertiary education gross enrolment rate is higher than Malaysia and Vietnam, but in 2015 is lower than both countries and still lower than Thailand and Brunei, there is no data about Philippines in 2015.

Table 3 ASEAN Countries Tertiary Education GER, 2005-2015

	2000	**2005**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Brunei Darussalam	12.69	14.83	15.65	17.63	22.55	24.29	31.73	30.84
Indonesia	**14.88**	**17.26**	**24.20**	**26.50**	**30.66**	**31.29**	**31.10**	**24.25**
Cambodia	2.47	3.38	14.06	15.90	N/A	N/A	N/A	13.09
Lao PDR	2.69	7.82	16.36	17.41	17.08	18.14	17.29	16.91
Myanmar	N/A	N/A	N/A	14.18	13.53	N/A	N/A	N/A
Malaysia	25.74	27.92	37.13	35.40	35.87	36.40	27.60	26.07
Philippines	N/A	27.51	29.75	30.92	31.30	33.61	35.75	N/A
Thailand	34.89	44.22	50.20	52.75	51.57	51.38	52.51	48.86
Vietnam	9.41	16.05	22.69	24.80	25.02	25.01	30.48	28.84

Source: World Bank country education indicators (no data for Singapore) and ASEAN (2015)

Chapter 4 Methodological Framework

In this chapter, firstly we will discuss the data, methods, and models that will be used to analyse the students' senior secondary preferences and their continuation to the tertiary education. The data used in this research is individual level.

4.1 Methodology

In this research, I will propose two main models, the first model is related to the people choice after graduating from junior high school and the second model is related to the people choice after graduating from senior high school.

4.1.1 Senior Secondary School Choice

The first model is multinomial logit. This model is developed from the combination model which are used by Newhouse & Suryadarma (2011) and Chen (2009). Newhouse and Suryadarma use multinomial logit to examine the senior secondary school choice. Newhouse and Suryadarma include non-senior secondary, general public, vocational public, private general and private vocational as school choice, while Chen only divides into vocational and general senior secondary school, so Chen uses probit model. In term of explanatory variables, Newhouse and Suryadarma only consider parent education for family characteristics variables, while Chen also consider family income. In term of personal characteristics Chen chooses earlier score, while Newhouse and Suryadarma choose repeated grade in a junior secondary to measure personal ability. The distribution of senior secondary schools in Indonesia is not even, some sub-districts have all the school types, but other sub-districts only have one type of senior secondary school. Children in the sub-district that only have one type of senior secondary school or even no senior secondary school, only have limited alternatives in term of education choice. Therefore, in this model, we combine Chen's model and Newhouse and Suryadarma's model, and add school availability as control variables. The specification of the model used in this research as follow:

$$Education\ Choice = \alpha_0 + \alpha_1 Female + \alpha_2 JHS\ Score + \alpha_3 Age + \alpha_4 Father\ Education + \alpha_5 Mother\ Education + \alpha_6 LnHousehold\ Income + \alpha_7 Rural + \alpha_8 Proportion\ of\ Vocational\ School + \alpha_9 Proportion\ of\ Private\ School + \mu \dots\dots\dots\dots (1)$$

4.1.2 The likelihood to continue to university

The second model tries to capture the choice of student after finishing their senior secondary school, this model tries to compare the choice between vocational and general senior secondary school attendances. This model is adapted from the model used by Chen (2009). The specification of the model is as follow:

$$College = \beta_0 + \beta_1 Female + \beta_2 SHS\ Score + \beta_3 JHS\ Score + \beta_4 Age + \beta_5 Vocational\ SHS + \beta_6 MA + \beta_7 Father\ Education + \beta_8 Mother\ Education + \beta_9 LnHHIncome + \beta_{10} Rural + \varepsilon \ldots..(2)$$

4.2 Data description and sources

This research utilises two main data sources, Indonesia Family Life Survey (IFLS) and Potensi Desa (PODES/Village Potential Survey). IFLS is a survey conducted every seven years in Indonesia by RAND organisation. IFLS is a longitudinal survey with respondent base on the household. The surveyors will survey the same household for every wave. The information in IFLS is divided into two categories: the first information is related to household and the second information is related to community and facility where the household live. IFLS is conducted in 13 provinces in Indonesia. Five provinces in Java island, four provinces in Sumatera island, and several provinces that are not located in both island, they are Bali Province, West Nusa Tenggara Province, South Sulawesi Province, and South Kalimantan Province. IFLS do not cover two main islands in Indonesia, Papua islands and Maluku islands. PODES is a survey conducted every three years to collect the information about the facilities in almost (all) villages in Indonesia.

The data used in this research is the data related to children who graduated from junior high school in period 2002 to 2010, it will include the data about the individual characteristics and ability, the data about household characteristics that will be taken from IFLS 2007 and 2014, and the data about the education facility in location where children live will be taken from PODES 2002, 2005, and 2008. The number of sample is 2,403 pupils who graduated from Junior High School in period 2002 to 2010. The sample are children who sit in junior high school national exam in period 2002 to 2010 and we got 3,857 pupils. Then we select only children who reported their junior high school final exam score and we got 2,854 pupils. In our estimation, we need the family income as explanation variables, and we got 2,403 samples. Base on pupils' residence we divided sample into three regions, Sumatera island, Java island, and another island. The distribution of sample base on their regions are 519 (21.60 percent) pupils lived in Sumatera, 1,338 (55.68 percent) lived in Java, and 546 (22.72 percent) lived in other islands. In term of educational choice, we divided into children who did not continue to

senior high school and children who continue to senior high school. Then base on the school types, we divided them into general senior high school (General SHS/SMA), vocational senior high school (SMK) and Islamic senior high school (MA), and also children who do not continue to senior high school their education choice become Junior High School (JHS/SMP). Further, we also divided into public and private high schools. Base on the education choice the share is 979 (40.74 percent) pupils attended General SHS, 752 (31.29 percent) attended Vocational SHS, 227 (9.45) attended MA, and 445 (18.52) not enrolled in senior high school (JHS). Newhouse and Suryadarma (2011) excluded students who attended senior high school with Islamic curriculum because of the small share, in this paper we still include them even though only 10 percent student who attend the Islamic senior high schools.

4.2.1 Dependent variables

Education Choice

This variable is stand for the choice after children graduated from junior high school. Education choice in this research paper will include senior secondary school types for those who continue to senior secondary and non-secondary school for those who did not continue to senior secondary. The senior secondary types using classification that is proposed by Newhouse and Suryadarma (2011) and we include MA (Islamic senior secondary school) as the choice. Thus, the education choice will be: *general public high school, private general high school, vocational public high school, private vocational high school, public MA, private MA and non-secondary.*

College

College is a dummy variable to stand for the choice after graduating from senior secondary. It only includes two main choices, goes to college or not. The dummy will have value 1 when the individual attend tertiary education and value 0 as the opposite.

4.2.2 Independent variables

Independent variables in this research will be categorized into three categories, individual characteristics, family characteristics, and residence characteristics.

4.2.2.1 Individual characteristics

Age

Age is children age when they graduated from junior high schools.

JHS Score

JHS Score is average score of the children in junior high school final exam. The score is the average score of three subjects which tested in the final exam, they are Bahasa Indonesia, English, and Mathematics. We use this variable as the measurement of individual ability because this score is very often used as measurement by senior high school to sort candidate students. Higher JHS score gives higher probability for individuals to be selected as a new student in qualified senior high schools.

