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**UPPER SECONDARY SCHOOL DROPOUT:  
LESSONS FROM CENTRAL JAVA  
PROVINCE, INDONESIA**

A dissertation presented in partial fulfilment  
of the requirement for the degree of

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## ABSTRACT

One of the biggest challenges in educational reform is dealing with the problem of school dropout. It is not merely due to poor grades or bad behaviour or human capital considerations; often it is a more complex problem. Dropout must be considered as a process of events rather than only a single event, which interacts with social contexts and environmental situations. It undeniably requires a comprehensive understanding of the factors and processes surrounding the dropout decision.

Indonesia still faces a high dropout rate, especially at upper secondary school level. Compared with other school levels, dropout rates are higher than in primary school and in lower secondary school. Therefore, the main aim of this study is to examine the effects of potential determinants on the likelihood of an individual to complete or drop out of upper secondary school in Central Java Province. This study mostly uses economic theories to explain the dropout phenomenon and human capital theory is used as the main theory to explain the importance of investment in upper secondary education for a better life in the future.

In this study, the most suitable research approaches in the Indonesian context are explored and employed. Primary data have been collected, enabling more in-depth and systematic analysis of the issue. There are two types of research methods used in this study, i.e., quantitative and qualitative analyses. The quantitative analysis is the centre of this study. 439 former upper secondary school students and 878 parents/guardians participated in the quantitative study. Logit is the preferred regression technique used in the quantitative analysis because of its advantages compared to other methods. This study also conducts probit and Ordinary Least Square regressions as part of the robustness analysis. There are 39 explanatory variables and four interaction terms. To the best of my knowledge, the interaction between *female* variables and three variables (*sibling rank*, *home location*, and *non-working mother*) used in this study have never been used in previous studies and this is one of the original contributions of this study to the body of knowledge. In addition, the empirical model is estimated separately for female students and for male students. This is because little previous research has been carried out that investigates whether the factors affecting students to drop out vary by gender.

Some important results from the quantitative analysis show that *being a female*, *older age at first entry*, *having a home location in a rural area*, *having low secondary school national examination grades*, *changing schools*, *larger family size*, *having siblings who dropped out* and *studying in urban schools* are associated with

higher odds of dropping out. This study indicates that the *lowest socioeconomic status* variable, as a proxy of poverty, also contributes to students dropping out. It is also shown that *government assistance for poor students* significantly reduces the odds of dropping out in all models. The main findings from interaction effects indicate that female students with higher sibling rank are less likely to drop out in comparison to male students with higher sibling rank. This study also suggests that female students who stay in rural areas are less likely to drop out than male students who stay in rural areas.

The gender-only regression results reveal significant differences in the odds of dropping out compared to the main sample regressions. Some explanatory variables only have strong impacts on females' decisions to drop out, such as *repeating a grade*, *low academic achievement at previous level of schooling*, *deviant behaviours* and *bullied by peers and/or teachers*. They all increase the odds of females dropping out. There are also some strong and statistically significant explanatory variables that influence males' decisions to drop out. Male students' good perception of education reduces their odds of dropping out. It is also shown that mothers who are not working and are physically present in the house reduce the odds of their sons dropping out.

Qualitative analysis is used to supplement the quantitative analysis. The purpose of the qualitative analysis is to understand why students drop out of school in Central Java Province. The qualitative findings are used to provide context and explanations for the quantitative findings. In-depth interviews were conducted by using open-ended questions. There were 16 dropouts, three males and 13 females that participated in the interviews. Parents of dropouts were also interviewed.

There are some important findings from the qualitative analysis. It was shown that the final decision to drop out was made by the students, not their parents. This study also shows that parents have a good perception of education and always support their children to get a higher education regardless of their financial conditions. However, parents' support is not enough since the main problem is that parents cannot force their child to stay in school or go back to school. Based on the evidence from the qualitative analysis, it is concluded that dropout prevention programs, not curative programs, are likely to be the best strategy to reduce dropout.

Based on our findings, existing policies are discussed and new policies are proposed to reduce the number of dropouts. In general, there are two main strategies: (1) Dropout Prevention Programs; and (2) Return to School Programs. An early warning system derived from the findings is suggested as the ideal practice to identify potential dropouts.

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## LIST OF ABBREVIATIONS, ACRONYMS AND INDONESIAN TERMS

ACDP	Education Sector Analytical and Capacity Development Partnership
AIC	Akaike's Info Criterion
ASEAN	Association of Southeast Asian Nations
BLSM	<i>Bantuan Langsung Sementara Masyarakat</i> (Temporary Direct Cash Assistance)
BOS	<i>Bantuan Operasional Sekolah</i> (School Operational Assistance)
BPS	<i>Badan Pusat Statistik</i> (Indonesian Central Statistics Agency)
BSM	<i>Bantuan Siswa Miskin</i> (Poor Students Assistance)
CCT	Conditional Cash Transfer
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
ECE	Early Childhood Education
EE	Equivalency Education
EFA	Education for All
EWS	Early Warning System
GDI	Gender Development Index
GDP	Gross Domestic Product
GED	General Education Development
GER	Gross Enrolment Ratio
GOF	Goodness of Fit
GOI	Government of Indonesia
GPA	Grade Point Average
GRDP	Gross Regional Domestic Product
HDI	Human Development Index
HL	Hosmer-Lemeshow (Goodness-of-fit)
IADB	Inter-America Development Bank
ILO	International Labour Organization
Inpres	<i>Instruksi Presiden</i> (Presidential Instruction)
KIP	<i>Kartu Indonesia Pintar</i> (Indonesia Smart Card)

KTSP	<i>Kurikulum Tingkat Satuan Pendidikan</i> (Education Unit Level Curriculum)
LR	Likelihood Ratio
MA	<i>Madrasah Aliyah</i> (Islamic Upper Secondary School)
MAK	<i>Madrasah Aliyah Kejuruan</i> (Islamic Vocational Upper Secondary School)
MI	<i>Madrasah Ibtidaiyah</i> (Islamic Primary School)
MT	<i>Madrasah Tsanawiyah</i> (Islamic Lower Secondary School)
MOEC	Ministry of Education and Culture
MORA	Ministry of Religious Affairs
MP3EI	<i>Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia</i> (Master Plan for the Acceleration and Expansion of Economic Development in Indonesia)
MUHEC	Massey University Human Ethics Committee
NCES	National Center of Education Statistics
NCWGE	National Coalition for Women and Girls in Education
NER	Net Enrolment Ratio
NZAE	New Zealand Association of Economists
NZ\$	New Zealand Dollar
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
PISA	Program for International Student Assessment
PKH	<i>Program Keluarga Harapan</i> (Family Hope Program)
PMU	<i>Pendidikan Menengah Universal</i> (Universal Secondary Education)
PPP	Purchasing power parity
PRAF	<i>The Programa de Asignacion Familiar</i>
PTA	Parent-teacher association
Rp.	Indonesian Rupiah
RT	<i>Rukun Tetangga</i> (neighbours association)
ROC Curve	Receiver Operating Characteristic Curve
SDPP	the School Dropout Prevention Pilot Program
SES	Socioeconomic Status
SMA	<i>Sekolah Menengah Atas</i> (General Upper Secondary School)
SMK	<i>Sekolah Menengah Kejuruan</i> (Vocational Upper Secondary School)

SMP	<i>Sekolah Menengah Pertama</i> (Lower Secondary School)
SUSENAS	<i>Survei Sosial Ekonomi Nasional</i> (National Socioeconomic Survey)
TNP2K	<i>Tim Nasional Percepatan Penanggulangan Kemiskinan</i> (The Indonesia National Team for the Acceleration of Poverty Reduction)
TVE	Technical and Vocational Education
UK	United Kingdom
UNDP	United Nations Development Programme
UNPFA	United Nations Population Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-IBE	United Nations Educational, Scientific and Cultural Organization - International Bureau of Education
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
US\$	United States Dollar
USS	Upper Secondary School
VIF	Variance Inflation Factor

# 1. INTRODUCTION

## 1.1. Background of the Study

Education has become the main policy to foster growth in both developed and emerging countries (Dearden, Emmerson, Frayne, & Meghir, 2009). Many economists consider education as an investment in human capital (Checchi, 2006, p. 19), and human capital is considered as the fundamental link between education and the labour market (Belfield, 2000, p. 16). Human capital refers to the knowledge, information, ideas, skills and health of individuals (Becker, 2002). Referring to Gary Becker's human capital theory, where instead of assuming that the difference in wages is mainly because of how 'good' or 'bad' the job is, the theory assumes that wages depend on investment in skills and knowledge that have increased a worker's productivity. Becker emphasises the importance of education, training and medical care to increase human capital. In addition, Becker (1998, p. 11) believes that investment in human capital is one of the best ways to reduce poverty. More investment in training and education would increase earnings and, in the end, a higher income would raise people's standard of living and welfare.

However, one of the biggest challenges in educational reform is how to deal with the problem of school dropout, i.e., students dropping out of school before graduating. According to human capital theory, dropout occurs because students (and parents) conclude that the expected benefits of staying in school are lower than the expected costs (Galster, 1998, p. 31). School dropout is widely considered a global problem and it occurs in all countries.<sup>1</sup> Rumberger and Lim (2008) examine research on dropouts in the United States (US) based on 203 published studies over 25 years. They conclude that there are two types of factors that determine student dropout: (1) *Individual*

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<sup>1</sup> See, e.g., Ajaja (2012); Alivernini and Lucidi (2011); Dekkers and Claassen (2001); Dunn, Chambers, and Rabren (2004); Lundetræ (2011); Ridge, Farah, and Shami (2013); Sang, Koros, and Bosire (2013); Suh and Suh (2011); Taş, Bora, Selvitopu, and Demirkaya (2013); and Townsend, Flisher, Chikobvu, Lombard, and King (2008).

*characteristics* of students, such as their attitudes, behaviours, and school performance; and (2) the *institutional characteristics* based on related factors found in their families, schools and communities. Dropping out of school is not just simply due to poor grades or bad behaviour or human capital considerations; often it is a more complex problem. Dropout must be considered as a process of events rather than only a single event, which interacts with social contexts and environmental situations to generate dropout (Hunt, 2008).

The dropout phenomena can partly be explained through the demand and supply for education. It is possible to think of the demand for education as a demand for a consumption good (Belfield, 2000, p. 54). For example, Hillman and Jenkner (2004) argue that dropout occurs because children's school expenditures are too high for poor parents and the opportunity costs of school are high, thereby reducing demand. They point out that the parents' perception about education also contributes to the demand for education. They argue that parents' insufficient understanding about the return on an investment in their children could decrease the demand for education. On the supply side for education, Hillman and Jenkner (2004) claim that inadequate educational services and incapability of the government to provide infrastructure for education may lead students to drop out of school. A study in Mexico shows that demand-side subsidies are better than supply-side expansions in term of effectiveness to improve the access to education for poor families (Coady & Parker, 2004).

The concept of human capital cannot explain specifically why students decide to drop out of school. It is because students' attainment is not only affected by their human capital but also by how they interact with their environment as social beings. Coleman (1988b) believes that human capital is not sufficient to explain dropout and he proposes the concept of 'social capital' as an integral part of explaining human behaviours, such as dropping out of school. He introduces his 'social capital' approach when he analyses the high school sophomore dropout phenomenon, i.e., second year of high school in the US. Social capital refers to the value of the social network and social

interaction (Nahapiet, 2011), not only with the family but also with the community. Coleman (1988a) points out that only social interaction that helps or increases productive action is called social capital. For example, norms, network trust and trustworthiness are forms of social capital.

Putnam (1993) believes that social capital can increase the value of investment in human capital if there is a mutual benefit of the social organization. Therefore, Smith, Beaulieu, and Israel (1992) recommend social capital theory as one of the best ways to study dropout problems. Social capital is believed to be a solution to educational and social problems (Dika & Singh, 2002). Researchers can use social capital to identify factors related to families that influence schooling (Teachman, Paasch, & Carver, 1997, p. 1344).

How bad is the dropout problem? For example, a national survey of high school dropouts in the US in 2001 reveals that only two-thirds of all public high school students finish school (the high school graduation rate was 68%), while the rest fail to graduate (Swanson, 2004). The dropout crisis entered public consciousness when reports such as *the Silent Epidemic: Perspectives of High School Dropouts* (Bridgeland, DiIulio Jr, & Morison, 2006) and *Locating the Dropout Crisis* (Balfanz & Legters, 2004) were released in the US (Balfanz et al., 2014, p. 12). The US Department of Education corrected many weaknesses in the education system by issuing new regulations in 2008, and the national high school graduation rate reached 80% in 2012 for the first time in US history (Balfanz et al., 2014). However, it was projected that an estimated 1.1 million high school students in the US still fail to earn diplomas in 2012 (Education Week, 2012).

Bridgeland et al. (2006) use the term "silent epidemic" to reflect the public's unawareness of the severity of the dropout problem in the US due to inaccurate data. They indicate that those who suffer from the dropout epidemic are young and marginal

people who go on to earn below-average income, reside in city areas, or become single-parent students who were enrolling in large public high schools in city centres.

How bad is the dropout problem in Indonesia? Undeniably, after recovering from the deep economic crisis in 1998, the country has shown tremendous improvement through major political, economic and social changes. Nowadays Indonesia is regarded as a success story in Asia and the Pacific. In February 2014, the World Bank classified Indonesia as a lower middle-income country (World Bank, 2014b) with gross national income per capita gradually increasing from US\$5,308 in 2000 to US\$9,788 in 2014 (UNDP, 2015, p. 3).<sup>2</sup> However, not everyone has been able to gain from Indonesia's great achievement. UNICEF (2012) indicates that poverty is still a major problem for the country. Half of Indonesians do not earn more than US\$1.75 a day to live on. One of the major impacts of poverty is on education. Neither primary school level nor lower secondary school level education is free, although the 2003 National Education Act assures the right to basic education for citizens aged seven through fifteen. Article 46 of the National Education Act clearly states that "Financing of education shall be the shared responsibility of the Government, local governments, and community."

According to an official report, in Indonesia almost 50% of children aged 7–17 did not attend school or left school because of financial problems (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). However, there are some shortcomings of the report: (1) It is clearly an aggregate report for all school levels in Indonesia; (2) the respondents of the survey also include those who did not attend school; and (3) the official ages for upper secondary school in Indonesia are 16 – 18 years old, while the report limits the respondents to up to 17 years old only. Thus, based on the report, it is not clear whether students at upper

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<sup>2</sup> In US\$ 2011 purchasing power parity (PPP).

secondary school left the school mainly because of financial problems or not. Therefore, further research to investigate the reasons for school dropout is needed.

## **1.2. Rationale of the Study**

A current widespread and deep concern is the number of students who never graduate from high school. A great number of studies on dropout have been conducted in many countries to explain factors contributing to dropping out of school. Although researchers have found the characteristics of students who leave school, there is still little information about the causal factors that lead to the dropout decision (Tyler & Lofstrom, 2009). It undeniably requires a comprehensive understanding of the factors and processes surrounding the dropout decision.

Reasons for dropping out of school have changed over time. In some countries, poverty is no longer the main reason for upper secondary school dropout. A recent survey in Latin America (Chile, Costa Rica, and El Salvador) shows that students express a lack of interest in education as the main reason to drop out (IADB, 2014). But, IADB's survey also shows that in some countries in Latin America (such as Honduras, Panama and Paraguay), poverty is still the main reason. A 2006 national survey in the US also shows that almost half (47%) of students drop out because they were uninterested in classes and feel disconnected from high school (Bridgeland et al., 2006). However, a survey in the US in 2012 presents information that lack of parental and educational support is the main reason for American students to drop out of high school (Globe Newswire, 2012, November 14). In Indonesia, government agencies state that having financial problems is the major cause of dropout (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). Unsurprisingly, students report a variety of reasons for dropping out of school and they are different from country to country.

Although surveys have exposed the reasons for dropout, and statistics may highlight the problem well, the actual fundamental causes of dropout are still obscure. There is still a research gap about the processes of dropping out and the reasons why and how it occurs. This makes it difficult for policy-makers to address the dropout problem effectively and efficiently.