SHS Score

SHS Score is average score of the children in senior high school final exam. The score is the average score of three subjects tested in the final exam, they are Bahasa Indonesia, English, and Mathematics.

Female

Female is dummy score to record children gender. It will get one if the child is a girl and zero if the child is a boy.

Vocational/MA/General

Dummy for senior secondary school types attended by student after graduating from junior high school.

4.2.2.2 Family characteristics

Father/mother years of schooling

Father/mother years of schooling becomes proxy to measure parent's education level. Some literature use level of education to measure parent's education. We use father/mother's years of schooling to give more variations, because many people not completed their education level.

Household income

Household income is used to measure the ability to pay or resources. The household income is the sum of head of household and spouse income.

4.2.2.3 Location of residence

Rural

Variable rural is a dummy for the location where children live. Dummy will value 1 when the children lived in the rural area when they were 12 years old, and will value 0 when the children lived in the urban area.

Proportion of vocational SHS

Proportion of vocational senior high school is a proxy for school availability. This variable measure the proportion of vocational school to the total senior high school in a district where the children live. This variable is a dynamic variable, base on the children district where they lived and year when they graduated from junior high schools. For example, for children who graduated from junior high school in year 2002 to 2004 we use data PODES 2002. For children who graduated from junior high school in year 2005 to 2007 we use data PODES 2005. This variable is important in student decision since the school distribution in Indonesia is not even.

Proportion of private SHS

Proportion of private senior high school is used to measure the proportion of vocational school to the total senior high school in a district. As stated before, we mainly use two data sources, IFLS and PODES. Proportion of vocational SHS and Proportion of private SHS use data from PODES.

Chapter 5 Result and Analysis

In this, chapter we will present the result of the study. First, we will present the variables descriptive analysis, then the result of regression, and later we will discuss the result at the end of this chapter.

5.1 Descriptive Analysis

This session will discuss about the stillest fact about the children education choice after they finished the junior high school level in period 2002 to 2010. The samples are divided base on the children senior high school types. They are general senior high school, vocational senior high school, Madrasah Aliyah (MA/Islamic senior high school), and junior high school for those who did not attend senior high schools.

The table below is summary statistics of the sample, and further information can be found in appendix 1 and appendix 2.

Table 4 Summary Statistics

	Gen SHS		Voc SHS		MA		JHS		Total Sample	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
JHS Score	6.91	1.17	6.78	1.15	6.60	1.23	6.39	1.17	6.74	1.19
SHS Score	7.10	1.40	7.12	1.20	6.88	1.21	-	-	7.08	1.30
AgeJHSgrad	15.40	0.83	15.52	0.91	15.48	0.93	16.05	1.66	15.57	1.09
c_female	0.55	0.50	0.49	0.50	0.55	0.50	0.62	0.49	0.54	0.50
f_yos	7.14	5.60	6.24	4.73	5.69	5.05	3.33	3.59	6.01	5.14
m_yos	7.18	5.40	5.92	4.56	4.99	4.87	3.38	3.44	5.87	4.97
HH Income *	2,137.43	5,169.55	1,460.56	1,650.13	1,074.87	1,376.85	756.58	788.89	1,569.52	3,508.07
c_rural	0.56	0.50	0.53	0.50	0.76	0.43	0.78	0.42	0.61	0.49
propvocshs	0.29	0.13	0.31	0.12	0.23	0.12	0.29	0.12	0.29	0.12
propprivshs	0.65	0.16	0.71	0.13	0.70	0.14	0.70	0.14	0.68	0.15
UANSMA	0.89	0.31	0.90	0.30	0.89	0.32	-	-	0.73	0.44
College	0.47	0.50	0.17	0.38	0.33	0.47	-	-	0.28	0.45

Note: JHSScore: JHS final exam score, Female: dummy female, AgeJHSgrad: age when graduated from JHS, College: dummy college enrolment, UANSMA: dummy sited in SHS final exam, f_yos: father years of schooling, m_yos: mother years of schooling, Rural: dummy rural, propvocshs: proportion of vocational secondary school to total senior secondary schools in a district, propprivshs: proportion of private senior secondary schools to total senior secondary schools. * in thousand rupiah

From the table above we can see that general senior high school has the highest average entrance score (JHS Score), yet vocational senior high school students able to compete with

general senior high school students and gain the highest average exit score (SHS Score).

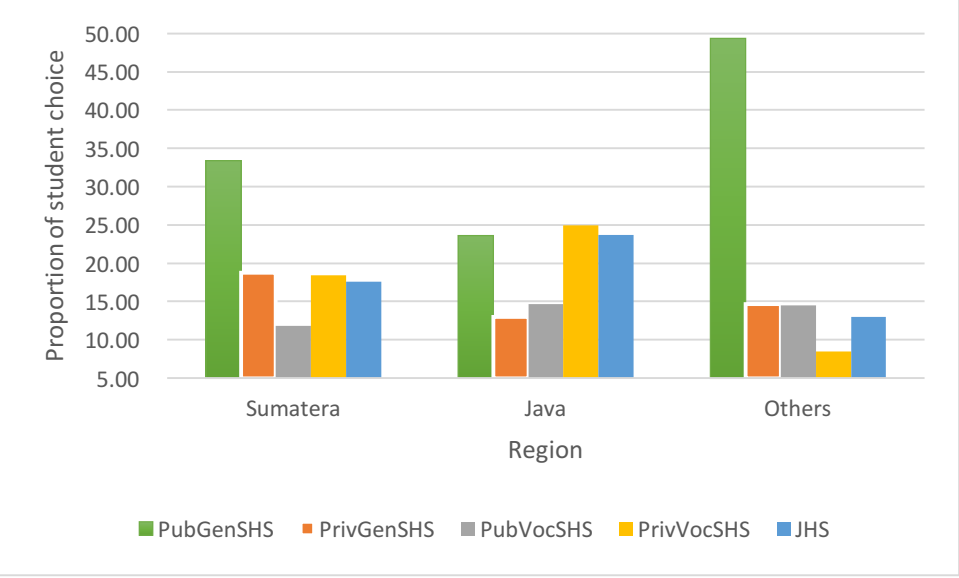
From the table above we also can see the general senior secondary school students are from the highest average household income family and the highest parent educational attainment.

In term of tertiary education entrance, the general senior high school students have the highest probability to enrol in tertiary education, about 47 percent of general senior high school graduates continue their education to tertiary education, followed by MA students with 33 percent and vocational students with only 17 percent.

5.1.1 Education choice after graduating from junior high school

Indonesia is an archipelagic country with over seventeen thousand islands, and has eight major regions they are; Sumatera, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua. Indonesia consists of 34 provinces and 508 district/regency. For simplicity, we divided them into three major regions, Sumatera and Java are two most populous islands in Indonesia, and other islands are gathered into one classification, "other regions". As we discuss in chapter forth IFLS does not cover two main island, Papua and Maluku. Therefore, other islands only include Kalimantan, Bali, Nusa Tenggara, and Sulawesi, each island is represented by one province.

Figure 2 Distribution of children education choice by region, 2002-2010



Source: IFLS 2007 and 2014 modified.