In the context of Indonesia, since 2010 education has been one of 11 national priorities and the government has set compulsory education to the upper secondary school level. The Ministry of Education and Culture<sup>3</sup> launched a 12-year compulsory education program in June 2013 named Universal Secondary Education (in Indonesian: *Pendidikan Menengah Universal*, or PMU). The previous basic education program that covered only 7-15 year old citizens commenced in 1994 for free and it became compulsory education. But now it is extended to 7-18 year olds to provide equal access to education for upper secondary school students. However, there is an issue with this policy not having the power to enforce regular attendance of students in upper secondary school. There are no penalties or fines for any parents who fail to keep their children in upper secondary school. Although the Indonesian government recognizes the importance of Universal Secondary Education in Indonesia, there are no strict regulations to enforce the policy.

The Government of Indonesia (GOI) also introduced the new 2013 curriculum to strengthen students' character and improve students' creative thinking. However, education practitioners and experts voiced criticism against the new curriculum before it was implemented by the Ministry of Education and Culture. They argued that some important subjects were eliminated (for example English in primary school) and students will spend more time at school because the Ministry increased school hours

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<sup>3</sup> The name of the ministry has been changed by a new president in 2014. The name is currently 'Ministry of Primary and Secondary Education and Culture of the Republic of Indonesia'. The ministry was previously also known as 'Ministry of National Education' (1999-2011). In this study, the names are used interchangeably.

from 32 hours per week to 38 hours per week (Sagita, 2012). The new curriculum is unlikely to satisfy everyone.

In addition, students from poor families wanting to continue to study (into higher education) face obstacles due to their families' economic limitations. To overcome them, in 2010 GOI introduced a scholarship named *Bidik Misi* (in English: Target Mission) in order to provide educational opportunities for students from poor families with excellence in academic achievement at upper secondary school, to continue enrolling at an Indonesian university. This scholarship covers living costs and tuition fees until the students finish university. Hence, because there is an opportunity for poor students to continue to higher education, it is important to keep these students in school.

Although studies of school dropout are analysed mainly through other social science disciplines (such as education, sociology and psychology), economics also plays a part in it. Economics is a study of how people behave when using scarce resources. The scarcity can be dealt with by the effective use of resources (Belfield, 2000, p. 1). In choosing whether students will drop out or stay in school, they are making economic decisions about the allocation of scarce resources (such as monetary and time resources). More specifically, one of the economist's roles in education is related to studying the labour market (Belfield, 2000, p. 2). Worker's wages are mainly determined by their education. Usually, educated people are more skilled, and because of their skills they earn more than uneducated people. The underlying relationship between more education and higher earnings can be put in the form of a sequence (Chattopadhyay, 2012, p. 24): (1) Education (and training) increases individuals' cognitive capacity; (2) as a consequence, it raises their productivity; (3) finally, productivity tends to increase the earnings of more educated people. The sequence reflects human capital theory. Therefore, economic analysis of student dropout is mainly driven by the expectation to gain a better income in the future.

### **1.3. Importance of the Study**

The advances in technology unquestionably make life better and easier. They have changed the world economy, caused a significant reduction in production cycles, and created improvement in productivity, taking over many human tasks, and causing the demand for “knowledge workers” and higher-level skills to increase (Wang, 2012). To meet the increasing demand for this type of labour, a minimum requirement for entering the labour market in many countries nowadays has shifted to those who hold a high school diploma. In this sense, social and economic impacts of dropping out of high school can be dangerous.

However, some students still decide to drop out of upper secondary school. In comparison to those who graduate, dropout students in the US face multiple negative outcomes such as: Higher probability to be unemployed; lower income; more health problems and earlier death; more engagement in crime; more dependency on public assistance; and less interest in elections (Belfield & Levin, 2007). Furthermore, a study in the US by Cataldi, Laird, KewalRamani, and Chapman (2009) shows that there is a significant income difference between people who had not completed high school and those who had finished high school, of approximately \$16,000 per annum in 2007. Bureau of Labor Statistics (2016) also reports that in the first quarter of 2016, the median weekly earnings of US full time workers without a high school degree are \$494. This is about 30 per cent less than for someone with a high school diploma (\$679).

In the US, total costs for all individuals who drop out of high school are estimated to be in the billions of US dollars. For example, Rouse (2005) estimates that the government loses more than \$50 billion in income taxes for all high school dropouts. Muennig (2005) reports that annual health-care costs for high school graduates in the US are only \$15,000 compared with high school dropouts who require \$35,000 for annual-health care. Morreti (2005) finds that a 1% increase in high school

completion of all men aged 20-60 would reduce crime costs up to \$1.4 billion a year in the US.

In Indonesia, the International Labour Organization (ILO) finds that in 2006 71% of dropouts aged 15-17 cannot find a job and also discovered that lower secondary school dropouts earn 56% less than those who have graduated (International Labour Organization, 2006, p. 12). The ILO's important finding shows that dropouts mainly get jobs in insecure areas and they have bad working conditions and low wages compared to high school graduates. Another study by Carneiro, Lokshin, Ridao-Cano, and Umapathi (2011) shows the importance of attending upper secondary school in Indonesia. They show that the average rate of return to the educational investment for those who were enrolled in upper secondary schooling is 26.9%, and for those who did not go to upper secondary school is only 1.7%.

The significance of education needs to be stressed to society. If the dropout trend is not terminated, or at least reduced, the future of these high school dropouts is likely to be grave (Ingrum, 2006). Therefore, Ingrum (2006) emphasises the importance of research on high school dropouts and the outcome of the research is expected to prevent the students most vulnerable of dropping out and help them to stay and finish high school. As a result, this could improve their economic achievement in the future.

Analysing the determinants of upper secondary school dropout in Indonesia is vital because the benefits of the outcome can help government agencies, universities, school practitioners and other interested parties to develop effective policies and responsive strategies to prevent students from dropping out of school. Furthermore, the correct strategies and policies will help nations, especially Indonesia, to eradicate poverty, improve people's welfare and, in addition, increase the nation's growth and development in the long run.

#### 1.4. Scope of the Study

Indonesia is committed to education. Indonesia's constitutional amendment in 2002 mandates the GOI to allocate at least 20% of the national budget to education. For about 40 years, the percentage of children who are enrolled in school has been rising.<sup>4</sup> The net enrolment ratio (NER) at primary school level has increased from 72% in 1975 to 91.5% in 1998, 94.4% in 2009 and 95.6% in 2013. Lower secondary NER rose from 17% in 1975 to 58.4% in 1998, 67.4% in 2009 and 73.9% in 2013. Upper secondary NER rose from 17% in 1975 to 36.9% in 1998, 45.1% in 2009 and 54.3% in 2013 (Indonesian Central Statistics Agency, 2014a).<sup>5</sup>

However, although the data show that school enrolments have increased, Indonesia still faces a high dropout rate, especially at upper secondary school level. World Bank (2013, p. 11) points out that the access to upper secondary school remains low, especially for the poor. Compared with other school levels, dropout rates in upper secondary school in Indonesia are higher than in primary school and in lower secondary school, as shown in Table 1.1. Although the dropout rate of upper secondary school may not appear high, in terms of numbers of students, they are quite significant. After the amendment in 2002, during the 2003/2004 to 2009/2010 academic years more than 1.4 million upper secondary school students dropped out of school. To overcome the problem, the GOI officially introduced 12 years of compulsory education in 2013. However, as mentioned earlier, there are no strict regulations that support the

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<sup>4</sup> The school system in Indonesia consists of primary schools, lower secondary schools and upper secondary schools.

<sup>5</sup> NER = Enrolled children in the official school age group / Total number of children in the official school age group. NER excludes late enrolment, early enrolment, or repetition.

Gross enrolment ratio (GER) = Enrolled children of all ages / Total number of children in the official school aged group. Thus, if there is late enrolment, early enrolment, or repetition, the total enrolment can exceed the population of the age group that officially corresponds to the level of education – leading to rates greater than 100%. In Indonesia, GER at primary school has increased from 62% in 1973 to 109.3% in 1998, then 110% in 2009, and decreased to 107.7% in 2013. Lower secondary GER rose from 17% in 1973 to 70.3% in 1998, then 81.1% in 2009 and 86.0% in 2013. Upper secondary GER rose from 9% in 1973 to 46.4% in 1998, then 62% in 2009 and 66.6% in 2013 (Indonesian Central Statistics Agency, 2014a). However, greater than 100% primary school's GER in Indonesia indicates inefficiencies of Indonesia's educational system.

policy to keep students in school. It has become an educational challenge for the GOI to reduce the large number of dropouts which occur at the upper secondary school level.

**Table 1.1. Trend of Dropout Rates in Indonesia by Level and Type of School**

Level and Type of School	Academic Year									
	2005/2006		2006/2007		2007/2008		2008/2009		2009/2010	
	No.	%	No.	%	No.	%	No.	%	No.	%
Primary School	824,684	3.17	625,055	2.41	475,145	1.81	437,608	1.64	445,075	1.65
Lower Secondary School	148,890	1.97	232,828	2.88	332,824	3.94	214,775	2.49	209,263	2.33
Upper Secondary School (USS)	171,485	3.14	190,822	3.33	160,618	2.68	235,744	3.63	296,901	4.27
- General USS	61,652	1.81	97,663	2.79	127,720	3.56	141,712	3.77	126,069	3.27
- Vocational USS	109,833	5.08	93,159	4.17	32,898	1.37	94,032	3.43	170,832	5.52

Source: Ministry of National Education Republic of Indonesia (2010a)

Another problem is that costs of education increase exponentially each time students continue their study to the next level of education (World Bank, 2013, p. 61). For example, World Bank (2013) shows that the average primary student from the poorest quintile spends about Rp. 205,000 (about US\$26) per year on education, while the average poor student in senior secondary education spends Rp. 1.2 million (about US\$150) per year. In addition to high costs of education at upper secondary school level, the main characteristic of upper secondary education is the high dependency on household support to keep the students in school (OECD & Asian Development Bank, 2015, p. 147). In private schools, parents are the main source of schools' funding. Parents play an important role in paying the tuition fees for the salaries of non-civil servant teachers and schools' operating costs. In public schools, parents are still required to pay a small amount of tuition fees, to support honorary teachers and other operating costs. Therefore, for poor families, the costs of upper secondary education are major constraints.

This study focuses on the causes of students dropping out of school at the upper secondary school level. This is mainly because the government decided that access to upper secondary education is one of the national priority programs (World Bank, 2013,

p. 53). This study is conducted in the areas of Central Java Province. Almost 50% of dropout students in Indonesia during the 2000/2001 to 2009/2010 academic years were from Java Island. The island's area only covers 6.8% of the total area of Indonesia, but the economic activities in this country are predominantly located on this island. The six provinces in Java Island contributed 58.95% to Indonesia's Gross Domestic Product (GDP) in 2000. This only dropped slightly to 57.5% in 2012. This high contribution is mainly driven by industrial sectors (Kuncoro, 2013). Moreover, Java Island is the most populous island, with 57.5 % of the Indonesia population residing in Java Island in 2010. It is said that it is the 'heartland' of Indonesia's economic activities (Kuncoro, 2013).

Central Java Province contributed the second highest number of dropout students during the 2000/2001 to 2009/2010 academic years after East Java Province. It is shown in Table 1.2 that during that period, 245,057 students have dropped out of upper secondary school in Central Java Province. The highest contribution of upper secondary school dropout was in the 2002/2003 academic year. More than 52 thousand students dropped out of school throughout Central Java Province. In total more than 345 thousand students dropped out of school throughout Indonesia during the 2002/2003 academic year. The high numbers of dropouts in Indonesia were allegedly due to the severe economic crisis that hit in 1998.<sup>6</sup> To alleviate the impact of the crisis on education, the GOI introduced the Social Safety Scholarship scheme to reduce school dropout in Indonesia. The scholarship was given in the 1998/1999 academic year for the next five years. However, Sparrow (2007) finds no effect of the scholarship on student dropout at the upper secondary school level.

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<sup>6</sup> The Asian financial crisis started in July 1997 in Thailand and affected Indonesia in August 1997. In December 1996 the Indonesian Rupiah was 2,400 to the US Dollar and dropped to 16,000 to the US Dollar in January 1998, a more than 600% deprecation. This turned a monetary crisis into a multidimensional crisis, including social and political crises. The number of poor people was about 22.5 million in 1996 and increased to 48.7 million in 1998 (Haryadi, 2001).

**Table 1.2. Number of Dropouts by Province in Indonesia**

No.	Province	Academic Year										Total 2000/2001 - 2009/2010	Share
		2000/2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	2009/ 2010		
<b>Java Island</b>													
1	Capital Special Region of Jakarta	21,668	13,846	6,979	18,760	17,153	11,999	11,509	7,338	11,485	20,972	141,709	7.0%
2	West Java	15,676	8,990	55,356	12,144	13,830	14,060	23,321	18,128	21,302	43,048	225,855	11.1%
3	Banten	n/a	6,775	8,203	17,920	2,536	5,821	8,813	4,599	4,506	12,227	71,400	3.5%
4	<b>Central Java</b>	<b>12,747</b>	<b>11,011</b>	<b>52,404</b>	<b>6,707</b>	<b>22,465</b>	<b>21,909</b>	<b>27,020</b>	<b>25,443</b>	<b>34,103</b>	<b>31,248</b>	<b>245,057</b>	<b>12.1%</b>
5	Special Region of Yogyakarta	3,325	3,567	2,146	3,416	4,724	5,293	4,591	2,638	6,505	5,060	41,265	2.0%
6	East Java	20,724	13,200	47,098	13,273	17,012	23,178	28,203	23,264	43,957	36,813	266,722	13.1%
<b>Sumatera Island</b>													
7	Nanggroe Aceh Darussalam	5,608	3,500	8,420	4,120	3,505	2,220	3,074	1,935	2,755	7,210	42,347	2.1%
8	North Sumatera	6,983	12,247	34,294	18,971	22,359	18,730	17,224	9,109	27,962	22,743	190,622	9.4%
9	West Sumatera	4,815	5,042	9,105	5,064	5,587	4,174	8,195	5,734	10,138	9,912	67,766	3.3%
10	Riau	2,302	3,284	11,124	5,177	2,512	2,511	3,721	1,694	5,215	6,510	44,050	2.2%
11	Islands of Riau	n/a	n/a	n/a	n/a	992	1,427	435	551	900	2,781	7,086	0.3%
12	Jambi	1,780	2,413	2,739	2,455	2,728	1,712	2,403	2,773	2,225	4,638	25,866	1.3%
13	South Sumatera	4,641	5,819	13,660	8,055	3,872	5,877	3,012	4,363	10,062	12,212	71,573	3.5%
14	Bangka Belitung	n/a	1,406	2,051	1,315	1,684	1,258	1,630	1,069	1,881	1,563	13,857	0.7%
15	Bengkulu	2,205	1,206	2,950	1,023	3,497	4,484	1,310	1,581	2,455	2,419	23,130	1.1%
16	Lampung	7,147	1,812	11,118	14,599	3,229	3,569	6,970	5,511	5,606	6,710	66,271	3.3%
<b>Kalimantan Island</b>													
17	West Kalimantan	1,227	4,145	3,682	3,894	2,882	2,427	1,854	2,569	4,412	8,278	35,370	1.7%
18	Central Kalimantan	1,761	2,025	1,464	2,700	1,298	779	1,314	700	2,188	1,233	15,462	0.8%
19	South kalimantan	2,188	n/a	4,813	5,762	3,716	4,329	2,103	2,248	4,470	3,673	31,165	1.5%
20	East Kalimantan	4,159	2,772	6,865	3,139	3,197	4,157	4,968	2,604	4,363	6,746	42,970	2.1%
<b>Sulawesi Island</b>													
21	North Sulawesi	3,629	1,444	4,753	4,472	4,135	4,434	2,658	3,458	2,136	4,290	35,409	1.7%
22	Gorontalo	n/a	782	1,078	577	573	581	668	465	380	1,178	6,282	0.3%
23	Central Sulawesi	1,560	2,048	3,821	3,251	1,850	3,038	1,684	1,390	938	2,592	22,172	1.1%
24	South Sulawesi	8,849	6,983	15,996	8,657	8,910	7,462	6,479	9,164	5,646	9,274	78,580	3.9%
25	West Sulawesi	n/a	n/a	n/a	n/a	523	701	1,034	660	405	1,596	4,919	0.2%
26	South-east Sulawesi	993	1,264	6,124	2,233	3,668	1,301	2,089	4,107	1,599	2,802	26,180	1.3%
<b>Eastern Indonesia</b>													
27	Maluku	4,994	2,931	2,161	2,849	2,976	1,457	1,767	1,585	2,248	4,126	27,094	1.3%
28	North Maluku	1,401	967	3,379	644	797	648	827	1,484	1,020	1,473	12,640	0.6%
29	Bali	3,231	3,876	4,430	2,714	1,298	2,427	3,449	2,112	2,653	3,575	29,765	1.5%
30	West Nusa Tenggara	2,210	2,280	7,295	3,062	2,058	2,884	3,812	4,899	1,469	5,497	35,466	1.7%
31	East Nusa Tenggara	3,780	3,568	7,327	2,912	2,875	2,472	1,471	4,171	6,623	10,038	45,237	2.2%
32	Papua	1,424	2,376	5,707	4,847	2,696	2,176	2,308	2,512	2,838	3,163	30,047	1.5%
33	West Papua	n/a	n/a	n/a	n/a	1,099	1,990	906	760	1,299	1,301	7,355	0.4%
<b>Indonesia</b>		<b>140,001</b>	<b>131,628</b>	<b>346,542</b>	<b>184,712</b>	<b>172,236</b>	<b>171,485</b>	<b>190,822</b>	<b>160,618</b>	<b>235,744</b>	<b>296,901</b>	<b>2,030,689</b>	<b>100%</b>
<b>Dropout Rate in Indonesia</b>		<b>3.2</b>	<b>2.7</b>	<b>6.6</b>	<b>2.8</b>	<b>3.1</b>	<b>3.1</b>	<b>3.3</b>	<b>2.7</b>	<b>3.6</b>	<b>4.3</b>		