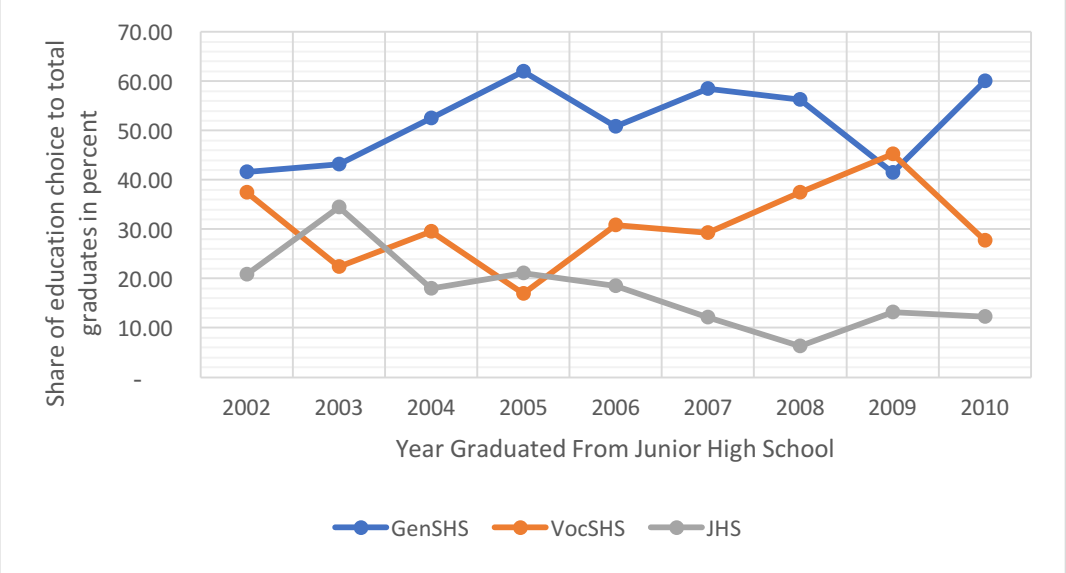
The figure above shows the percentage of the educational choice base on regions. From the chart above we can see that the people educational preferences after they graduated from

junior secondary school are very varied among the regions. The difference in the facilities availability could be the reason for the variation. General senior high school is the most popular choice in Sumatera and other regions, but not in Java. Private vocational school is the most popular choice among students in Java island about 25 percent of student choose private vocational school, 23.7 percent student in Java island did not attend senior secondary, general public school with 23.63 percent. Vocational public high school is attended by 14.65 percent student and private general senior secondary is the least popular attended by 13.03 percent students.

General public school is the most popular choice among junior high school graduates in Sumatera island. 33 percent of junior high school graduates chose general public school. General public school as the most popular choice is followed by private general high school, private vocational high school, and no-secondary education. Vocational public school is the least popular choice among junior high school graduates in Sumatera island, this option is only chosen by 11.83 percent students.

Not only in Sumatera, general public school is also the most popular choice among student in other regions. The private vocational is the most unpopular choice among students in other regions. Private general high school and vocational public high school share popularity as the educational choice among students in other regions.

Figure 3 Trend in children educational choice by year graduated from junior high school, 2002-2010



Source: IFLS 2007 and 2014 modified

The figure above illustrates the trend of education choice along the time. From the graph above we can see that the general senior high school is the most popular choice over

other educational option for student after graduating from junior high school. The proportion of children who did not continue into senior high school was decreasing from time to time. Vocational and general senior high schools show interesting pattern, vocational senior secondary acts as the inverse of general senior high school. When the general high school shows increasing trend, vocational senior high school shows the opposite trends and vice versa. From 2005 to 2009, the proportion of children who choose vocational senior secondary education shows increasing trend and then decreased in 2010. There are two intersections between vocational and general senior secondary school enrolment share, in 2002 and 2009. The proportion of children who choose both senior secondary school types were almost equal at both periods.

5.1.2 Parents' education and children's education

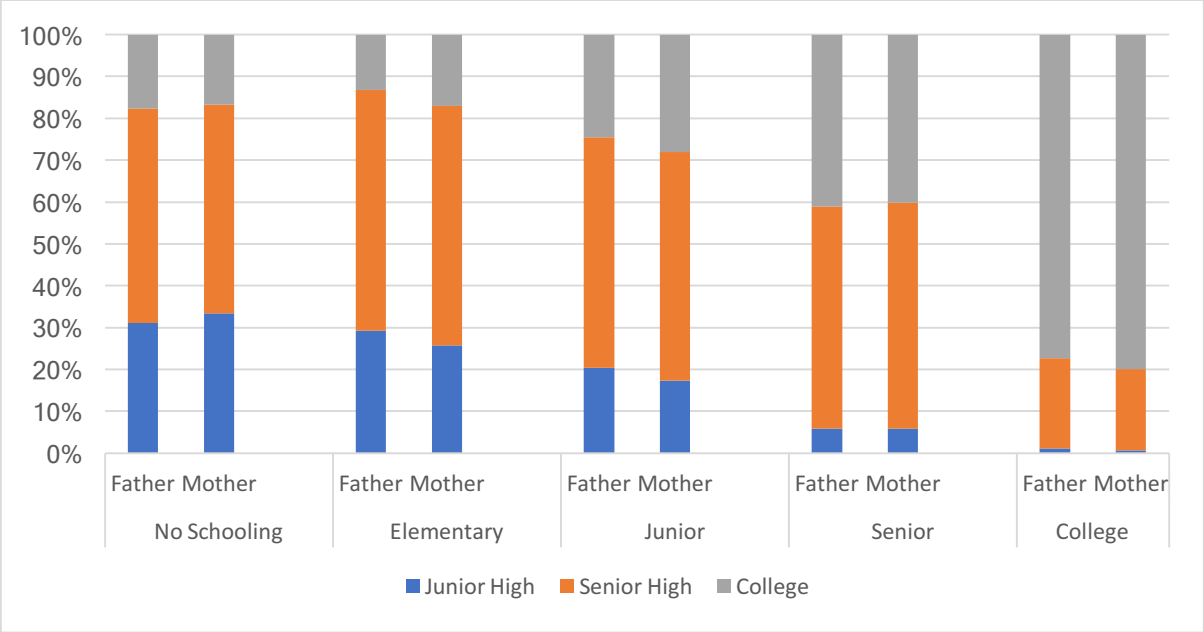
Parents' educational attainment acts as an independent variable in many studies about children educational decision. That variables always show significant impact in influencing children educational attainment is in line with some theory, such as rational act theory by Breen and Goldthorpe (1997) or with subjective expected utilities by Esser (1999). Parents' educational attainment is also used to measure social mobility and intergenerational inequality. For that reason, these variables are also used in this paper.

In this section, we will discuss the relationship between parents' educational attainment and children's educational choices using data from IFLS 2007 and 2014. We will present three figures; the first two figures (figure 4 and figure 5) show the relationship between father education and children education, and the third chart will show the relationship between mothers' education (head household spouse) and children education.

The figure 4 shows the relationship between father and mothers' level of education and their children's level of education in percent. The lowest bar is the proportion of children who only finished junior high school, the middle bar is the proportion of children who only completed their education in senior high school level, and the highest bar is the proportion of children who continue to the tertiary education. From the figure above, we can see that the children's educational attainment is increasing along with their parents' educational attainment. Higher parents' education lowers the probability of children do not continue their education after completing their junior secondary schools. About 32 percent of children from no schooling parents' end up their education with a junior secondary school level, and only about one percent of children from parents with university education degree end up their

education with junior secondary school. And higher parents' education higher probability their children register to tertiary education level. About 78 percent of children from parents with college degree enrolled in tertiary education, compared with only about 17 percent of children from no schooling fathers attended tertiary education.