Source: Ministry of National Education Republic of Indonesia (2010b)

Furthermore, there are additional reasons to focus on Central Java Province. The average number of dropout students per school in 2010 was 15.6 in Central Java Province and 15.3 in East Java Province. On average, an upper secondary school in Central Java Province contributed more dropout students than an upper secondary school in East Java Province.

Another reason to focus on Central Java Province is that the average poverty rate during 2007 to 2012 was the highest compared to the other five provinces on Java Island,<sup>7</sup> as presented in Table 1.3. It is believed that there is a strong, positive relationship between higher levels of education and poverty reduction. The former President of the World Bank, James D. Wolfensohn, makes a clear statement on education and poverty reduction: "All agree that the single most important key to development and to poverty alleviation is education" (World Bank, 1999, p. iii; 2002, p. i). People with a better education are likely to be less poor because the likelihood of finding jobs increases with upper levels of education and persons with higher levels of education earn higher incomes (Van Der Berg, 2008). Moreover, some studies also find a strong relationship between a higher level of education and lower poverty (e.g., Awan, Malik, Sarwar, & Waqas, 2011; Jamal, 2005; and Okojie, 2002). As mentioned by Dearden et al. (2009), there is a strong belief that promoting education is a long-run solution to eradicate poverty problems. Therefore, studying dropout in Central Java Province not only helps to keep students at school but is expected to also reduce the poverty rate in the region.

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<sup>7</sup> The poverty rate is defined as the percentage of poor people to the total population. In Indonesia, poor people are defined as people with monthly expenditure lower than Rp. 233,740 per month (about US\$20 per month) or Rp. 7,780 per day (or less than US\$1 per day).

**Table 1.3. Poverty Rate on Java Island, 2007-2012 (in Per cent)**

Province	2007	2008	2009	2010	2011	2012	Average 2007 - 2012
Capital Special Region of Jakarta	4.6	4.3	3.6	3.9	3.8	3.7	3.9
West Java	13.6	13.0	12.0	11.3	10.7	10.1	11.8
Banten	9.1	8.2	7.6	7.2	6.3	5.9	7.4
<b>Central Java</b>	<b>20.4</b>	<b>19.2</b>	<b>17.7</b>	<b>16.6</b>	<b>15.8</b>	<b>15.3</b>	<b>17.5</b>
Special Region of Yogyakarta	19.0	18.3	17.2	16.8	16.1	16.1	17.3
East Java	20.0	18.5	16.7	15.3	14.3	13.4	16.4
<b>Indonesia</b>	<b>16.6</b>	<b>15.4</b>	<b>14.2</b>	<b>13.3</b>	<b>12.5</b>	<b>12.00</b>	<b>14.0</b>

Source: Indonesian Central Statistics Agency (2013a)

Average years of schooling, which is a common proxy for human capital (Kwon, 2009), is another reason for choosing Central Java Province. Table 1.4 indicates the average years of schooling from 2007-2012 in Java Island. Jakarta Province is the province with the highest average years of schooling among all provinces in Indonesia. In comparison to other provinces on the island, the average years of schooling in Central Java Province is the lowest one. Schooling years increased by only 0.6 years during the 2007 – 2012 period. This is a rather low achievement for Central Java Province. Furthermore, the education achievement of upper secondary schools in Central Java Province is also low. The NER of population aged 16-18 years in Central Java Province was 38.3% in 2003 (NER for Indonesia was 40.6)(Indonesian Central Statistics Agency, 2015) and increased to 58.3% in 2015 (NER Indonesia was 59.7) (Indonesian central Statistics Agency, 2016b).

**Table 1.4. Average Years of Schooling for Population 15 Years of Age and Over in Java Island, 2007-2012**

Province	2007	2008	2009	2010	2011	2012	Average 2007 - 2012
Capital Special Region of Jakarta	10.1	10.2	10.3	10.4	10.4	10.6	10.3
West Java	7.5	7.5	7.7	8	7.9	8.1	7.8
Banten	7.7	7.7	8	8.3	8.4	8.6	8.1
<b>Central Java</b>	<b>6.8</b>	<b>6.9</b>	<b>7.1</b>	<b>7.2</b>	<b>7.2</b>	<b>7.4</b>	<b>7.1</b>
Special Region of Yogyakarta	8.6	8.7	8.8	9.1	9.1	9.2	8.9
East Java	6.9	7.0	7.2	7.2	7.3	7.5	7.2
<b>Indonesia</b>	7.5	7.5	7.7	7.9	7.9	8.1	7.8

Source: Compiled from Indonesian Central Statistics Agency (2011, 2013c, 2013d).

Last but not least, a reason for choosing Central Java Province was research funding and Central Java being my home province. With a limited research budget, it would have been rather difficult to conduct research at the location with the highest proportion of upper secondary school dropout students. Therefore, with existing research funds, Central Java Province as the province with the second highest number of upper secondary school dropout students is selected.<sup>8</sup>

<sup>8</sup> Cost was the main consideration for choosing Central Java Province as the location of East Java Province (the highest dropout rates in the country) was relatively far from my hometown and I would have had to spend a lot of funds for transportation and accommodation for conducting research there. Being based in Central Java Province made it easier for me to collect data in this area because I could reduce transportation and accommodation costs. It was also easier for me to recruit research assistants from this region. Research assistants were collecting the data in the areas near their homes, again to reduce transportation costs and avoiding the need for accommodation costs.

## **1.5. Research Questions**

This study is conducted based on the following research questions:

1. What are the reasons for students dropping out of upper secondary school in Central Java Province?
2. How do upper secondary school students in Central Java Province describe their dropout processes, and how are they related to economic and other theories?
3. What variables best capture the reasons for, and determinants of, upper secondary school students dropping out in Central Java Province?
4. What strategies and policies have been used by central and local governments to counter dropout problems in Central Java Province? Are they effective or not?
5. What new policies, if any, might be able to address the issues arising from the answers to research questions numbers one to four?

## **1.6. Research Contribution**

In this study, the most appropriate research methods in the Indonesian context to answer the research questions are explored and employed. The research questions of this study lead to a unique contribution: This study includes variables in the interaction terms that, to the best of my knowledge, have never been used in previous studies in Indonesia or in other countries. In the regressions, four interaction terms are explored. They are the interactions between *female* and *sibling rank*, *female* and *rural home location*, *female* and *non-working mother* and also between *rural home location* and *urban school location* variables. This study focuses on females because the government of Indonesia strives to achieve gender equality. Therefore, this study emphasises the importance of gender on dropout.

In addition to the contribution above, this study also contributes to a more in-depth and robust evaluation of dropout in Indonesia, such as:

**a. Newer Study with Systematic and In-depth Research on Upper Secondary School Dropout in Indonesia**

To the best of my knowledge, there is no systematic and in-depth research focusing specifically on upper secondary school dropout in Indonesia. Previously, the government of Indonesia paid little attention to upper secondary school dropout, but now the government has put more attention on this problem by expanding the compulsory education to 12 years. Therefore, it is important to conduct comprehensive research to examine the causes of upper secondary school dropout with reference to the current situation in order to assess existing policies, and to suggest new potential policies, to protect students from dropping out.

**b. New Questionnaire Design**

This research employs an innovative approach to questionnaire design. Two sets of questionnaires have been developed for primary data collection. The questionnaires are designed for students and their parents/guardians. They are useful and applicable for studying dropout in Indonesia at every level of schooling. Experts were consulted to assist in designing questionnaires in understandable and unambiguous ways. The first drafts were designed in consultation with supervisors and they were also given to an expert in questionnaire design at Massey University. Based on the expert's comments, the questionnaires were revised and then the second drafts were translated into Indonesian. The Indonesian questionnaire versions were sent to six Indonesian scholars (three Indonesian students at Massey University and three lecturers at an Indonesian University). The main objective of sending the questionnaires to Indonesians was to get comments related to any potential problems arising in context

of different local cultures. All Indonesian scholars gave valuable comments and, based on them, the questionnaires were again revised.

In a pilot study, the third drafts of questionnaires were given to a small group of dropout students and their families in Central Java Province and the result shows that the lists of questions in the questionnaires do not cause discomfort, embarrassment, or psychological or spiritual harm to study participants. To the best of my knowledge, only my research uses both students' answers and parents'/guardians' answers from primary data collection to construct regression models to analyse dropout in Indonesia.

### **c. Probability Sampling for Primary Data Collection on Student Dropout**

Another contribution of this study is the use of a better probability sampling technique for primary data collection on student dropout in Indonesia (Chapter Four discusses this technique in more detail). The advantage of using probability sampling is that it can make inferences from the samples to the population, while the advantage of using primary data in research is that the data is original in nature and relevant to the topic, so the degree of accuracy is very high. There are relatively few published studies about upper secondary school dropout using primary data collection (e.g., Alivernini & Lucidi, 2011; Daniel et al., 2006; Davis & Dupper, 2004; Shahidul, 2013a; and Townsend et al., 2008). To the best of my knowledge, there are no previous student dropout studies (at any level of education) in Indonesia that collected primary data using probability sampling technique. Most previous studies on student dropout in Indonesia use secondary data. Only one previous study in Indonesia (i.e., Ajis, Sugiyanta, & Zulkarnain, 2013) uses primary data collection. However, that study collects data from only 19 respondents from one village and it does not use probability sampling.

Furthermore, one of the main problems of government agencies in Indonesia is the lack of document storage. In the case of dropout students in Central Java Province,

there was only the total number of dropout students available without lists of these students' names and locations. I also had difficulty getting a list of students' names from the local government. So, I could not have the sampling frame and it is difficult for me to take random samples without the sampling frame.<sup>9</sup>

The person in charge of data collection at the Central Java Province Education Agency has been contacted and asked to provide the lists of students' names. Unfortunately, the agency does not keep the lists and asked me to request the list directly from every education agency at regency/city level. However, there are 29 regencies and 6 cities in Central Java Province and it requires a lot of time to track the person in charge of dropout students' documentation. This procedure would have been both extremely time consuming and costly.

Therefore, I use an application of three-stage proportionate stratified random sampling with special reference to Indonesia (see Chapter Four for detailed explanations). To my knowledge, this sampling method may not have been used previously in Indonesia or other developing countries. The advantage of this method is that the sampling method gives every element in the target population the same probability to be chosen. It is efficient in the use of time and money and should be used by other researchers wanting to examine student dropout at all levels of education in other provinces or at national level.

#### **d. New Variables on Upper Secondary School Dropout in Indonesia**

Previous studies on student dropout have examined the different types of variables that contribute to it. However, only a limited number of variables have previously been used in Indonesia to study upper secondary school dropout. For example, a study by Ajis et al. (2013) only uses five variables. Those variables are

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<sup>9</sup> Sampling frame is a list of all members of a population used as a basis for sampling (OECD, 2005).

parents' income, the number of children in the family, the impact of social environment, parents' education level and students' interest in schooling. The study by Sparrow (2007) uses secondary data collection. It evaluates the effects of the Social Safety Net Scholarship scheme on school dropouts in Indonesia during the 1998 economic crisis. Some important explanatory variables have never been included in studies on Indonesia, for example: Gender, perception of education, deviant behaviour, working experience and sibling order. This study covers a bigger set of explanatory variables than previous studies on Indonesia.

#### **e. A Clearer Definition of Dropout**

This study offers a more precise definition of dropout that is likely to have a significant impact on the overall results. The Indonesian Central Statistical Agency and Ministry of Education and Culture do not have a clear definition of dropout. My study might become an entry point for the ministry to establish a clearer definition of dropout. I am planning to introduce the definition of dropout used in my study to government agencies and educational practitioners. The definition of dropout used in my study has already been presented in some seminars and conferences in Indonesia.

### **1.7. Chapter Outline**

The remainder of this thesis consists of seven chapters as follows:

Chapter Two – This chapter firstly explains the theoretical background used in this study. It starts by discussing both economic and non-economic theories that are used to explain the dropout phenomenon. This study uses human capital theory as the main theory to explain the importance of investment in human capital for a better life in the future. The next section of the chapter examines the various definitions of dropout. It is shown that they vary from country to country. This section also shows that the definition of dropout in Indonesia is not clear enough and simplistic. A precise

definition of dropout in Indonesia is suggested. Moreover, the chapter provides a comparison of school systems for selected countries and explains the education system in Indonesia. Next, three forms of dropout prevention - subsidies, grants and scholarships - are discussed in section 2.6. A fourth form of dropout prevention, i.e., early warning system, is examined in section 2.7. Lastly, the basic values of Javanese culture that may influence the decision to drop out are explored.

Chapter Three - This chapter reviews previous studies on dropout. They are divided into two categories: Studies conducted in developed countries and studies conducted in developing countries. The literature review on school dropout in this study starts from dropout studies at primary, lower secondary and upper secondary school, respectively. Empirical studies of higher education dropout are also discussed. This chapter also addresses previous studies for Indonesia. Last, the limitations of previous studies are pointed out in order to avoid biases in this study.

Chapter Four – The Research Methodology and Data Collection chapter explains the research methods utilized in this thesis. There are two approaches in this study, i.e., quantitative and qualitative approaches. The procedures for collecting data are explained. This chapter also introduces the empirical model and potential explanatory variables used in the regressions. The pilot study and its results are also explained. The last section presents the information about the main data collection. The first part of this section presents the description of variables and the second part summary statistics of data used for quantitative analysis.

Chapter Five – This chapter presents the qualitative analysis and it discusses the results of the in-depth interviews. Information collected from the interview gives valuable information about dropout decisions made by students. This chapter also examines the experiences and perceptions of the parents of dropout students. It also explains the impact of Javanese culture on the decision to drop out.

Chapter Six – This chapter mainly discusses the results of the quantitative analysis. Logit regression is used as the main econometric estimation technique in the study. In addition, two other methods of regression analysis are applied (i.e., Probit and Ordinary Least Squares) to estimate factors contributing to student dropout. This chapter also examines the interaction effects between variables in order to provide further insights into the dropout problem. One explanatory variable, i.e., gender, has become the focus of interaction effects. The chapter also presents and discusses the results of regressions based on gender, i.e., first female only regressions, and then male only regressions.