Figure 4 The relationship between parents' education and children educational attainment

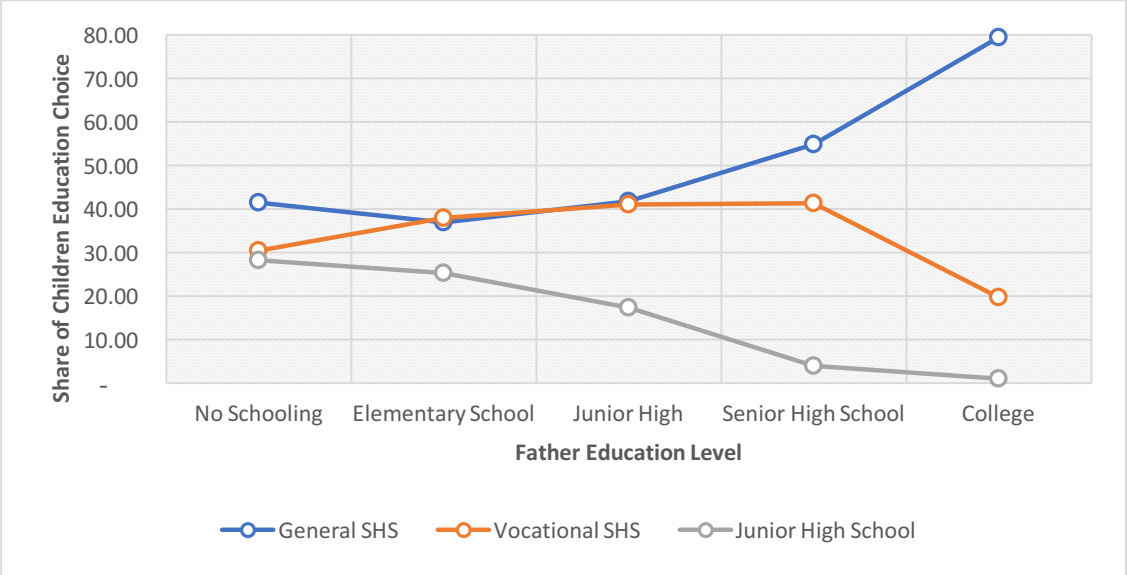


Source: IFLS 2007 and 2014 modified

The figure above can be an evidence of Breen and Goldthorpe (1997) relative risk aversion. Base on the relative risk aversion, parents maintain their children's achievement so that the children's achievement will not be lower than their achievement.

Fathers' education not only affects the children educational attainment but also the children educational choices after completing their junior high school. The figure 5 shows the relationship between fathers' level of education and children's educational choice. The chart indicate that higher father education is higher probability the children of enrolling in the senior high school, it can be seen from the proportion of children in Junior High School (JHS) level which is decreasing along with the increase in the father education level. Higher father's education is higher probability a child chooses general high school than others educational choice.

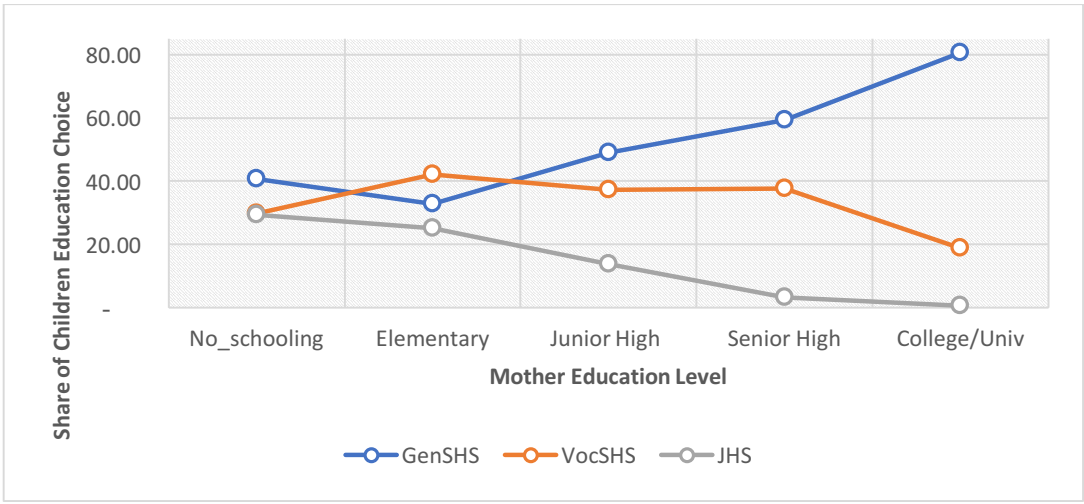
Figure 5 The children secondary education choice and fathers' educational attainment



Source: Author calculation IFLS 2007 and 2014

Fathers with college degree tend to send their children to general senior secondary school. 80 percent of children from fathers with college degree enrol in general senior high school, only 20 percent of them who enrolled in vocational high school, and less than one percent who did not continue to senior secondary school. Father with senior high school degree also tend to send their children to general senior high school, but the proportion is lower compared to a father with college degree. Children from father with junior high school degree and elementary degree have equal probability to enter vocational or general senior secondary schools.

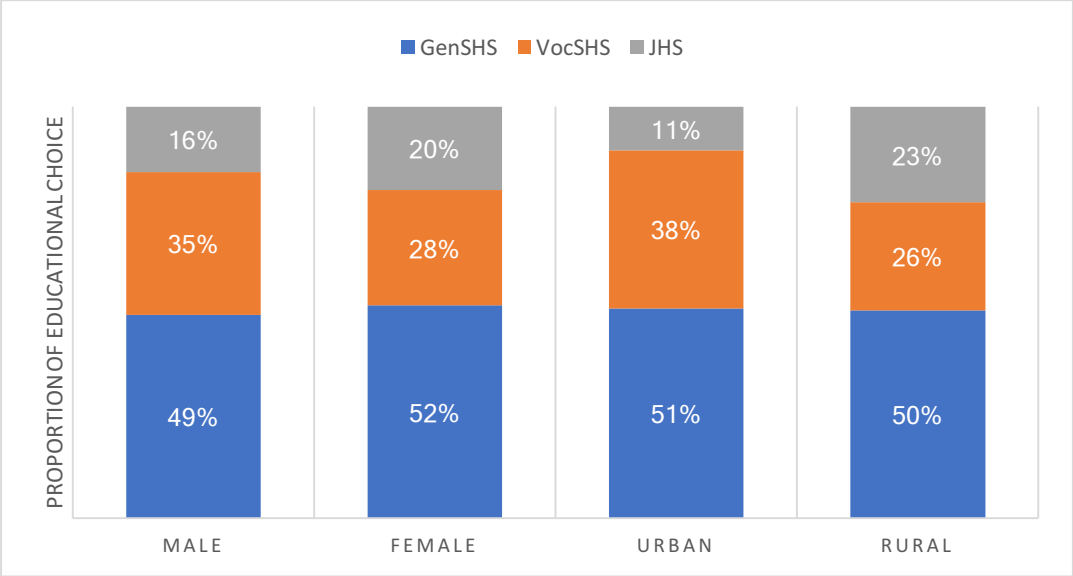
Figure 6 Children secondary educational choice and mother educational attainment



Source: Author calculation IFLS 2007 and 2014

The figure 6 above shows the relationship between children education choice and their mother education level. The relationship between mother education and children education choice shows a similar pattern with the relationship between children education choice and father education attainment. Higher mother education is greater probability her child of enrolling in senior secondary education after graduating junior secondary, it can be seen from the decreasing trend of the share of children with only junior secondary school. The vocational senior high school is less attractive choice compared to general high school for mother with all education level except for mother with elementary education. The higher the mother education level is less probability her child not continue to senior high school after finishing junior high school and higher probability a child enrol in general secondary school.

Figure 7 Children gender, community, and educational choices



Source: modified IFLS 2007 and 2014

The figure 7 above is about relationship between children educational choice and their gender and community. The chart shows that male children have bigger probability to continue their education to the senior high school than female. The percentage of female children who do not enrol in senior high school is 25 percent higher than male children. Vocational senior high school is more preferably by male than female children, and male children have 25 percent higher probability to enrol in vocational high school than female do. From the community perspective, urban children have higher chance to enrol in senior high school than rural children. The proportion of rural children who did not enrol to the senior high school is more than twice as the urban children who did not enrol in senior high school level. There is no

different probability between urban and rural children in general senior secondary enrolment. About fifty percent of children from urban and rural enrol to general high school. Yet, in term probability to enrol in vocational high school, urban children have 37 percent higher probability to enrol in vocational senior high school than rural children do.

5.1.3 Education choice after graduating senior high school

The table below is the comparison in tertiary education enrolment base on three characteristics; the location where they live, the senior secondary types, and gender.

Table 5 The residence, senior high school types, gender, and tertiary education enrolment

		Tertiary Education Enrolment	
		Not Enrol	Enrol
Residence	Rural	65.21%	34.79%
	Urban	76.57%	23.43%
Senior High School Type	General	52.60%	47.40%
	Vocational	82.74%	17.26%
	MA	67.40%	32.60%
Gender	Male	74.68%	25.32%
	Female	69.98%	30.02%

Source: author calculation from IFLS 2007 and 2014.

The data in the table above might result differently with the regression because we did not filter the observations base on their final examination. While in the regression we filter the data using the final exam score that guarantee every sample in the regression is a child who already graduated from senior high school. While in the table above, we still include children who dropped out during senior high school. From three characteristics above we can see the enrolment base on senior high school is very varied. Children who attended general high school have higher probability to continue to tertiary education compare to children who attended MA or vocational high schools. From the table, we can see that 47.40 percent of children who attended general high school continue to tertiary education, followed by MA students by 32.60 percent, and vocational student by 17.26 percent. General high school graduates have 175 percent higher probability than vocational high school graduates to continue to tertiary education. Compare to MA, general high school graduates have 45 percent higher probability

than MA graduates in tertiary education enrolment. While MA graduates have 89 percent bigger chance to enrol in tertiary education than vocational graduates.

From the table, we can see an indication of gender disparity in the university enrolment. Female children have 18 percent higher probability to enrol in tertiary education compared to male children. From the community aspects, we can see that urban children have a 48 percent higher probability to enrol in tertiary education than their peer from rural area.

5.2 Regression

5.2.1 Preferences Junior High School Graduates

In this session, we will discuss the regression result of children's educational decision after graduating from junior high school. The children can choose to continue their education to senior high school or enough with junior high school. For those who continue to senior high school, they also need to decide in what type of school they will enrol. The type of schools can be divided into: general senior high school, vocational senior high school, and for Muslim children, they also can choose Madrasah Aliyah (MA/religious school), thus we have four choices. When we consider public and private senior secondary school as the different type of school, the number of choices becomes seven.

We use a multinomial logit model to accommodate all possible outcomes. We also consider multinomial probit model as an alternative model. Stata refuses multinomial probilt as a suitable model to examine our model by showing unfinished iteration. Base on the STATA result, we decided to use multinomial logit model as our regression model.

We divide the multinomial logit model into two regressions for the simplicity in interpretation. First, we regress the four choices and after that, we regress the full outcome variations, seven options. The first regression in Table 5 is the marginal effect of multinomial logit model with the senior high school types without considering public or private institutions as different choice. While the second regression, we consider public and privates institutions as different school choices in table 6. The result of the first regression can be seen in Table 5 below.

Table 6 The likelihood of senior secondary choice (1)

	Multinomial Logit Marginal Effect			
	General SHS	Vocational SHS	MA	No Senior Secondary
Personal Characteristics		(1)		
JHSScore	2.66	-0.57	-0.37	-1.72
	(2.68)**	(0.64)	(0.7)	(2.72)**

	Multinomial Logit Marginal Effect			
	General SHS	Vocational SHS	MA	No Senior Secondary
Age When Graduated JHS	-3.33	0.49	-0.91	3.76
	(3.63)**	(0.45)	(0.98)	(3.46)**
Female (dummy)	2.82	-7.45	-0.05	4.68
	(1.24)	(4.37)**	(0.04)	(2.05)*
Family Characteristics				
Father years of schooling	0.83	0.05	0.15	-1.04
	(3.59)**	(0.29)	(1.05)	(7.24)**
Mother years of schooling	1.95	-0.29	-0.25	-1.40
	(5.4)**	(1.15)	(1.54)	(5.28)**
Ln Household Income	3.36	1.45	-1.16	-3.66
	(4.4)**	(1.32)	(2.18)*	(5.03)**
Residence Characteristics				
Rural (dummy)	-3.90	-8.04	5.56	6.39
	(1.33)	(2.05)*	(3.67)**	(3.15)**
Proportion of Vocational High School in district	-22.50	50.01	-37.91	10.41
	(1.38)	(2.62)**	(-3.58)**	(0.96)
Proportion of Private High School in district	-68.48	38.60	11.84	18.03
	(5.3)**	(2.75)**	(2.74)**	(2.38)*
Base Probability	43.34	34.73	8.74	13.19
Number of Obs	2403			
Pseudo R2	0.11			

Notes: * 5% significance; ** 1% significance; the marginal effects are in percent, t-statistics in parentheses, the result is robust from heteroscedasticity, clustered base on province

The table above shows the result of multinomial logit model with dependent variables are senior high school types and without considering the difference between public and private senior secondary school institutions. The independent variables are categorized into three characteristics; individual characteristics, family characteristics, and residential characteristics. To get robust estimation, the regression is clustered base on the provincial level to avoid heteroscedasticity effect.

From the regression, we found that junior high school exam score and age when graduated from junior high school have a significant effect on the probability selecting general high school or does not enrol in senior high school. Increase one point junior high school score from the mean will increase the probability attending general high school by 2.66 percent and

decrease the likelihood to not enrol in senior high school by 1.72 percent. Increasing one year of children age will decrease the probability enrol to general senior high school by 3.33 percent but increase the probability of drop out by 3.76 percent. Gender is still used as consideration when children choose between general high school and vocational high school, a female child has significant lower probability to attend vocational high school than a male child by 7.45 percent, and female children have higher probability to not enrol in senior high school by 4.68 percent. All individual characteristics variables have influence in consideration for children in deciding to enrol or not enrol in senior high schools.

Parent education have positive and significant effect in the probability selecting general senior high school and have negative and significant effect in the probability to not enrol in senior high school. The probability a child enrol in general high school is increasing by 0.83 percent and the probability a child not enrol in senior high school is decreasing by 1.04 percent when his/her father year of schooling one year higher than the average fathers' year of schooling. The mother education effect in the children decision is bigger than father effect, it can be seen from the marginal effect magnitude.

Household income has positive and significant impact in the children probability in selecting general senior high school, yet has negative and significant impact in the children selecting MA and not attending senior high school. Increasing 1 percent of income from the mean will increase the probability a child enrols in general senior high school by 1.95 percent and decrease the probability a child enrols in MA by 1.16 percent and decrease the probability a child not enrol in senior high school by 3.66 percent.