Chapter Seven – This chapter mainly discusses the current policies aimed at reducing dropout in Indonesia and proposes new strategies and policies to reduce dropout. Firstly, there is an assessment of whether the existing policies and strategies are effective to reduce dropout. Next, new strategies proposed to prevent students from dropping out of upper secondary school derived from the qualitative and quantitative analyses are discussed.

Chapter Eight – This chapter summarizes the main results from Chapters Five to Seven. It also discusses the limitations of this study and provides recommendations for further research.

## **2. THEORETICAL BACKGROUND AND COMPARISON OF EDUCATION SYSTEMS**

### **2.1. Introduction**

The first part of this chapter discusses the theoretical background that is used to explain the dropout phenomenon. Human capital theory is the main economic theory to explain why people invest in education. This part also discusses the demand for education and behavioural economics. Moreover, pushout and pullout theories are discussed to obtain a better understanding of the dropout decision. In addition, non-economic theory is also incorporated. Some researchers believe that human capital theory is not sufficient to explain the dropout phenomenon. Therefore, social capital theory was introduced as a theoretical approach to identify other factors that cause dropout.

The second part of this chapter discusses the definition of dropout. What makes a student a dropout? The definition of dropout and dropout rates varies from country to country. Every institution uses different concepts of dropout. In addition, researchers also have their own definitions of dropout. The different concepts and definitions make assessment and general conclusions of the factors contributing to school dropout quite challenging. The third part of this chapter discusses school systems. This part compares different education systems and structures that give more understanding about dropout. The fourth part explains the education system in Indonesia. The fifth part of this chapter discusses the subsidies, grants and scholarships programs to prevent students dropping out. This chapter also discusses early warning systems that are widely used in the US and in some developing countries to prevent students from dropping out. The last part explains some aspect of Javanese culture. Understanding students' cultural background is important to get better insights into the decision to drop out.

## **2.2. Theoretical Background**

This study mainly uses economic theories to explain the dropout phenomenon. As mentioned by Samuelson and Nordhaus (2010, p. xix), economics is the science of choice. Economists study how people make decisions to allocate their scarce resources. Economics tries to explain how much people need to work, what people buy, how much people save, how much people invest, etc. In the case of education, students (and their parents) make decisions on how many scarce resources (such as financial resources, time and energy) to allocate to education.

Nevertheless, economics is not the only discipline that can explain the dropout phenomenon. It cannot be ignored that other disciplines also give useful insights. Therefore, this study also explores social capital theory, and pullout and pushout theories, to explain school dropout.<sup>10</sup>

### **2.2.1. Human Capital Theory**

Human capital theory stresses the significance of investment in formal education (and on-the-job training and health) to improve people's welfare. This theory postulates that differences in wages occur because of differences in the sets of skills and abilities of individuals. Skills and abilities are gained from investment in human capital. Becker (2008) suggests that the most important investments in human capital are in education, training, and health.

Let's consider educational choice as an investment decision where current income opportunities are renounced in exchange for better income prospects. Below is a simple model of the main determinants of educational choice as investment in human capital (Checchi, 2006):

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<sup>10</sup> It is argued that pushout and pullout theories can be classified as economic theories. Section 2.2.3 explains more why these theories can be classified as economic.

$$\Delta H_{it} = f(A_i, T_{it}, E_{it}, H_{it}) \quad (1)$$

Where:

$\Delta H_{it}$  = formation of new human capital

$A_i$  = individual (unobservable) ability

$T_{it}$  = the fraction of time devoted to schooling (for example, longer school activity)

$E_{it}$  = per-capita resources used in schooling (teachers, libraries, etc.)

$H_{it}$  = a proxy for the family background (including the social capital that is relevant for acquiring an education)

$i$  = individual  $i$

$t$  = period  $t$

Equation (1) is known in the economics literature as the educational production function (Checchi, 2006, p. 84), since it relates inputs (student abilities, schooling resources, cultural environment) to the output of human capital. Moreover, disruption in inputs could reduce the quality of human capital formation. For example, longer attendance in schools favours greater formation of new human capital. But, if students misbehave at school, it will decrease the quality of human capital, and in the worst case, students no longer see education as an investment in their future.

Equation (1) can be modified into the following equation that can explain student dropout:

$$D_{it} = f(I_{it}, F_{it}, S_{it}, GM_t) \quad (2)$$

Where:  $D_{it}$  = Decision to drop out

$I_{it}$  = Proxy for individual characteristics

$F_{it}$  = Proxy for family characteristics

$S_{it}$  = Proxy for school characteristics

$GM_t$  = Proxy for government policies and macroeconomic condition

More investment in education (and training) will increase someone's skills and an individual who possesses more skills will have better performance in the labour force and higher earnings. Becker (2008) shows that more educated individuals tend to earn above the average. So, individual's human capital will determine people's standard of living.

Ingrum (2006, p. 75) also believes that investments in human capital increase the chances for economic success. This theory implies that someone should not drop out of school. If students drop out of school, they do not possess enough skills and knowledge to compete in the labour market. Hence, they are categorised as unskilled workers and only earn low wages. It is likely to be impossible for dropouts to have a better standard of living. As human capital theory highlights the importance of increasing investment in human capital, students need to finish high school before joining the labour force or continuing to higher levels of education. So, dropout prevention is needed to increase individual investment in human capital.

### ***Demand for Education***

Human capital theory focuses on the demand for education. Demand for education involves economic decision-making in the sense that economic factors play a crucial role in shaping the decisions of providers, institutions, and customers (i.e., students and parents) (Chattopadhyay, 2012, p. 17). Becker's canonical model posits that demand for education is driven by students' and parents' perception of education as an investment in future income earning capacity (Sequeira, Spinnewijn, & Xu, 2016, p. 373). Individuals invest in various ways which entails a sacrifice of current consumption with the purpose to gain income in the future (Chattopadhyay, 2012, p. 17).

In contrast, Lincove (2014) suggests that the demand for education depends on the parents only. According to Lincove, demand for education refers to family's

willingness (parents as consumers) to send their children to school. She states that parents play an important role in making investment decisions on behalf of their children. She argues that demand for education is not influenced only by parents' perception but also by parents' resources and preferences. However, many studies show that children's perception of education also affects the demand for education (e.g., Alivernini & Lucidi, 2011; Fall & Roberts, 2012; South, Haynie, & Bose, 2007; and Wexler & Pyle, 2012). Lincove's claim seems correct for children of primary school ages only, because at that age, children cannot make any educational decisions and their parents decide for them. Children start to make educational decisions when they are getting older and mature.

There are other factors that influence demand for education. Family socioeconomic status (SES) is cited as a prominent factor. Parents face a set of consumption and investment options and they decide the level of their children's schooling that maximises family well-being. However, the main obstacle to maximise family well-being is parents' financial resources. Families with limited financial resources sometimes cannot afford education expenses and reduce the demand for education. Poor families often face the decision to choose between their children's education and their basic consumption needs. Schooling expenses, which an impoverished family cannot afford, are not only tuition fees. There are also other expenses such as transportation, uniform, books and other supplies. Higher financial allocation to education decreases family consumption. In the end, they have no choice but to stop sending their children to school, even if they recognise the benefits of schooling.

According to Chattopadhyay (2012, p. 17), there are also non-economic factors that affect demand for education. Firstly, parents' good perception of education is important for increasing the demand for education. Parents from poor families often do not recognise the impact of making an educational investment to the future benefit of their children (Smink & Reimer, 2009, p. 11). Research by Pryor and Ampiah (2003,

p. 44) in Ghana suggests that many parents consider that education is not valuable because it is not helping their children's future life as farmers. However, a study by Hunter and May (2002, p. 10) shows that poor families try their best to keep their children in school as they see education as the pathway out of poverty.

Gender differences also play a role in the demand for education (Lincove, 2014, p. 195). On the one hand, in some countries, labour markets tend to offer work opportunity for male labourers but not female labourers and this condition leads male students to leave school. Males have a bigger opportunity to enter the labour force when they have reached a certain age and parents deliberately send their son to work if they think that the opportunity cost of schooling is high. The opportunity cost of schooling can be children involved in paid labour during school hours (e.g., wage foregone) or the value of the unpaid work on the family farm (Lincove, 2014). In countries where demand for child labour is high (due to cheaper wages), demand for boys' education is low.

On the other hand, traditional gender stereotypes may still exist. In contrast to the above, parents may prioritise boys' education over girls' because they believe sons can earn more money after finishing formal education than girls. Parents think that daughters do not need to have a high level of education because they will do more household chores after they are married. A study in China by Chi and Rao (2003) reveals that parents believe the long-term benefits of educating their girls only accrue to their husband's family, so it is not necessary to provide them with higher levels of education. Early marriage and pregnancy also reduce the demand for education.

In addition, parent's education levels also affect the demand for education. Future wealth of their children always becomes parents' concern and parents with higher human capital will send their children to obtain higher levels of education (Dabla-Norris & Matovu, 2002). Educated parents who have gained the benefits of education may also choose better education for their children and it will increase the

demand for education (Lincove, 2014). Uneducated parents' limited information about the returns to education may lead them to underestimate the importance of schooling. Two studies show that children's educational and occupational success is determined by parents' educational level (Davis-Kean, 2005; Dubow, Boxer, & Huesmann, 2009). Therefore, it is important to use the parental education level as a variable in the model because it is a prominent factor that contributes to the dropout decision.

As mentioned above, higher demand for education is driven by parents' perception about the future benefits of education. In addition, students' good perception of education also contributes to higher demand for education. Sequeira et al. (2016) suggest that the low perceptions of good education by students in poor rural areas are because of poor information from their uneducated parents. Demand for education is high if students believe that their investment in better education will benefit them in terms of future income earning capacity. In that case they are likely to stay and finish their schooling.

### **2.2.2. Behavioural Economics**

Human capital theory has also been criticised for assuming that individuals act rationally to maximise utility while in the real world economists are aware that individuals are capable of acting irrationally to reach goals other than the maximisation of utility (Fitzsimons, 2015, p. 2). While economic agents are assumed to be rational, have complete and objective knowledge, unchanging preferences, perfect self-control and always maximise long-term utility, in reality people cannot process unlimited amounts of information, have incomplete, incoherent and changing preferences, are highly influenced by other people, and can act differently from their own long-term best interest (Diamond, Vorley, Roberts, & Jones, 2012, p. 20). To sum up, economic agents sometimes are not rational and they differ from the standard economic view of rational decision making.

Therefore, Lavecchia, Liu, and Oreopoulos (2016, p. 5) suggest using behavioural economics to explain the deviations from the traditional human capital investment model. Behavioural economics is “an umbrella of approaches that seek to extend the standard economics framework to account for relevant features of human behaviour that are absent in the standard economics framework” (Diamond & Vartiainen, 2007, p. 1). Behavioural economics inserts insights from psychology and sociology into the standard economic approach to gain better understanding about human behaviour (Koch, Nafziger, & Nielsen, 2015, p. 4). Behavioural Economics suggests that economic agents deviate from the standard economic model in three ways (DellaVigna, 2009, p. 316): (1) Non-standard preferences (such as self-control problems), (2) non-standard beliefs (for example: Overconfidence), and (3) non-standard decision making in response to social pressure and emotions.

Culture also can be introduced as the deviation from the standard economic views (Teraji, 2015, p. 81). Culture, as a set of shared beliefs, values and attitudes, can influence people's preferences and their choices for goods and services (op cit., p. 81). Culture appears to be important to determining economic behaviour because it controls or restricts actions that people are likely to do in a certain situation (Teraji, 2016, p. viii). Culture clearly creates boundaries for what members of a society should or should not do in some circumstances.

One of the examples of deviation from the standard economic view is decision-making about school dropout. There are some students who drop out of school when the returns seem to be at the greatest if they graduate (Koch et al., 2015, p. 3). Lavecchia et al. (2016, p. 5) argue that some students deviate from the traditional human capital investment model because they: (1) focus too much on the present; (2) heavily depend on routines and ignore relevant information; (3) deeply focus on negative attributes; and (4) make wrong decisions due to insufficient information or too many choices. Making poor decisions may lead to lifelong regret (Connolly & Zeelenberg, 2002, p. 212; Zimmerman, 2016, p. 303). In addition, Lavecchia et al.

(2016, p. 15) suggest that long-term consequences of being dropouts may not always be at the top of students' minds as later dropouts regret their decision to drop out.

In line with Lavecchia et al., Oreopoulos (2007, p. 1) suggests that students ignore or underestimate the future consequences when deciding to drop out. Moreover, Koch et al. (2015) argue that self-control problems are important to understand individuals' decisions to invest too little in education. Economists define self-control problems as present-biased preferences (White & Dow, 2016, p. 35). According to White and Dow (2016), present-biased preferences are the results of placing disproportionately more weight on present costs and benefits than future costs and benefits. One form of self-control problem is myopic (short-sighted expectations) behaviour (Lavecchia et al., 2016; Oreopoulos, 2007). It is important for policy makers to intervene people with self-control problems to overcome their problem and make right decisions more in keeping their long run interest (Sanders & Hallsworth, 2016, p. 271)

Lavecchia et al. (2016) borrow two systems of thought to describe why individuals have myopic behaviour and make a variety of poor economic choices such as drop out of school. The two systems of thought are called *System 1* and *System 2* (Kahneman, 2003, p. 1451). *System 1* focuses on the present while *System 2* anticipates the future. *System 1* assesses what it finds to be noticeable and most important in the present. In contrast, *System 2* considers current and future benefits more carefully than *System 1*. The decision to drop out is not rational if individuals weight current and future expected costs and benefit wrongly as *System 1* exaggerates the present and downplays the future. *System 1* responds quickly and makes decisions about a trade-off with a cost today, especially when the current cost is partly obvious, with future benefit that may be unclear or abstract. According to Roberto and Kawachi (2016, p. 5), it is difficult to make wise decisions when individuals do not understand the impacts of those decisions, simply because they do not get sufficient information in order to make a wise decision. Behavioural economics models suggest that if imperfect information is

a main contributor to poor decisions, it is important for policy makers to promote policy making that nudges individual toward better choices (White & Dow, 2016, p. 54).

### **2.2.3. Pushout and Pullout**

Pushout and pullout theories are also often cited in the non-economic literature to explain the reason for students to drop out of school. Firstly, pushout theory postulates that there are some factors from within the school that push students out of school, such as school environment and policies. Secondly, pullout theory states that there are factors outside of school that influence students' decision to drop out. However, both theories are similar to the demand for education.

Rumberger and Lim (2008) advise that there are school policies that force students to drop out of school involuntarily. Schools discharge students deliberately and systematically - based on their strict policies and practices – because they are “troublemakers” and low performing students. Some researchers define this type of dropout as “pushout” (Bradley & Renzulli, 2011, p. 523; Brownstein, 2009; Cassidy & Bates, 2005, p. 70; Davis & Dupper, 2004, p. 182; Hood, 2004, p. 6; Jordan, Lara, & McPartland, 1996, pp. 62-63; Stearns & Glennie, 2006, p. 31; Zimmer & Guarino, 2013, pp. 461-462). “Pushout” as a term puts attention on the schools that discourage students to finish their education, rather than the term “dropout”, which reflects students dysfunction and pathology (Davis & Dupper, 2004, p. 182). The term pushout is used to differentiate the process of dropout by school-initiated instead of student-initiated actions.

However, there is also another definition of pushout. Students are “pushed out of school” because of the limitations of the school system to create a comfortable environment for them. While Tate (2008, p. 4) emphasises the bullying and harassment problems in schools that push students out, Reddy and Sinha (2010) assert that students are pushed out of school because of a lack of capacity in a school, such as

facilities, regulation and quality. They argue that school dropout usually means the incapability of students to stay in school for some reason. However, if the issue is looked at as students being pushed out of school, the problem is on the limitation of the school's system to ensure they stay in school. For example, a survey of students in England estimates that 16,493 young people aged 11-15 in 2010 were frequently absent from state schools because of bullying (Brown, Clery, & Ferguson, 2011, p. 6). In conclusion, pushout means that the student is voluntarily leaving school because there is no adequate support from the school. Pushout theory is closely related to the demand for education. The demand for education decreases when bullying and harassment problems in schools arise.