Rural children have 8.04 percent lower probability to enrol in vocational, have 5.56 percent higher probability to enrol in MA, and have 6.39 percent higher probability to not enrol in senior high school compare to the urban children. The vocational education availability also increases the probability a child to enrol in vocational high school but decrease the probability a child to enrol in MA. The vocational education availability does not significantly affect the probability of a child to enrol in general senior high school. The proportion of private school compare to public school has significant effect in all educational choice, it has significant and negative effect in general senior high school choice, but has positive and significant in other choices.

The table 6 shows the result of multinomial logit model with dependent variables are senior high school types and considering the different between public and private senior

secondary school institutions. The independent variables are categorised into three characteristics, individual characteristics, family characteristics, and residential characteristics.

Table 7 The likelihood of senior secondary choice (2)

	Multinomial Logit Marginal Effect						
	General public SHS	Private General SHS	Vocational public SHS	Private Vocational SHS	Public MA	Private MA	No Senior Secondary
Personal Characteristics				(2)			
JHSScore	4.99	-2.20	3.46	-3.84	-0.49	0.03	-1.95
	(4.55)**	(3.36)**	(3.9)**	(3.29)**	(1.39)	(0.09)	(2.53)**
Age When Graduated JHS	-2.99	-0.46	-0.29	0.67	-0.81	-0.14	4.00
	(3.12)**	(0.45)	(0.38)	(0.86)	(1.71)	(0.3)	(3.55)**
Female (dummy)	5.30	-2.60	-2.56	-4.90	-0.21	0.09	4.87
	(2.07)*	(1.2)	(1.89)	(3.66)**	(0.29)	(0.09)	(2.06)*
Family Characteristics							
Father years of schooling	0.68	0.19	0.04	0.03	0.28	-0.13	-1.10
	(2.82)**	(1.82)	(0.34)	(0.13)	(3.68)**	(-1.06)	(7.6)**
Mother years of schooling	1.19	0.80	-0.15	-0.12	-0.06	-0.19	-1.47
	(5.88)**	(3.79)**	(1.23)	(0.65)	(0.82)	(1.64)	(5.47)**
Ln Household Income	2.47	1.01	0.31	1.13	-0.43	-0.69	-3.79
	(2.2)**	(0.94)	(0.34)	(1.32)	(1.02)	(2.04)*	(5.06)**
Residence Characteristics							
Rural (dummy)	-1.69	-2.37	-1.26	-6.61	0.80	4.40	6.74
	(0.71)	(0.82)	(0.96)	(1.96)	(0.74)	(3.15)**	(3.24)**
Proportion of Vocational High School in district	-19.69	-4.11	15.61	33.98	-11.03	-24.93	10.18
	(1.16)	(0.52)	(2.06)*	(2.21)*	(2.52)**	(3.02)**	(0.89)
Proportion of Private High School in district	-81.93	11.09	-18.37	59.65	-3.89	14.26	19.18
	(7.79)**	(0.98)	(1.92)	(5.03)**	(1.18)	(4.72)**	(2.28)*
Base Probability	28.33	15.35	14.99	19.03	3.29	5.11	13.89
Observations	2,403						
Pseudo R-square	0.11						

Notes: * 5% significance; ** 1% significance; the marginal effects are in percent, t-statistics in parentheses, the result is robust from heteroscedasticity, clustered base on province

From the regression, we found that two individual characteristics, individual's ability, and gender affected the school type decision. Individual's age only affects the decision between attending general high school or not. Junior high school score has positive and significant impact in the probability children attending general public and vocational public high school,

but has negative effect in the probability children attending private general and private vocational high school. Junior high school score also has negative and significant effect in the probability children not attending senior high school, yet junior high school score does not have significant effect in the probability attending MA. Increasing 1 point junior high school average score increases 4.99 percent and 3.46 percent probability the children attending general public high school and vocational public high school respectively. However, increasing 1 point in junior high school average score decrease the probability children attending private general high school, private vocational high school or not attending senior high school by 2.20 percent, 3.84 percent, and 1.95 percent respectively.

There is significant different in selecting vocational or general high school between male and female children. Female children more likely to choose general public high school than other choice. But there is no significant different probability between male and female in probability attending public or private MA.

Family characteristics affect the children educational choice after they graduated from junior high schools. Father's education significantly affects the children choice between general and vocational senior high schools. Fathers with higher education more likely send their children to more academic public senior secondary education path than to vocational senior secondary education path. Father education has positive and significant effect in general public high school and public MA. Increasing one year father year of schooling increase the probability of children enrol in general public high school by 0.68 percent, and increase the probability of children enrol in public MA by 0.28 percent, decrease the probability the children not enrol in senior high school by 1.1 percent. Meanwhile, mother education has positive and significant effect in the probability of children attending public or private general high school.

Vocational school availability has significant impact in increasing the probability children to choose vocational senior high school over other options. It also applies to the private school availability, higher the proportion of private school in a district increase the probability children in that district to choose private school over public schools.

5.2.2 The likelihood to enrol in tertiary education

After graduating the senior high school level, children can directly join the work force by entering labour market or continue their education to the university level. The following regression is used to examines the children decision after graduating from senior secondary schools. In this regression, we use two methods, probit and logit model.

According to the estimation in table 7, we can see that two methods, probit and logit, do not show a different result in term of statistical significance, sign, and pseudo R-square. In term of variables significance, we found that seven out of ten variables show significant result. Only MA dummy, rural dummy and constant do not show significance result. Four out of eight coefficient shows statistically significance.

All individual characteristics variables have a significant effect in the college entry decision except Junior high school score. Junior high school score is used to measure the initial student ability. Senior secondary score as proxy of individual's ability has positive and significant effect to the college entry decision. Increase senior high school score by one point increase the probability a child attends tertiary education by 3.33 percent in probit and 3.53 in logit model. While, age shows the opposite sign. It means that older children have lower probability to continue their education to tertiary education. With the same characteristics, female children have higher probability to enrol in tertiary education than their male peers about 6 percent. The statistics show significant at 5% in logit model but do not show significance in probit estimation.

Table 8 The likelihood in college entrance

	Probit: College entry	Logit: College entry
Personal Characteristics	(3)	(4)
SHS Score	3.33	3.53
	(2.99)**	(2.91)**
JHS Score	2.02	2.01
	(1.28)	(1.23)
Age When Graduated JHS	-4.62	-4.97
	(2.41)**	(2.35)*
Female (dummy)	6.19	6.59
	(1.91)	(1.98)*
Senior secondary types		
Vocational SHS (dummy)	-27.60	-27.80
	(12.45)**	(12.46)**
MA (Islamic School) (dummy)	-1.23	-1.42
	(0.2)	(0.23)
Parent Characteristics		
Father years of schooling	1.70	1.72
	(9.6)**	(9.08)**
Mother years of schooling	1.68	1.69
	(3.67)**	(3.69)**
Ln Household Income	5.18	5.32

	(5.18)**	(5.49)**
Rural	-1.67	-1.76
	(0.53)	(0.53)
Base probability	32.27	31.18
Observations	1,564	1,564
Pseudo R-Square	0.194	0.196

Notes: * 5% significance; ** 1% significance; the marginal effects are in percent, t-statistics in parentheses, the result is robust from heteroscedasticity, clustered base on province

Senior secondary types have effect in the college entry decision. General senior high school graduates have significantly higher probability to enrol in university than the vocational senior high school graduates. But there is no significant difference in probability to enrol in tertiary education between MA graduates and general secondary school graduates. From three types of senior secondary education, we can see that vocational secondary graduates have the lowest probability to enrol in tertiary education, and general secondary graduates have the highest probability to enrol in tertiary education. Attending vocational senior high school will decrease the probability a child enrols tertiary education about 28 percent compare to attending general high school.