Pullout refers to a decision to drop out based on financial considerations and the high likelihood of finding a job (Bradley & Renzulli, 2011; McNeal Jr, 1997; Stearns & Glennie, 2006). In general, pullout theory suggests that students decide to drop out based on a cost-benefit analysis (Stearns & Glennie, 2006, p. 31). Rumberger and Lim (2008) do not mention the term "pullout" explicitly in their study, but define it as the "access to institutional resources" (for example, access to employment opportunities). Based on the pullout theory, labor markets pull students out of school when there is a greater demand for low-skilled and low-paid jobs (McNeal Jr, 1997; Stearns & Glennie, 2006). The perceived opportunity cost for staying in school is high as well because they are forgoing present earning potential to stay at school (Stearns & Glennie, 2006). In addition, Jordan et al. (1996) and Stearns and Glennie (2006) state that students are pulled out of school not only because of financial considerations, but also due to having to take care of families and pregnancy. In general, pullout is the process of dropout by student-initiated actions, not school-initiated actions.

Pullout theory is analogous to human capital theory. Pullout theory implicitly suggests that students underestimate the importance of investment in human capital. Pullout theory is also related to the demand for education. Financial problems, having to take care of families and higher low-skilled job opportunities reduce the demand for

education. It is clear that pullout theory is an economic theory as it relates to students' consideration about the costs and benefits before they decide to drop out.

How important is pushout and pullout for Indonesia? Pregnancy is considered as an example of pushout in Indonesia, although some researchers classify pregnancy as an example of pullout (see Doll, Eslami, & Walters, 2013, p. 3; and Jordan et al., 1996, p. 64). Generally, schools in Indonesia cannot accept students who are involved in 'immoral behaviour,' such as out of wedlock pregnancy. It is considered as a violation of the regulations. Consequently, students' pregnancy certainly means being expelled from school. Therefore, in Indonesia it seems that students' pregnancy is classified as pushout, not pullout, because schools expel pregnant students.

Another example of pushout in Indonesia is bullying in schools. Hinitz, Shore, and Kumara (2010) assert there were many reported incidents of bullying behaviour in Indonesia towards students, both by other children and also by their teachers. Their study indicates that the phenomenon of bullying can be frequently found in Indonesia. Therefore, some actions must be taken to prevent students and teachers from bullying and other forms of deviant behaviour.

There is a clear pullout problem in Indonesia since there were a lot of students who decided to quit school and enter the labour force because of financial issues. Table 2.1 shows that Indonesia still has a large workforce with low educational attainment. For example, 91% of the economically active population in Indonesia has lower secondary school education or below and only 9% of the economically active population has upper secondary school or tertiary education. In order to achieve the objectives outlined in the Master Plan for the Acceleration and Expansion of Economic Development in Indonesia (MP3EI), and to be competitive within the context of Association of Southeast Asian Nations (ASEAN) integration, Indonesia must rapidly increase the proportion of the economically active population with upper secondary

school and tertiary education (International Labour Organization, 2013). Therefore, the pullout problem must be stopped or reduced in the future.

**Table 2.1. Educational Attainment of the Economically Active Population in Indonesia, 2010-2012 (in Per cent)**

<b>Educational Attainment</b>	<b>August 2010</b>	<b>August 2011</b>	<b>August 2012</b>
No Schooling	4.6	5.1	4.6
Primary School and below	63.2	62.0	61.3
Lower Secondary School	24.1	24.8	25.1
Upper Secondary School and above	8.1	8.2	9.0
Total	100.0	100.0	100.0

Source: International Labour Organization (2013, p. 10)

#### **2.2.4. Social Capital Theory**

Most of the explanatory variables used in the quantitative approach are based on human capital theory. In addition, this study also incorporates Coleman's (1988b) concept of 'social capital' to explain school dropout. Social capital proponents believe that human capital theory is not sufficient to explain the dropout phenomenon. Coleman's social capital theory contributes to a theoretical approach to identify additional family factors that affect schooling (Teachman et al., 1997, p. 1344). It explains that students' attainment is not only affected by their human capital but also by how they interact with their environment as social beings.

According to Coleman (1988b, p. S109), the impact of families on students' achievement in school can be separated into three different components: Financial capital, human capital, and social capital. Financial capital is usually measured by family's wealth or income and human capital is measured by parents' education. Social capital refers to the value of the social networks and social interactions (Nahapiet, 2011;

Smith et al., 1992). Coleman (1988b, p. S101) claims that social interaction that does not help or increase productive action does not represent social capital. It is also suggested that the social networks and social interactions occur not only within the family but also with the community (Coleman, 1988b, p. S113).

Social capital theory explains that parents' human capital is transferred to the children through positive interaction between the parents and the children. Coleman suggests that even though the parents' human capital strongly affects children, it may not be relevant for children if parents are not an important part of their lives. For example, the absence of the parents in the home or less positive interaction between the parents and the children may deter the transmission of parents' human capital. Smith et al. (1992, p. 77) argue that parents may have high human capital, but if parents do not set up a good relationship with the children, the transmission of human capital is less effective. Moreover, Teachman, Paasch, and Carver (1996, p. 774) indicate that there is no effective way to transmit parents' human and financial capital to children without positive parent-child interaction.

As mentioned by Dohmen, Falk, Huffman, and Sunde (2012, p. 675), children may end up with similar outcomes (for example, education and income) to their parents partly because they possess attitudes similar to their parents and make similar choices in life. Therefore, increasing the social capital of parents with low human capital is very important so that they will encourage their children to gain higher human capital.

It is suggested that lack of social capital within the family may cause dropping out of school (Coleman, 1988b, p. S111). Therefore, some variables that are proxies for social capital are tested in the quantitative analysis. This study examines the impacts of the variables *fathers' academic support*, *mothers' academic support* and *relation with teachers* on school dropout.

### **2.2.5. Theoretical Background for Interaction Terms in this Study**

One explanatory variable, i.e., gender, has become a main focus of this study. Four interaction terms are included in the model discussed in Chapter Four. They are interactions between *female* and *sibling rank*; *female* and *rural home location*, *female* and *non-working mother*; and *rural home location* and *urban school location* variables. This section presents the theoretical background to describe why those interaction terms are incorporated in this study. It describes the theory, i.e. demand for education, to explain why gender differences may lead to different access to education.

This study adds new variables that have never been used in previous studies, i.e., the interaction between *female* variable and three other variables. They could give us a better understanding about the decision to drop out, and more importantly, add to the existing literature about the demand for education.

Before explaining the theoretical background, it is important to understand the gender issues in Indonesia. The government of Indonesia strives to achieve gender equality. One of the prominent actions to accelerate gender integration in the education sector was to include a strategy of gender equality in the National Education Strategic Plan 2010-2014 (CEDAW, 2011). The Strategic Plan has five main aims which target all educational levels (OECD & Asian Development Bank, 2015, pp. 67-68) . They are: (1) Improve availability of education services; (2) improve affordability of education services; (3) improve the quality and relevance of education services; (4) improve equality in obtaining education services; and (5) improve the assurance/guarantee of obtaining education services. The strategic plan has shown a tremendous improvement in school enrolments. In 2012, about 36.2% of Indonesian women held a secondary or higher level educational qualification compared to 46.8 % of men (UNDP, 2013). By 2013, this had increased to 39.9% and 49.2%, respectively (UNDP, 2014).<sup>11</sup> This

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<sup>11</sup> There was no change in the percentage of females and males with at least secondary education.

represents about 3.7% growth for females and only about 2.4% growth for males during 2012 – 2013. Although there is an improvement in school enrolments, Indonesia is still struggling to reduce its gender equality gap. The Human Development Index (HDI) in 2013 shows that the Indonesia women HDI is 0.654, lower than the HDI for men, which is 0.712 ((UNDP, 2014), resulting in a Gender Development Index (GDI) value of 0.927.<sup>12</sup> By 2014, this had increased to 39.9% and 49.2%, respectively.

Having discussed the gender issues in Indonesia, the following part discusses the theoretical background explaining the interaction terms used in this study. The first interaction term is the interaction between *female* and *sibling rank*. The number of children in a family also influences the demand for education. Larger family often face problems sending all of their children to school, due to financial constraints. Having a high number of siblings not only decreases family resources, but also parental attention and educational supervision which can cause children's low educational attainment (Roscigno & Crowle, 2001). It is suggested that there is a trade-off between family size and quality of education (Booth & Kee, 2009). The number of children affects the demand for education in two different ways. Firstly, older siblings receive a higher share of family resources than younger siblings (Booth & Kee, 2009). In this case, demand for education for older sibling is higher and for younger siblings is lower.

Secondly, there is a probability that to avoid younger children receiving less education, older siblings sacrifice their current education and enter the labour market to give an opportunity to younger siblings to get better education. In most cases older siblings also provide financial support to younger siblings. In this case, demand for education for older sibling is lower and for younger siblings is higher. Since there are two different ways of the impact of sibling rank on the demand for education, this study tests whether female students with higher sibling rank have higher or lower probability of dropping out.

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<sup>12</sup> Gender Development Index is defined as a ratio of the female to the male HDI (UNDP, 2013).

The second interaction term is the interaction between *female* and *rural home locations*. UNESCO Institute for Statistics (2012), based on data from 47 countries, suggests that primary school-age female students from rural areas are more likely to withdraw from school than male students from rural areas, and they are twice as likely to quit school in comparison to female students in urban areas. It suggests that rural areas reduce females' demand for education. Therefore, this study checks whether there is a gender difference in rural areas on the probability of dropping out.

The third interaction term is the interaction between *female* and *non-working mother*. Schwarz, Trommsdorff, and Chakkarath (2004, p. 361) show that support from the Indonesian daughter to her mother corresponds with her filial obligations to her mother, reflecting the traditional view of the mother–daughter relationship in Indonesia. It is still unclear whether females who have non-working mothers have a reduced demand for education. Therefore, this study tries to find out whether female students whose mothers are not working have a higher probability of dropping out.

Last, this study also checks the interaction between *rural home location* and *urban school location* variables. A study in rural Java shows that students who reside at longer distances from school have lower school attainment (Mason & Rozelle, 1998). Again, It is still unclear whether a home location different from the school location will reduce demand for education or not. Therefore, this study adds an interaction between *rural home location* and *urban school location* in order to examine whether students from rural areas that study in urban schools have a higher probability of dropping out.

### **2.3. Definition of Dropout**

One of the problems encountered in the studies of dropouts is the lack of a uniform definition. There is no consensus on how to define a school dropout. The most well-known definition was proposed by Morrow (1986, p. 353) (Kyridis, Tsakiridou, Zagkos, Koutouzis, & Tziamtzi, 2011, p. 4; OECD, 2010, p. 204):

“Any student previously enrolled in a school, who is no longer actively enrolled as indicated by fifteen days of consecutive unexcused absence ... not satisfied local standards for graduation, and for whom no formal request has been received signifying enrolment in another state-licensed educational institution. A student death is not tallied as a dropout. The designation of dropout can be removed by proof of enrolment in a state-licensed educational institution or by presentation of an approved high school graduation certificate.”

However, statistical agencies, international agencies, education authorities, research centres and researchers use different concepts of dropout. On the one hand, some agencies only provide a broad and general definition of dropout, such as UNESCO, OECD, the World Bank and the Indonesian Central Statistics Agency. UNESCO, for example, defines dropout as pupils or students who leave school definitely in a given school year. The US National Center of Education Statistics (NCES), on the other hand, gives a specific and technical definition of dropout. Table 2.2 shows the various definitions of school dropout used by statistical agencies, international agencies and education authorities (arranged in alphabetical order).

**Table 2.2. Definitions of a Dropout Used by Some Agencies**

Agencies	Dropout Definition
Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency	<p>Dropout is defined as a person who does not finish a certain level of education or leave a specified school level without obtaining the diploma.</p> <p>Source: Ministry of Women Empowerment and Child Protection and Indonesian Central Statistics Agency (2012, p. 49)</p>
National Center for Education Statistics (NCES)	<p>Based on a "snapshot" count of students at the beginning of the school year. A dropout is an individual who:</p> <ol style="list-style-type: none"> <li>1. Was enrolled in school at some time during the previous school year and was not enrolled on October 1 of the current school year; or</li> <li>2. Was not enrolled on October 1 of the previous school year, although expected to be in membership (i.e., was not reported as a dropout the year before); and</li> <li>3. Has not graduated from high school or completed a state- or district-approved educational program; and</li> <li>4. Does not meet any of the following exclusionary conditions:               <ol style="list-style-type: none"> <li>a. Transfer to another public school district, private school, or state- or district-approved education program;</li> <li>b. Temporary school-recognized absence due to suspension or illness, or</li> <li>c. Death.</li> </ol> </li> </ol> <p>Source: US Department of Education - National Center for Education Statistics (n.d.-a)</p> <p>Note: The status dropout rate represents the percentage of 16- through 24-years-old who are not enrolled in school and have not earned a high school credential (US Department of Education - National Center for Education Statistics, n.d.-b).</p>
OECD	<p>Dropouts are defined as those students who leave the specified level in the educational system without obtaining a first qualification.</p> <p>Source: OECD (2002)</p>
UNESCO	<p>Pupil or student who leaves school definitively in a given school year.</p> <p>Source: UNESCO (n.d.)</p>
World Bank	<p>Pupils (total, male, female) in any grade of primary or secondary in a given school year and who no longer attend school the following school year.</p> <p>Source: World Bank (n.d.)</p>

Researchers also often have their own definition of student dropout. Table 2.3 shows several dropout definitions used. Although researchers use different definitions, the commonalities in their definitions include 'early school-leaving' and 'does not have a valid certificate'. The different definitions and formula used by researchers often make comparing research results difficult.

**Table 2.3. Definitions of a Dropout Used by Researchers**

No.	Country	Dropout Definition
1	Indonesia	<ol style="list-style-type: none"> <li>1. If the child was attending school at the start of the school year (in late July) and dropped out of school by December 1998 (Cameron, 2009, pp. 310-311).</li> <li>2. Those who did not continue their study to junior secondary school after graduating from primary school (Suryadarma, Suryahadi, &amp; Sumarto, 2006, p. 18).</li> <li>3. Dropout rate: Percentage of students who dropped out from school (Toi, 2010, p. 114).</li> </ol>
2	Australia	Someone who leaves school before Year 12 (the final year of secondary school) or begins year 12 but leaves without obtaining an upper secondary qualification (S. Lamb) (Lamb & Markussen, 2011, p. 5).
3	Canada	Someone who has not successfully completed high school and is not enrolled in education or in a work study program qualification (M. Janosz, S.L. Bisset, L.S. Pagani and B. Levin) (Lamb & Markussen, 2011, p. 5).
4	England	Someone who does not hold an upper secondary qualification and is no longer in education, employment or qualification (A. Sullivan and L. Unwin) (Lamb & Markussen, 2011, p. 5).
5	Finland	Someone who does not hold an upper secondary qualification and is no longer in education, employment or training qualification (R. Rinne and T. Järvinen) (Lamb & Markussen, 2011, p. 5).
6	France	Someone who is no longer in school and did not reach the recognised standard of achievement in the final year of their academic or vocational study qualification (M. Blanchard and R. Sinthon) (Lamb & Markussen, 2011, p. 5).
7	Germany	Someone who leaves school without gaining any official upper secondary qualification or certificate qualification (A. Reupold and R. Tippelt) (Lamb & Markussen, 2011, p. 5).
8	Iceland	Someone who by the age of 24 has not completed an upper secondary qualification (K.S. Blondal, J. Jónasson and A-C. Tannhäuser) (Lamb & Markussen, 2011, p. 5).

No.	Country	Dropout Definition
9	Norway	Someone who left upper secondary education before the final year or who remained to the end, but failed to fulfil the graduation requirements qualification (E. Markussen, M.W. Frøseth, N. Sandberg, B. Lødding and J.S. Borgen) (Lamb & Markussen, 2011, p. 5).
10	Poland	Someone who has not completed an upper secondary qualification and is no longer in education, employment or training (P. Mikiewicz) (Lamb & Markussen, 2011, p. 5).
11	Scotland	Someone who does not hold an upper secondary qualification in the 'regular' or specified period qualification (D. Raffé) (Lamb & Markussen, 2011, p. 5).
12	Spain	Someone who enrolls in <i>baccalaureate</i> or in vocational training but does not complete it (R. Merino and M. Garcia) (Lamb & Markussen, 2011, p. 5).
13	Switzerland	Someone who as an 18- to 24-years-old has not successfully completed post-compulsory education and does not enter another type of training (E. Pagnossin) (Lamb & Markussen, 2011, p. 5).
14	USA	Someone who does not complete a high school diploma or equivalent credential qualification (R.W. Rumberger) (Lamb & Markussen, 2011, p. 5).
15	The Netherlands	Someone who does not even have a general education certificate (Dekkers & Claassen, 2001, pp. 341-342).
16	Cambodia	Those who were officially taken out from the list of students made by school. Also those who were absent on the two days of the field work and 95% of their classmate testified that they had not come to school for more than one month (No & Hirakawa, 2012, p. 30).
17	Kenya	Pupils who leave school before the end of the final year of an educational cycle in which they are enrolled (Julius & Bawane, 2011, p. 77).
18	Nigeria	Students who withdraw from school prematurely and end up not obtaining any certificate of graduation (Ajaja, 2012, p. 145)

Note: The definitions of a dropout in points 2 to 14 are compiled by Lamb and Markussen (2011) from authors who wrote case study chapters for their book. The names of the authors are presented after the definition (in parentheses).

In addition, most previous studies just directly construct a variable without giving a clear definition of dropout. While some previous studies do not give a clear definition, some studies simplify the definition of dropout student. For example, South et al. (2007, p. 74) classify adolescents as school dropouts if "they are reported of being expelled or having dropped out of school as the reason they were no longer enrolled."

No and Hirakawa (2012, p. 30) define one criteria of dropouts as “those who were absent on the two days of the field work and 95% of their classmates testified that they had not come to school for more than one month.” In another study, No, Taniguchi and Hirakawa (2016, p. 217) term dropouts as “those who had been absent for 30 continuous days without reasons being given, and those who were reported to have dropped out by 95% of their classmates.” These studies ignore the probability of students enrolling in other schools or death and simply count students who are “being expelled”, “had not come to school for more than one month” and “absent for 30 continuous days without reasons being given” as dropout students.

In the case of Indonesia, previous studies on dropout (e.g., Cameron, 2009; Ha & Mendoza, 2010; and Toi, 2010) have not presented a clear and complete definition of dropout. Moreover, the *Indonesian Central Statistics Agency* (BPS) does not have a clear definition of dropout. BPS calculates the dropout rate as the percentage of students who dropped out in a level of education. However, the dropout rate is still ambiguous and simplistic. For example, the BPS still includes students’ mortality in the calculation of dropout rates. Similarly, Ministry of Education and Culture also includes the mortality in its calculation of dropouts. The Ministry of Education and Culture calculates dropouts using the following formula:

$$DO_{t-1} = S_{t-1} - S_t + NS_t - G_{t-1} \quad (3)$$

Where:

$DO_{t-1}$  = number of dropouts last academic year

$S_{t-1}$  = number of students at the beginning of previous academic year

$S_t$  = number of students at the beginning of current academic year  
(excluding new first grade students)

$NS_t$  = number of new first grade students at the beginning of current academic year

$G_{t-1}$  = number of last year’s graduates

The above calculation does not clearly mention that  $S_t$  excludes mortality. The calculation must clearly mention that deaths are excluded from the dropout calculation. If the mortality is included in the dropout rate calculation, the rate seems larger. To get a more precise definition of dropout in Indonesia, we should refer to the definition of the NCES as presented in Table 2.2 and modify Equation (3) as follow:

$$DO_{t-1} = S_{t-1} - S_t + NS_t - G_{t-1} - DEATH_{t-1} \quad (4)$$

Where:

$DEATH_{t-1}$  = mortality

The NCES's definition states that students who are transferred to another school and students who are temporarily absent due to suspension or illness are not counted as dropouts. In Equation (3), students who are moving to another school, or are suspended or ill, are still counted in  $S_t$ .

## **2.4. Education System Comparison**

Every child has the right to a good education. A good education allows children to learn and to grow, and to develop their talents and potential. Going to school helps children how to learn and how to relate to other children. It provides children with the tools to learn, such as reading, writing and manipulating numbers. School introduces children to the wealth of the wider world and gives them a chance, later on, to get a job and contribute to society. The learning processes in schools depend on a country's education system. Every country in the world has its own education system which is considered the best for the country. It was reported that 702 million children in 2009 were enrolled worldwide in compulsory primary education, compared to 646 million in 1999 (UNESCO Institute for Statistics, 2011).

This section discusses education systems in some countries around the world. It is important to note that compulsory education may be important for explaining school

dropout. It has been noted that there is almost no research on primary school dropout in developed countries because it is compulsory by law that children of certain ages must enrol in primary school, while in some developing countries there are no such rules. Previous studies have shown a strong relationship between compulsory education age and school dropout (e.g., Cabus & De Witte, 2011).

#### **2.4.1. Comparison of Duration of Compulsory Education**

According to UNESCO, compulsory education refers to the number of years or age spans when children are legally obliged to attend school. Compulsory education varies between a minimum of five years to a maximum of 14 years (see Table 2.4), with 9 years of compulsory education as the common one (about 31% of countries adopt this duration, with most of Asian region (47.7%) and European region (40.4%) applying this system. Among the nations, Uruguay and Venezuela are countries that apply the longest compulsory education, that is, 14 years. Furthermore, all OECD member countries enforce at least 9 years compulsory education. The duration for which school attendance is required varies from country to country because of the difference of education system structure, for example, 6+3+3 system (6 years of primary school + 3 years of lower secondary school + 3 years of upper secondary school) or the 5+4+3 system (5 years of primary school + 4 years of lower secondary school + 3 years of upper secondary school).

**Table 2.4. Number of Countries and Duration of Compulsory Education, 2011**

<b>Years</b>	<b>No. of Countries</b>	<b>%</b>
5	5	2.58
6	24	12.37
7	7	3.61
8	14	7.22
9	60	30.93
10	35	18.04
11	17	8.76
12	14	7.22
13	3	1.55
14	2	1.03

Source: UNESCO Institute for Statistics (n.d.)

Note: For detail list of countries, please see Appendix Table 6.1.

Some countries allow students to legally withdraw from school at certain ages. For example, in New Zealand children may start school at five years old, but by law schooling is compulsory from ages six to 16 (Ministry of Education New Zealand, 2016). In the US, the minimum age a person who is legally allowed to drop out is 16. After a student has passed the minimum age, parents and school authorities have no legal powers to prevent him/her from quitting school.

#### **2.4.2. Starting Age of Compulsory Education**

The intended age for school entry varies by country. It typically begins between the ages of 5 to 7 years, with 6 years as the most common entry age (almost 60% of countries commence compulsory education at 6 years old). Generally, primary education is the start of compulsory education, but in some countries, compulsory education begins before that. For example, Venezuela starts compulsory education as early as age 3, while in Ghana, Mexico and Uruguay they begin compulsory education at 4 years old. At least three-quarters of countries in the world begin compulsory education at age 6 or earlier, and the rest begin at age 7 (17.5%) (see Table 2.5).

**Table 2.5. Number of Countries and Starting Age of Compulsory Education, 2011**

<b>Age</b>	<b>No. of Countries</b>	<b>%</b>
3	1	0.52
4	3	1.55
5	27	13.92
6	116	59.79
7	34	17.53
Not Applicable	2	1.03
No Data Available	11	5.67
<b>Total Countries</b>	<b>194</b>	<b>100</b>

Source: UNESCO Institute for Statistics (n.d.)

Note: For detail list of countries, please see Appendix Table 6.2.

Since there are different ages of starting school, one might raise a question: When is an appropriate age for children to start school? In the United Kingdom (UK), for example, children have a school starting age of 5, earlier than most other European countries. The reasons for the earlier school starting age adopted in the UK are that young children are able to learn more formal skills inherent in the school curriculum and that starting school early allows them to get a head start in learning. Moreover, it is argued that an early start gives an opportunity for children from less advantaged backgrounds to make up any deficits in their academic skills (Sharp, 2002). Nevertheless, Sharp concludes that there is no clear evidence that a child who starts primary school later is restrained in his/her progress.

### **2.4.3. Education System Structures**

Table 2.6 presents an overview of the education system structures in 29 selected countries from pre-primary level up to tertiary education. As shown in Table 2.6, there is no single accepted structure. The education system structure varies among countries, but the 6+3+3 system is the most common system used (representing 11 out of 29 countries reviewed).

It is important to note that the official starting age of upper secondary school differs from country to country. For example, in some developing countries (Indonesia, Philippines, Malaysia and South Africa) the official starting age of upper secondary school is 16 years old, while in developed countries (such as England, Italy, New Zealand and the US) the official starting age of upper secondary school is 14 years old. It implies that the student's level of maturity is different when he/she starts upper secondary school. Moreover, there are also different lengths of upper secondary school. For example, in some countries upper secondary school consists of three years of education, while in other countries upper secondary school consists of two or four years of education. In that sense, upper secondary school dropout studies for the US differ from those for Cambodia because the US and Cambodia have different lengths of school and official starting ages.

Therefore, school dropout studies that use cross-country data can be biased. For example, a study by Chaudhuri and Maitra (2008) examines the determinants of the dropout rate at primary and secondary levels using data from 138 countries. Since there are differences in school length and ages of every country, there are biases in their estimation results. It can be concluded that the problems encountered in the studies of dropouts are not only due to the lack of a uniform definition, but also due to differences in education system structures and official schooling ages.

**Table 2.6. Education System Structure in ASEAN Countries, Selected Developing Countries and Developed Countries**

Age	INDONESIA	THAILAND	SINGAPORE	PHILIPPINES	MALAYSIA	BRUNEI DARUSSALAM	VIETNAM	MYANMAR	LAO PDR	CAMBODIA
> 20	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education
20	Upper Secondary School (3 years)	Upper Secondary school (3 years)	Upper Secondary School (2 years)	Senior High School (2 years)	Upper Secondary school (2 years)	Post-Secondary School (1 year) Upper Secondary school (2 years)	Upper Secondary school (3 years)	Upper Secondary school (2 years)	Upper Secondary school (3 years)	Upper Secondary school (3 years)
19										
18	Lower Secondary School (3 years)	Lower Secondary School (3 years)	Lower Secondary School (4 years)	Junior High School (4 years)	Lower Secondary School (3 years)	Lower Secondary School (3 years)	Lower Secondary School (4 years)	Lower Secondary School (4 years)	Lower Secondary School (4 years)	Lower Secondary School (3 years)
17										
16	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (5 years)	Primary School (5 years)	Primary School (5 years)	Primary School (6 years)
15										
14	Pre-school	Pre-primary Education	Kindergarden	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
13										
12	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory
11										
10	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (6 years)	Primary School (5 years)	Primary School (5 years)	Primary School (5 years)	Primary School (6 years)
9										
8	Pre-school	Pre-primary Education	Kindergarden	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
7										
6	Pre-school	Pre-primary Education	Kindergarden	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
5										
4	Pre-school	Pre-primary Education	Kindergarden	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
3										

Source: Compiled from UNESCO International Bureau of Education (2011)

**Table 2.6. Continued**

Age	AFGANISTAN	BANGLADESH	BOTSWANA	BRAZIL	CHINA	EGYPT	NEPAL	NIGERIA	PAKISTAN	SOUTH AFRICA	UGANDA
> 20	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education
20	Upper Secondary School (3 years)	Higher Secondary School (2 years)	Senior Secondary School (2 years)	Senior Secondary School (2 years)	Common Senior Middle School (3 years)	General and Technical Secondary School (3 years)	Higher Secondary School (2 years)	Senior Secondary School (3 years)	Higher Secondary School (2 years)	Senior Secondary School (3 years)	Upper Secondary School (2 years)
19											
18	Lower Secondary School (3 years)	Secondary School (2 years)	Junior Secondary School (3 years)	Lower Secondary School (4 years)	Common Junior Middle School (3 years)	Preparation Level (3 years)	Secondary School (2 years)	Junior Secondary School (3 years)	Secondary School (2 years)	Lower Secondary School (3 years)	Lower Secondary School (4 years)
17											
16	Compulsory	Junior Secondary School (3 years)	Primary School (7 years)	Primary School (5 years)	Primary School (6 years)	Primary School (6 years)	Low Secondary School (3 years)	Primary School (6 years)	Middle School (3 years)	Primary School (6 years)	Primary School (7 years)
15											
14	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory	Compulsory
13											
12	Primary School (6 years)	Primary School (5 years)	Primary School (7 years)	Primary School (5 years)	Primary School (6 years)	Primary School (6 years)	Primary School (5 years)	Primary School (6 years)	Primary School (5 years)	Primary School (6 years)	Primary School (7 years)
11											
10	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
9											
8	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
7											
6	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
5											
4	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school	Pre-school
3											

Source: Compiled from UNESCO International Bureau of Education (2011)

**Table 2.6. Continued**

Age	AUSTRALIA	DENMARK	ENGLAND	ITALY	JAPAN	NEW ZEALAND	SOUTH KOREA	UNITED STATES																	
> 20	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education	Higher Education																	
20			Post-compulsory Advanced Programmes (3 years)						Upper Secondary school (4 years)	Upper Secondary school (3 years)	Secondary School (5 years)	High school (3 years)	4 - Year High School (4 years)	Upper Secondary school (3 years)											
19															Upper Secondary school (2 years)	Upper Secondary school (3 years)	Secondary School (5 years)	Middle School (3 years)	Combined Junior Senior High School	Lower Secondary School (4 years)					
18																					Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)	Lower Secondary School (3 years)	Intermediate School (2 years)	Primary School (6 years) -> 6-6 Combination	Middle School (4 years)
17																									
16	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)	Primary School (6 years)	Primary School (4 years) -> 4-4-4 Combination																						
15				Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)	Primary School (5 years)	Primary School (6 years) -> 6-6 Combination																			
14	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)						Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																	
13				Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)					Primary School (5 years)	Primary School (6 years) -> 6-6 Combination															
12	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)										Primary School (6 years)	Primary School (6 years) -> 6-6 Combination													
11		Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)	Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																					
10	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)				Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																			
9		Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)					Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																	
8	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)								Primary School (6 years)	Primary School (6 years) -> 6-6 Combination															
7		Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)									Primary School (6 years)	Primary School (6 years) -> 6-6 Combination													
6	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)		Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																					
5		Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)			Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																			
4	Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)						Primary School (6 years)	Primary School (6 years) -> 6-6 Combination																	
3		Comprehensive School (Consist of Primary and Lower Secondary School, 11 years)							Primary School (6 years)	Primary School (6 years) -> 6-6 Combination															

Source: Compiled from UNESCO International Bureau of Education (2011)

## 2.5. The Indonesian Education System

Indonesian National Education System Law No. 20 of 2003 confirms that all Indonesian citizens have the right to a quality education and that the Indonesian central government and local governments have to provide the funds to support free basic education. This law integrates various types of educational programs under an integrated education system regulated by the Ministry of Education and Culture (MOEC) and the Ministry of Religious Affairs (MORA). Under this Act, formal education is defined as follows: (1) Pre-primary education; (2) primary education (six years); (3) lower secondary education (three years); (4) upper secondary education (three years); and (5) higher education, as presented in Figure 2.1. Under the integrated education system, all school types (general, religious, technical and vocational schools) should follow the national curriculum. This law also regulates the level of equivalency when completing one of three types of secondary school.

**Figure 2.1. Indonesian Education System**

Approximate age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Approximate grade			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Level of education	Pre-Primary	Primary Education						Lower Sec. Education			Upper Sec. Education			Higher education									
General		General						General			General			Bachelor's Degree			Graduate Level						
											Technical & Vocational			Post-secondary Technical Programmes									
Religious		Religious						Religious			Religious			Bachelor's Degree (religious)			Graduate Level (religious)						

Source: UNESCO (2010, page 1.)