Family characteristics also have an effect in tertiary enrolment decision. Parent education and family income have a positive and significant effect to the probability a child enrol in tertiary education. Increasing father/mother's year of schooling by one year will increase the probability a child enrols in tertiary education about 1.7 percent. Household income also has positive and significant effect in the decision of children tertiary education enrolment. Increasing the family income by one percent will increase the probability a child enrols in tertiary education by 5 percent. There is no significant different between urban and rural children in tertiary education enrolment.

5.3 Analysis

5.3.1 Senior high school enrolment

According to our prediction, parent educational attainment has significant effect in children senior secondary education decision. Our hypothesis is "parent with higher

educational attainment will tend to send their children to academic secondary over the vocational high schools." From the regression our, we found that father and mother education have positive and significant effect in the probability of children to enrol in general senior high school. From the marginal effect magnitude, we can see that the parent education shows bigger magnitude in the public and private general senior high schools compare to the magnitude of public and private vocational high schools. It means parent with higher educational attainment will tend to send their children to the general high schools than to send their children to vocational high schools. This finding is in line with Chen (2009) and Newhouse and Suryadarma (2011) finding. The finding concords with Chernichovsky & Meesok, (1985) suggestion. According to Chernichovsky & Meesok well-educated parent tend to avoid sending their children to vocational education.

Another finding is related to the impact of school availability to student educational choice. From the regression, we found that the proportion of vocational school to total senior high school has positive and significant effect to the probability attending vocational education. Higher the proportion of vocational schools in the children district, the probability of the children attending vocational education become higher. This finding is almost similar with Chen (2009) finding, she measures this kind of effect using the share of vocational graduates in the community where the children live. We use the proportion of the number vocational school to the total senior high school to give more insight about the effect of government policy in vocational education expansion to the educational choice. School provision is a real proof of government commitment in the vocational education expansion. The vocational education expansion might have bad effect to the senior secondary enrolment. Higher the proportion of vocational school higher probability the children in the district do not continue to the senior high school. As we discuss in chapter 3, attending the vocational senior high school is relatively more expensive than attending the general senior high school. Cost of attending education can be a reason for children to not enrol in senior high school. This finding is also supported by the effect of proportion of private school to the children enrolment. We found that higher share private education institutions in a district, higher the probability children in that district enrol in senior secondary school. Increase the proportion by hundred percent will decrease senior high school enrolment by 19.18 percent. As we know, that private education institutions are tuition driven, they will charge higher fee than the public education institutions. We suspect that cost of attending senior high school become a barrier for children to attend senior high school.

5.3.1 Tertiary education enrolment

As we expected, the parent year of schooling has a positive and significant effect to the probability a child enrols in tertiary education. Chen (2009) and Ogawaa & Iimuraa (2010) have a similar finding with us. They find that head of households' education have a positive and significant effect to the probability of the children pursuing tertiary education. This empirical finding is supported by some theories such as rational action theory by Breen and Goldthorpe (1997) or with subjective expected utilities by Esser (1999) or "intergenerational class maintenance (Becker 2003). In the rational action theory Breen and Goldthorpe also explain about the relative risk aversion. Relative risk aversion explains the relationship between parents' education and their children's education. According relative risk aversion, parents expect their children social-economic status not lower than the parents' social-economic status include the educational attainment.

According to Corak (2004:3) "the relationship between the socio-economic status of parents and the status and income their children will attain in adulthood." is the indication of generational mobility. Stronger the relationship between parent social status and children social status is an indication of low generational mobility. Low generational mobility has implication to the intergenerational inequality. Children whom born from low socio-economic status family will get low socio-economic status when they are adult and vice versa. From our finding, we can conclude that there is low generational mobility in term of education. Because children whom born in the high education parent tend to get high education as well and vice versa.

We also examined the effect of attending vocational high school to the probability attending tertiary education. We found children who attend vocational secondary school have a lower probability to enrol to the tertiary education compare to their peers from the others secondary school types. This finding is the same with Chen (2009) finding. According to Chen, attending the vocational high school does not have effect to the probability attending tertiary education when it is controlled with the senior high school final exam score, but it has effect when it is not controlled with the senior high school final exam score. In our paper, we already control the regression with senior high school exam score at beginning, even we add junior high school exam score as the initial score. We found that both variables, senior high school final exam score and attending vocational high school, have a significant effect to the probability of enrolling in tertiary education with an opposite sign. Attending vocational high school gained negative sign, while senior high school exam score gained positive sign.

From the regression about senior high school decision, we found that children from low education parents tend to attend vocational high school than attending general high schools. And we also know that parents with low education have a low probability to send their children tertiary education. From those finding we suggest that the vocational high school is the choice for those who do not have intention in pursuing tertiary education, especially for those who come from low education family.

Our conclusion is in line with Breen and Goldthorpe (1997) assumption. Breen and Goldthorpe assumed that decision of entering an n level of education is affected by the expectation of gaining access to level n+1. Therefore, for those who attending general senior high school expect to get access to tertiary education, and for those who attending vocational senior high school expect to get direct access to the labour market.

Chapter 6 Conclusion

6.1 Concluding remarks

This study has three goals, first goal is examining the relationship between parents' education attainment and children educational decision, the first decision related with children decision after graduating junior high school and the second decision is after graduating senior high school. The second goal is examining the role of educational expansion through educational facilities provision to children decision. And the last goal is finding the relationship between children decision in senior secondary education to college entry.

In addressing that three goals, we conduct two regressions. The first regression is multinomial logit model to examines the impact of parental educational attainment and educational provision to senior secondary enrolment decision. The second regression is logit/probit model to examines the impact of parental educational attainment and senior secondary types to college enrolment decision.

From the analysis in chapter 5, we can conclude that: (1) Parents' education have a positive and significant effect in promoting their children to enrol in general high school, especially in attending general public high school. Well-educated parents tend to avoid sending their children to vocational education. (2) The education availability has a significant effect in influencing children educational decision. The increase in the proportion of vocational high school to general senior high school facilities increase the probability a child to enrol in vocational high school, yet it also increases the probability a child does not enrol in senior high school. The proportion of private school also has the same impact as the proportion of vocational high school. Increasing proportion of private senior high school to public senior high school also increases the probability a child to enrol in private senior high school. Increase in the proportion of private to public senior high school will significantly decrease the probability a child enrols to senior high school. (3) Parents' education also has a positive and significant effect to the probability a child attends tertiary education. (4) Attending vocational senior high school decreases the probability a child attends tertiary education.

From the policy perspective, increasing the share of vocational senior high school could be an effective way to increase the share of vocational senior high school enrolment. But the government needs to consider the side effect of increasing the proportion of vocational senior high school, the first it may increase the probability a child not attending senior high school. It

is still debatable because according to Pittman (1991) there is no evidence that attending vocational high school could reduce the drop out rate. The second it will decrease the probability senior high school graduates attending tertiary education. Our finding indicates attending vocational high school can reduce the probability a child to enrol in tertiary education. The government also needs to consider the people taste or preference in educational choice, from the regression we can see that high education parents still prefer academic senior high school for their children than vocational senior high school.

We still witnessed a class differentials in the children educational choices. The more educated parents with senior high school education or college degree education tend to send their children to the more academic senior high schools. Parents with junior high school and elementary education see general and vocational high school indifferently. We also found that higher parents' education is lower the probability their children do not continue to senior high school. For policy perspective, the government needs to give incentives and support to the children from low educated parents to continue their education to the highest level.

6.2 Limitation and further research

The first limitation in this study is related to the household income data. The data used in this paper is IFLS survey that is conducted every seven years, thus we cannot obtain the income data in the same year as the children graduating from junior high school. In lieu, we use the income from the closest survey.

The second limitation is related to the decentralization. In the decentralization era, the local governments have a more freedom in spending their budget. As the result, the education fee among regions may be different significantly, because the rich local government can abolish educational tuition fee while the poor local government cannot do that.

The third limitation is related to the observation period. In this paper, we only observe nine-year period, five years before vocational education expansion planning and four years after education expansion planning. It might be not a sufficient period for the government to implement all the strategic related to vocational education planning. In other words, this paper could not estimate the effect of vocational education expansion policy.

The future researchers could improve the result by considering the longer observation period and adding the local government policy related to the education financing.

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APPENDICES

Appendix 1-All variables summary statistics

Variables	N	Mean	SD	----------Quantiles----------				
				Min	0.25	Median	0.75	Max
Dependent Variables								
Education Choice	2403	2.06	1.11	1	1	2	3	4
College	2403	0.28	0.45	-	-	-	1.00	1.00
Independent Variables								
JHSScore	2403	6.75	1.18	2.39	5.91	6.80	7.63	10.00
SHSScore	1571	7.08	1.31	0.16	6.48	7.21	7.96	10.00
AgeJHSgrad	2403	15.56	1.09	9.00	15.00	15.00	16.00	33.00
c_female	2403	0.54	0.50	-	-	1.00	1.00	1.00
f_yos	2403	5.96	5.18	-	-	6.00	10.00	18.00
m_yos	2403	5.92	4.92	-	-	6.00	9.00	18.00
HHIncome*	2403	1,572.91	3,506.87	-	400.00	900.00	1,716.67	83,791.67
c_rural	2403	0.61	0.49	-	-	1.00	1.00	1.00
propvocshs	2403	0.29	0.12	-	0.20	0.29	0.37	0.71
propprivshs	2403	0.68	0.15	-	0.60	0.72	0.80	1.00
UANSMA	2403	0.73	0.44	-	-	1.00	1.00	1.00

Note: JHSScore: JHS final exam score, Female: dummy female, AgeJHSgrad: age when graduated from JHS, College: dummy college enrolment, UANSMA: dummy sited in SHS final exam, f_yos: father years of schooling, m_yos: mother years of schooling, Rural: dummy rural, propvocshs: proportion of vocational secondary school to total senior secondary schools in a district, propprivshs: proportion of private senior secondary schools to total senior secondary schools.
* In thousand rupiah

Appendix 2- Summary statistics based on children educational choice

Education Choice	Vari	N	Mean	SD	---------Quantiles----------					Education Choice	Vari	N	Mean	SD	---------Quantiles----------				
					Min	0.25	Median	0.75	Max						Min	0.25	Median	0.75	Max
GenSHS	JHSScore	979	6.91	1.17	3.04	6.08	6.96	7.80	9.87	MA	JHSScore	227	6.60	1.23	2.61	5.72	6.59	7.65	9.72
	SHSScore	778	7.10	1.39	0.83	6.56	7.31	8.00	10.00		SHSScore	180	6.89	1.21	1.23	6.44	6.94	7.56	9.33
	AgeJHSgrad	979	15.40	0.83	12.00	15.00	15.00	16.00	20.00		AgeJHSgrad	227	15.48	0.93	10.00	15.00	15.00	16.00	20.00
	c_female	979	0.55	0.50	-	-	1.00	1.00	1.00		c_female	227	0.55	0.50	-	-	1.00	1.00	1.00
	f_yos	979	7.15	5.61	-	-	6.00	12.00	18.00		f_yos	227	5.51	5.22	-	-	6.00	9.00	18.00
	m_yos	979	7.16	5.38	-	1.00	6.00	12.00	18.00		m_yos	227	5.07	4.79	-	-	6.00	9.00	18.00
	HHIncome*	979	2,143	5,163	-	500	1,100	2,250	83,791		HHIncome*	227	1,076	1,373.	16	333	750	1,216	13,000
	c_rural	979	0.56	0.50	-	-	1.00	1.00	1.00		c_rural	227	0.75	0.43	-	1.00	1.00	1.00	1.00
	propvocshs	979	0.29	0.13	-	0.20	0.28	0.37	0.71		propvocshs	227	0.23	0.12	-	0.13	0.22	0.31	0.71
	propprivshs	979	0.65	0.16	-	0.55	0.68	0.77	1.00		propprivshs	227	0.70	0.14	0.19	0.64	0.74	0.80	0.91
	UANSMA	979	0.89	0.31	-	1.00	1.00	1.00	1.00		UANSMA	227	0.89	0.32	-	1.00	1.00	1.00	1.00
	College	979	0.47	0.50	-	-	-	1.00	1.00		College	227	0.32	0.47	-	-	-	1.00	1.00
VocSHS	JHSScore	752	6.78	1.15	2.39	5.99	6.83	7.62	10.00	JHS	JHSScore	445	6.40	1.17	2.55	5.52	6.45	7.22	10.00
	SHSScore	606	7.11	1.23	0.16	6.43	7.21	7.96	10.00		SHSScore	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AgeJHSgrad	752	15.52	0.91	9.00	15.00	15.00	16.00	21.00		AgeJHSgrad	445	16.05	1.66	11.00	15.00	16.00	17.00	33.00
	c_female	752	0.49	0.50	-	-	-	1.00	1.00		c_female	445	0.61	0.49	-	-	1.00	1.00	1.00
	f_yos	752	6.04	4.81	-	-	6.00	10.00	16.00		f_yos	445	3.39	3.60	-	-	2.00	6.00	16.00
	m_yos	752	6.06	4.45	-	2.00	6.00	9.00	16.00		m_yos	445	3.35	3.44	-	-	3.00	6.00	14.00
	HHIncome*	752	1,457	1,648	1	500	1,000	1,797	17,083		HHIncome*	445	759	790	-	250	500	1,000	5,000
	c_rural	752	0.52	0.50	-	-	1.00	1.00	1.00		c_rural	445	0.78	0.42	-	1.00	1.00	1.00	1.00
	propvocshs	752	0.31	0.12	-	0.23	0.31	0.39	0.71		propvocshs	445	0.29	0.12	-	0.22	0.30	0.37	0.71
	propprivshs	752	0.71	0.13	0.14	0.62	0.75	0.80	1.00		propprivshs	445	0.70	0.14	0.09	0.62	0.73	0.80	0.91
	UANSMA	752	0.90	0.30	-	1.00	1.00	1.00	1.00		UANSMA	445	0.00	0.00	-	-	-	-	0.00
	College	752	0.17	0.38	-	-	-	-	1.00		College	445	0.00	0.07	-	-	-	-	1.00

Note: JHSScore: JHS final exam score, Female: dummy female, AgeJHSgrad: age when graduated from JHS, College: dummy college enrolment, UANSMA: dummy sited in SHS final exam, f_yos: father years of schooling, m_yos: mother years of schooling, Rural: dummy rural, propvocshs: proportion of vocational secondary school to total senior secondary schools in a district, propprivshs: proportion of private senior secondary schools to total senior secondary schools. * in thousand rupiah