An equivalent to the system of general education is Islamic schools or madrasahs. Islamic primary school, lower and upper secondary schools are known as *Madrasah Ibtidaiyah* (MI), *Madrasah Tsanawiyah* (MT), and *Madrasah Aliyah* (MA), respectively. Technical and vocational education in the Islamic school system, known as *Madrasah Aliyah Kejuruan* (MAK), is also provided. The Islamic schools basically teach Muslim students religious principles (Moulton, 2008). Aligned with the general education track, madrasah schools follow the 6-3-3 system.

The GOI expanded basic education from six years (primary school only) to nine years (including primary and lower secondary school level) through the National Education Law No. 2 of 1989. It states that every citizen aged 7-15 has the right to a basic education. Basic education was made both compulsory and free in 1994 through the Nine Year Basic Education Program (UNESCO, 2010). In addition, the 1945 Indonesian Constitution mandates a minimum of 20% of the national budget and at least 20% of the local government budget must be allocated to the education sector.

In recent years, two new upper secondary school policies have been introduced:

a. Universal Secondary Education (*Pendidikan Menengah Universal*)

This program was formally started in the new school year in July 2013 (2013/2014 academic year). The aim of this program mainly is to accelerate the increase in the GER in upper secondary schools.

b. 2013 Curriculum

The Ministry of Education and Culture also introduced a new 2013 Curriculum for all levels of schools. The 2013 Curriculum began in the 2013/2014 academic year for some selected schools to replace the previous curriculum called the Education Unit Level Curriculum (in Indonesian: *Kurikulum Tingkat Satuan Pendidikan*, or KTSP), which started in the 2006/2007 academic year. The difference between the 2013 Curriculum and the Education Unit Level Curriculum is mainly on the competence aspects of knowledge. The 2013 Curriculum gives attitude a higher priority than skill

competencies and knowledge. The implementation of the new 2013 Curriculum is in response to concerns that the previous curriculum created a workload that was too high for students. However, nowadays not all schools adopt the 2013 curriculum. Only some schools were selected by the education agencies to apply the curriculum because the government wants to assess the effectiveness of the new curriculum before it is applied in all schools.

### **2.5.1. Pre-School Education**

Pre-school education is provided for children from four to six years and lasts one to three years. It is not compulsory. Article 28 of the 2003 Education Law stipulates that early childhood education (ECE) is provided through formal, non-formal and/or informal education. Formal ECE is provided at kindergarten or similar institutions and non-formal ECE including playgroups and children's day care or similar provisions (UNESCO International Bureau of Education, 2011).

### **2.5.2. Primary Education**

Primary school (*Sekolah Dasar*, SD) lasts for six years and the medium of instruction is officially *Bahasa Indonesia* (Indonesian language), although regional/local languages are also used during the first three years. As part of the new curriculum of 2013, English will no longer be a subject taught in primary school. Students are allowed to continue to the next school level after passing the state examination in the final year (year six).

### **2.5.3. Secondary Education**

Secondary education begins with three years of lower secondary school (*Sekolah Menengah Pertama*, SMP). Students must also sit a state examination in the final year

(year three). After completion of this level, students are awarded the certificate and allowed to continue to the next school level. Upper secondary school also lasts for three years, and is divided into general upper secondary school (*Sekolah Menengah Atas, SMA*) and vocational upper secondary school (*Sekolah Menengah Kejuruan, SMK*). In the second year, students in the general upper secondary school choose one of the following subject clusters: (1) Natural sciences; (2) social sciences; or (3) languages. Students must also sit a state examination in the final year. If students pass the examination, they are awarded the upper secondary school certificate.

Moreover, in response to the need for middle-level skilled workers in the growing economy, the GOI plans to expand access to technical and vocational education (TVE) and increase the number of graduates. Additionally, the government is aiming for a 50:50 ratio of enrolment in vocational secondary schools and general secondary schools by 2015 and a ratio of 70:30 by 2025. TVE in Indonesia is only offered at the upper secondary level. There are technical and vocational schools under both MOEC and MORA and they follow the national curriculum formed by MOEC (UNESCO, 2010).

#### **2.5.4. Higher Education**

Completion of any one of the upper secondary schools allows students to enter higher education. Similar to most other countries, higher education in Indonesia offers various qualifications such as a diploma, bachelors, masters, specialized postgraduate, and doctorate degrees. Technical and vocational degrees are also available from academies, polytechnics, colleges and universities.

### **2.5.5. Equivalency Education System**

The equivalency education (EE) system is a non-formal education system in Indonesia. EE system is a program for dropout students to get a school diploma by completing the examination named Package Program. There are three types of Package program, i.e., Package-A, Package-B and Package-C Programs (UNESCO International Bureau of Education, 2011). The Package-A program is a non-formal equivalent to a primary education program which would provide education to primary school dropouts. The Package-B program is a non-formal equivalent to a lower secondary education program which would provide education to primary school graduates and to lower secondary school dropouts. The Package-C program is a non-formal equivalent to an upper secondary education program which would provide both general and vocational education to lower secondary school graduates and to upper secondary school dropouts.

### **2.6. Subsidies, School Grants and Scholarships**

Subsidies in the form of a cash payment are mainly given by the government to groups or individuals to remove some types of burden. In the education sector, one of the well-known forms of subsidies is conditional cash transfers (CCTs). According to Fiszbein et al. (2009), CCTs are programs that mainly help poor households investing in the human capital for their children with certain conditions. CCTs strictly require parents to invest the transfer cash for education, health and nutrition. The long term aim is to reduce poverty. Fiszbein et al. (2009) reports that the CCT programs have become popular in developing countries and the programs have been eradicating poverty successfully.

In Latin America, CCT programs were started at the end of the 1990s and early 2000s in Brazil, Mexico, Colombia, Honduras, and Nicaragua (Garcia & Hill, 2010). A study shows that the CCT program named *Bolsa Escola/Familia* in Brazil has improved

enrolment rates and grade promotion rates (Glewwe & Kassouf, 2012), and has reduced school dropout (Amaral, Weiss, Monteiro, & Gonçalves, 2010; De Janvry, Finan, & Sadoulet, 2006; Glewwe & Kassouf, 2012). However, another study in Brazil by Cardoso and Souza (2004) reveals that the program only increases the enrolment rate but it does not reduce children's labour activity.

A study in Mexico concludes that the CCT Program named *Programa Nacional de Educacion, Salud y Alimentacion* or *PROGRESA* (now known as *Oportunidades*) increases the enrolment rate among poor children in treatment areas compared to poor children in other areas who do not participate in the PROGRESA program (Schultz, 2004). Another study in Mexico, by Skoufias (2005), states that PROGRESA increases secondary school enrolment by more than 20 per cent for females and 10 per cent for males. Skoufias and McClafferty (2001) find that the increase in enrolment for girls ranges from 7.2 to 9.3 percentage points and for boys from 3.5 to 5.8 percentage points at secondary level. PROGRESA also has proven effective at avoiding dropout and failure (Behrman, Parker, & Todd, 2005).

According to Attanasio et al. (2006), a CCT program in Colombia, *Familias en Acción*, has positive effects on the enrolment rate for both urban and rural youth aged 14 – 17. Another study by Garcia and Hill (2010) finds that *Familias en Acción* also has a positive impact on school achievement for students aged 7 to 12 in rural areas of Colombia. In Honduras, *The Programa de Asignacion Familiar* (PRAF) II, a program to encourage poor households to invest in their family's education and health, significantly decreases the dropout rate, and school attendance and promotion rates to the next grade (Glewwe & Olinto, 2004).

Dearden et al. (2009), based on their study in England, suggest that a CCT to high school students is an effective way to reduce dropout. In China, the government provides a cash transfer for parents conditional on their child's enrolment or school

attendance. This program is found to reduce the dropout rate successfully (Yi et al., 2012).

Grants and subsidies are two terms that are often used interchangeably. However, they are two different types of funding. Subsidies are given to the recipients in order to reduce some expenses, while grants are non-repayable funds for recipients to fund specific projects. School grants refer to funds that are provided to schools and schools have discretion over the use of these funds (World Bank, 2014a, p. 22). Furthermore, World Bank (2014a) explains that in some cases, school grants are given to schools in order to compensate schools' potential losses when policies that decreased or eliminated fees were applied, while in other cases, school grants are given as part of efforts to improve the overall quality of education. World Bank (2015) classifies Indonesia's School Operational Assistance (*Bantuan Operasional Sekolah* –BOS) program as school grants.

Scholarships are open for students regardless of their background and the recipients are selected based on their academic performance. However, in Indonesia, scholarships are usually given with special priority for poor children with good academic performance from primary school level up to undergraduate level. The main aim for scholarships at these levels is pro-poor, to give opportunities to poor student to enrol at school, while scholarships for master and doctoral degrees are given based on academic performance regardless of students' financial conditions. The difference between scholarships and grants is that scholarships tend to have stricter requirements.

Some authors use the term 'scholarships' in their studies for Indonesia. For example, Sparrow (2007) uses the word 'scholarships' to refer to financial cash transfers to poor students. However, it was actually not scholarships that were awarded to students based on their academic performance. It was given to poor students regardless of whether the students were smart or not. Therefore, the correct term

should be 'assistance'. The Indonesia National Team for the Acceleration of Poverty Reduction (*Tim Nasional Percepatan Penanggulangan Kemiskinan*) states that it is called assistance because it is based on the poor financial conditions of students, while scholarships are based on the academic performance of students. The word 'scholarships' is also cited in other previous studies in Indonesia (e.g., Cameron, 2009; Ha & Mendoza, 2010; Ridao-Cano & Filmer, 2004).

## **2.7. Early Warning System**

In the US, educational stakeholders have been working on developing effective dropout prevention methods and one essential element of prevention is the detection of students with the highest risk for dropping out through early warning systems (Heppen & Therriault, 2008, p. 1). An early warning system (EWS) is a system to identify students who are heading off track, so that educators can immediately support them to get back on the right track (Bruce, Bridgeland, Fox, & Balfanz, 2011, p. 2). Macheca (2013) suggests that an EWS is similar to a smoke detector in a kitchen. The smoke detector will sound a loud alert when something goes wrong (i.e., heavy smoke occurs) in the kitchen. Similarly, the EWS will alert school authorities when a student begins to show some negative indicators. Before students permanently leave school, they show some obvious warning signs of dropping out (Bruce et al., 2011).

The EWS is built based on a body of research (Data Quality Campaign, 2014; Macheca, 2013). Previous research (e.g., Allensworth & Easton, 2005; Allensworth & Easton, 2007; Balfanz, Herzog, & Mac Iver, 2007; Neild & Balfanz, 2006; and Neild, Balfanz, & Herzog, 2007) indicates that many students who drop out of education exhibit negative signals several months or years before they finally dropped out. For example, a study for the US by Allensworth and Easton (2005, p. 7) develops an on-track indicator to predict whether students in Chicago public schools will graduate or not. The indicator was found to be a good predictor, with 81% of the students who were

classified as on-track students when they were freshmen graduating four years later. Allensworth and Easton (2005) also show that 88% of students who were classified as off-track students in the beginning of first year dropped out. One prominent indicator in their study was academic achievement. They found that ninth grade students who got more than one F in core academic subjects failed to get promoted to tenth grade.

Neild and Balfanz (2006, p. 30) find that 80% of dropout students in Philadelphia show dropout signals when they were at eighth or ninth grades. In addition, their study also shows that 78% of eighth grade students who had attendance records of less than 80% dropped out of school. Another study for the US by Neild et al. (2007, p. 30) indicates that 80% of the dropout students in Philadelphia public high schools had displayed dropout signals in the middle grades or during the first year of high school. They suggest that an EWS could effectively identify who would potentially drop out by the ninth grade. Allensworth and Easton (2007, p. 6) found three significant predictive indicators of whether freshman students would graduate within the next four years. They are: On-track students (if a student has collected five full credits and has maximum one F in a semester in a core subject by the end of the first year in high school), number of semester course failures, and Grade Point Average (GPA). They find that those indicators correctly identify 80% of graduate and dropout students. Balfanz et al. (2007, p. 229) by using four warning indicators (poor attendance, misbehaviour, course failures in sixth grade, and status variable, such as over-age) was able to predict 60% of the students who will not graduate from high school.

EWS has been used widely in the US and has been useful in identifying the students at high risk of dropping out. The numbers of States in the US having early warning reports have increased significantly with 31 states producing early warning reports in 2013. This increased from only 18 states in 2011 (Data Quality Campaign, 2014). This indicates that EWS has become an important tool in the US to keep potential dropouts on the graduation path. Jerald (2006, p. 3) believes that, compared

with the cost of providing dropout interventions or system-wide reforms to boost graduation rates, the cost of developing a precise EWS in the US is relatively small.

The US Agency for International Development (USAID) funded a five-year program named the School Dropout Prevention Pilot Program (SDPP) in order to test the effectiveness of dropout prevention interventions in four developing countries, i.e., Cambodia, India, Tajikistan and Timor Leste (USAID, 2015). The project used EWS to identify, monitor and support students at risk of dropping out of school. The EWS uses some warning signs such as high absenteeism, low academic performance, disinterest, lack of engagement, and bad behaviour. The assessment of the SDPP project shows that preventative intervention was successful. The project significantly reduced dropout in Cambodia and Timor Leste; with marked improvement in attendance and increased student engagement in India, Tajikistan and Timor Leste. The assessment also finds that 50% of the at-risk students would have dropped out of school within two years if SDPP had not been implemented in Cambodia.

EWS is considered as “a low cost and easy to do” system (USAID, 2015, p. 17) because it does not require high tech systems or high skill levels. The system can be implemented by existing school personnel (i.e., schools do not need to recruit new personnel to handle EWS) and it fits within teachers’ duties and tasks to track students and record-keeping.

## **2.8. Some concepts in Javanese Culture Relevant to the Dropout Decision**

All the respondents in this study are ethnic Javanese; therefore, it is important to understand aspects of Javanese culture that may explain the decision to drop out. The first important concept is that Javanese believe that God has set their life and they cannot challenge it. Everything in Javanese people’s life is considered as fate. From the point of view of Javanese’s local wisdom, fate should be accepted and should not be

fought against (Novianti, 2014). The full acceptance of someone's fate in Javanese society is called *nrimo* (Großmann, 2006).

The concept of *nrimo* is related to the concept of locus of control. Locus of control refers to the extent to which individuals expect that an outcome of their behaviour is dependent on their own actions or individual characteristics (internal locus of control) or is beyond their own control (such as luck, or fate, or under the control of powerful others, or simply unpredictable) (Rotter, 1990, p. 489). As *nrimo* is a form of full acceptance of fate, it is one of the forms of external locus of control. As mentioned in Section 2.2.2, culture can be introduced as a deviation from the standard economic views. When individuals believe that their external locus of control, in terms of cultural aspects, strongly influences their life, they are not rationally assessing their own long-term costs and benefits of education. This is in line with behavioural economics.

However, *nrimo* does not mean that Javanese simply give up on everything. Magnis-Suseno (1981 cited in Zaumseil, von Vacano, & Schwarz, 2014) states that *nrimo* is the realistic reaction to events of disappointments and impediments in Javanese lives without trying to struggle against them. In some cases, it gives strength to Javanese. For example, there was a big earthquake with magnitude of 6.4 in Bantul, South Java in May 2006 with 5,176 deaths and 40,000 injuries. However, the survivors recovered in a relatively short time. A study by Yuniarti (2009) concludes that the earthquake's victims accepted the event as God's will and she also finds that the *nrimo* attitude gives positive energy for survivors to recover.

*Nrimo* means accepting adverse things because those are God's will. Javanese are taught to prepare themselves to accept hardships and misfortunes of fate willingly, and they are able to accept bad experience positively. In order to prevent Javanese students from dropping out of school and showing a *nrimo* attitude, they must prepare themselves with the Javanese concept of *usaha* (effort) or Muslim concept of *ikhtiar*

(the initiative, finding a way and making an effort (Budijanto, 2009)) while they are still in school. *Usaha* refers to Javanese responsibility to take the initiative to shape their own living conditions based on their capacities (Von Vacano & Schwarz, 2014). In terms of Javanese principles, the responses of *nrimo* and *pasrah* (surrender) are not sufficient to manage bad things in Javanese lives. Javanese should not only accept (*nrimo*) and surrender (*pasrah*), but they must also show *usaha*. In other words, the first step to accept fate is to show *nrimo* and *pasrah* attitudes and then the second step is to show *usaha* attitude. Students are encouraged to show *usaha* or *ikhtiar* in order to avoid *nrimo* and *pasrah* attitudes that might result in dropout.

The concept of *hormat* (full respect) is also important in Javanese culture. Javanese are required to show full respect to other people in their speech and behaviour, especially to older people and to those who have a higher rank. Javanese children start to learn the principles of *hormat* from their parents and they must show respect and obedience to their parents. There are also *asih* (loving), *asah* (guiding) and *asuh* (caring) concepts in Javanese culture. Javanese parents are required to practice *asih*, *asah* and *asuh* in their parenting (Hakim, Supriyadi, & Yuniarti, 2012). In addition, Hakim et al. (2012) state that Javanese parents have a guilty feeling and feel useless if they cannot help their children's lives. Moreover, Javanese people try to avoid any open conflict and they want to apply this in all relationships, including in the family and the neighbourhood. We call this *rukun*. *Rukun* is a way of conduct and Javanese continuously aim to interact peacefully with each other (Großmann, 2006).

## **2.9. Concluding Remarks**

The theoretical background discussed in this chapter provides frameworks for the research methodology introduced in Chapter Four. Firstly, the theoretical background of this study uses human capital theory as the umbrella for quantitative analysis. It has been shown previously that human capital theory influences the

demand for education. Therefore, the independent variables in this study are constructed from the demand for education. In addition, some independent variables in this study are constructed from social capital theory. Secondly, the behavioural economics framework is used to discuss the qualitative analysis in Chapter Four. It can be concluded from behaviour economics that many students do not choose to maximise lifetime well-being. This study examines whether dropouts in Central Java Province only consider the present and neglect the future consequences of being dropouts by examining the interviews with dropouts. Pushout and pullout theories are also used to explain the dropout event in the qualitative analysis.

Thirdly, it has been shown in section 2.3 that there is a lack of a uniform definition of dropout. Accordingly, it is important to note that different definitions of school dropout from various studies are associated with different findings and it is difficult to make specific comparisons. Moreover, previous studies on dropout in Indonesia, as well as relevant Indonesian agencies, have not presented a clear and complete definition of dropout. Therefore, this study provides a more precise definition of dropout as discussed in the Chapter Four.

Fourthly, this chapter compares education systems in some countries around the world because it may be important for explaining school dropout. Education systems are not universal. Every country has its own education system and undeniably some countries' are better than others. School dropout also varies depending on the educational system adopted by each country and how they try to reduce dropout. This chapter discusses the duration of compulsory education, starting age of compulsory education and the education system structure. It is found that differences in education system structures and official schooling ages make the study of dropouts more challenging.

This chapter examines EWS as a potential tool to prevent students from dropping out. Previous studies show that EWS successfully identifies students who

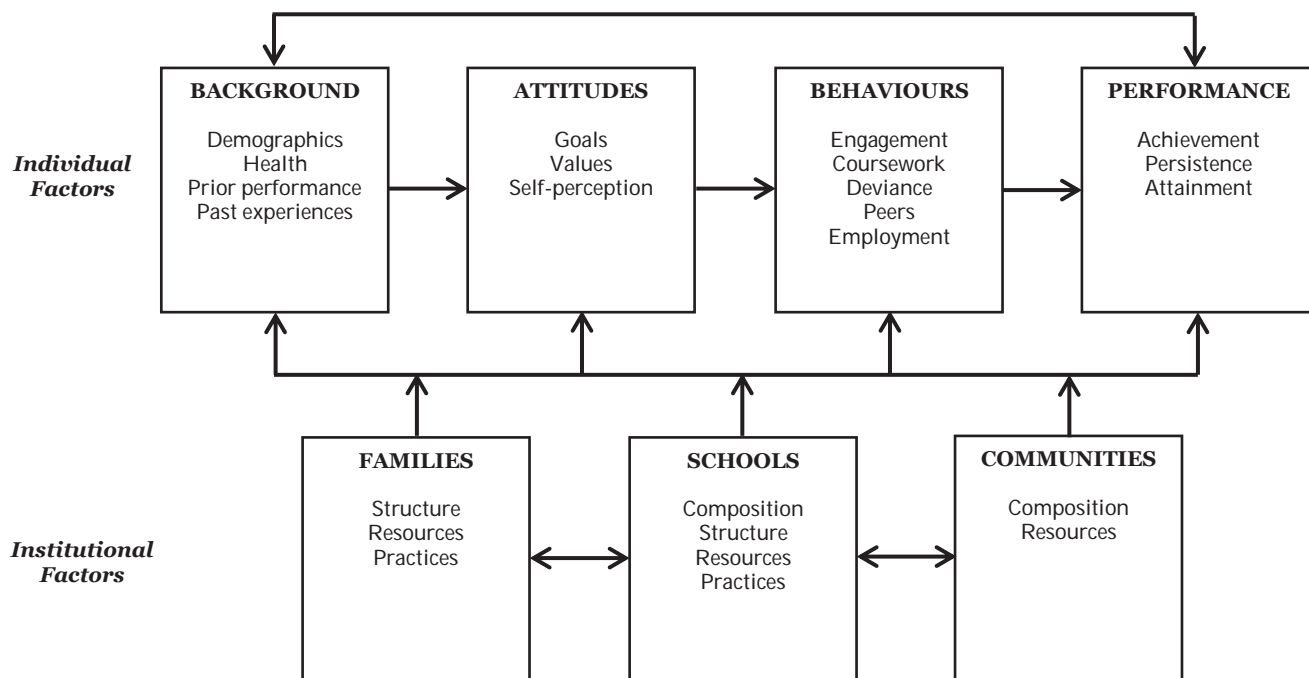
exhibit negative indicators and it is likely that it can be usefully applied in Indonesia. Lastly, it is important to address the relationship between Javanese culture and student dropout. Cultural practices and beliefs may also be important in explaining the dropout decision. This study discusses some relevant aspects of Javanese culture that are used to analyse students' decisions to drop out in Chapter Five.

### 3. REVIEW OF PREVIOUS STUDIES ON SCHOOL DROPOUT

#### 3.1. Introduction

This chapter explores previous studies on school dropout. They are classified into certain type of factors contributing to student dropout based on Rumberger and Lim’s (2008) conceptual model as seen in Figure 3.1. As mentioned before, they conclude that there are two types of factors that determine student dropout: (1) *Individual characteristics* and (2) the *institutional characteristics* based on related factors found in their families, schools, and communities.

**Figure 3.1. Conceptual Model of High School Performance**



Source: Rumberger and Lim (2008, p. 86)

Great interest and attention by researchers in developed countries is given to upper secondary school and/or lower secondary school dropouts because it is almost

impossible for children to drop out of school at primary level. This is because fines or penalties will be charged to parents in developed countries if they are convicted of not keeping their children in school. However, there is a different story in developing countries. Student dropout occurs at all levels of education, not only at upper secondary school level. Therefore, it is also important to review previous studies at primary school and lower secondary school levels. The review is divided by developed and developing countries.<sup>13</sup>

The first section of this chapter reviews previous studies on school dropout at primary school, followed by reviews of previous studies on school dropout at lower secondary school and upper secondary school levels. Studies on university dropout are also discussed. School dropout studies in Indonesia are reviewed separately. Next, this chapter derives some general conclusions from the previous studies. Lastly, the shortcomings of previous studies are summarized.

### **3.2. Dropout at Primary School Level**

Compulsory primary education is one of six specific education goals in an UNICEF Education for All (EFA) campaign. However, some obstacles obstruct the EFA achievement. Although launched in 1990, there were still about 67 million primary school-age children out of school in 2008 (UNESCO Institute for Statistics & UNICEF, n.d.). It is important to review previous studies on dropout at primary school level because primary school builds the learning and development foundation for children's future life.

Most factors discussed below are similar to factors contributing to dropout in upper secondary school. However, there is also a different factor that only appears in relation to primary school dropout. As we know, primary education is important for

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<sup>13</sup> Country classification into developed or developing country is based on the World Bank Classification (see <http://data.worldbank.org/country>).

character building. The first step for a good academic performance starts at this level. A study by Mirza and Mahmood (2011) gives a comprehensive understanding about students' deviant behaviour specifically in primary education that could lead to drop out.

Only one study is found to examine primary school dropout in developed countries. It is understandable that there is almost no study on primary school dropout in developed countries because most of these countries apply a penalty for parents who do not send their children to school on a regular basis, for example, in the UK (United Kingdom Department of Education, 2012), Singapore (Ministry of Education Singapore, n.d.), and New Zealand (New Zealand Parliamentary Counsel Office, n.d.).

### **3.2.1. Primary School Dropout Studies in Developed Countries**

One study in Spain, by Peraita and Pastor (2000), is found to examine primary school dropout in developed countries. They conclude that (1) students' gender makes no significant difference to dropping out; (2) the odds of dropping out are higher in families with more household members than those with fewer household members; (3) students from lower income families are more likely to drop out than students from higher income families; (4) students residing in a rural area and smaller city size tend to drop out more than those in bigger cities; (5) students from families receiving assistance from the government are more likely to drop out; (6) a lot of job availability in communities is positively correlated with student dropout.

### **3.2.2. Primary School Dropout Studies in Developing Countries**

#### **A. Individual Characteristics**

Based on the demographic characteristics of primary school students, a strong relationship between gender and dropout has been found in some studies in developing

countries. Studies in Kenya (Lloyd, Mensch, & Clark, 2000) and Nigeria (Regina & Stella, 2010) find that the probability for female students to drop out of school is higher than for male students. Another study in Egypt (Hanushek, Lavy, & Hitomi, 2008) also finds that male students are less likely to drop out than female students. It is estimated that, other things equal, male students in Egypt are 6% less likely to drop out than female students. They argue that the finding is not surprising because Egypt's society traditionally had lower schooling for females.

In primary school dropout studies, being a minority ethnicity also contributes to dropout. For example, in Cambodia, ethnic Cham students tend to drop out more in Grade Five and insignificant results are found in Grade One (No & Hirakawa, 2012). Using longitudinal dataset, No, Taniguchi, and Hirakawa (2016) find that being ethnic Cham students increases the odds of dropping out, supporting the previous study by No and Hirakawa (2012). However, they suggest that the results could be only coincidental. They think that there was a bias in their survey because all ethnic Cham respondents were from only one school. Students' poor health is also found to contribute to dropping out of school in Pakistan (Mirza & Mahmood, 2011). These findings suggest that student background characteristics contribute to higher school dropout at the primary school level.

Only a few studies find a relationship between dropout and pupils' attitudes at the primary school level. There is no doubt that students must value school in order to be successful (Rumberger & Lim, 2008). However, a study conducted in Pakistan (Mirza & Mahmood, 2011) shows that not all students are interested in study and some decide to leave school permanently. In addition, students not only must value school, but they must believe that they have the capability to finish school. No, Sam, and Hirakawa (2012) suggest that an increase in positive self-esteem in school leads to a reduction in the odds of dropping out.

Student engagement is one of the most important behavioural signals for dropout (Rumberger & Lim, 2008). It is found in Pakistan that frequent student absenteeism from school impacts on dropout permanently (Shah, Amir, Akhtar, & Din, 2011). Some students are found to have deviant behaviours. Similar results are also found in Cambodia, where frequent absence in grades one and four is a strong indicator for dropout (No et al., 2016). In Pakistan, one example shows that students' excessive attention towards recreational activities at home, such as watching television and playing video games, will result in dropout (Mirza & Mahmood, 2011). A good relationship with peers contributes to a reduction in dropout. No et al. (2012) point out that the dropout rate reduces if the perceived quality of student-student interaction is improved.

Academic achievement is found to be one of the most cited predictors of school dropout. Some studies, for example, in Egypt (Hanushek et al., 2008), in Pakistan (Shah et al., 2011) and in Cambodia (No & Hirakawa, 2012; No et al., 2012; No et al., 2016), find that students with higher academic achievement are less likely to drop out. Students' lack of persistence is also one of the signals for dropout. For example, students' unwillingness to do assignments at home contributes to dropping out (Mirza & Mahmood, 2011). Furthermore, late entry to school is believed to influence students to drop out. If pupils enter school at an older age than their peers then the odds of dropping out is increased, such as in Cambodia (No & Hirakawa, 2012; No et al., 2012; No et al., 2016). Related to students' performance, No and Hirakawa (2012) and No et al. (2016) show that class repetition is associated with a higher likelihood of dropping out. Furthermore, a number of studies in Pakistan by Mirza and Mahmood (2011) and Shah et al. (2011) find that intellectually weak students are more likely to drop out.

## **B. Institutional Characteristics**

Family structure mainly refers to the number and types of individuals in a child's household (Rumberger & Lim, 2008). It is suggested that the odds of dropping out are higher in larger families than smaller families in Cambodia (No & Hirakawa, 2012). A study in Uganda shows the opposite result, where students from larger families tend to stay in school more than those who live in smaller families (Mike, Nakajjo, & Isoke, 2008). In Cambodia, students who lost one of their parents have a significantly increased odds of dropping out of school (No et al., 2012). It is indicated by Mike et al. (2008) in Uganda that if the ratio of economically active household members (proportion of household members between 18-64 years to the total number of household members) increases, the odds of students dropping out also increases.

Family resources consist of the financial resources and human resources of parents. Students from lower income families, in Nigeria (Regina & Stella, 2010), and in Pakistan (Mirza & Mahmood, 2011; Shah et al., 2011), are more likely to drop out than students from higher income families. Moreover, in Pakistan students who are doing work after school also tend to drop out (Mirza & Mahmood, 2011). For human resources indicators, studies in Uganda (Mike et al., 2008), in Pakistan (Mirza & Mahmood, 2011), and in Cambodia (No & Hirakawa, 2012; No et al., 2012) show that higher levels of parental education are correlated with lower odds of dropping out.

Family practices are manifested in parental involvement. Some studies show that social capital practices have a significant effect on dropout. For example, studies in Nigeria (Regina & Stella, 2010), and in Pakistan (Mirza & Mahmood, 2011) indicate that parents who are not concerned about education increase the tendency of their children to drop out, suggesting lack of social capital. This is because there is no positive interaction from the parents indicating that education is important for their children. In Turkey, parental involvement in school significantly reduces students' likelihood of dropping out (Cemalcilar & Gökşen, 2014). Parents' inability to guide their children in academic performance and lack of parent-teacher coordination to

discuss the students' performance contribute to children's probability of dropping out in Pakistan (Mirza & Mahmood, 2011). Another factor in family practices that contributes to primary school student dropout is parental support for early marriage in Uganda (Regina & Stella, 2010). It is indicated by a study in Egypt that the increase of the mother's level of participation in making household decisions will reduce the odds of daughters dropping out (Suliman & El-Kogali, 2002).

The school's location contributes to the odds of primary school dropout. For example, it is found that students in Uganda's rural areas tend to drop out more than students in urban areas and students traveling long distances to school are more likely to drop out of school (Mike et al., 2008). Also, it is shown that schools located in Kenya's flood areas also enhance students' dropout (Okuom, Simatwa, Maureen, & Wichenje, 2012). According to Suliman and El-Kogali (2002), students aged 5-10 who reside in urban areas in Egypt have a higher odds of dropping out. However, a study for Bangladesh (Sabates, Hossain, & Lewin, 2010) reports that distance to school is not statistically significant in the decision to drop out. They argue that the insignificant result is due to most of the schools not being located far from students' homes.

School practices (how the schools are managed, teaching practices, climate to promote student engagement and prevent students from leaving) are believed to influence the students' decision to drop out of primary school. Students who enrol in high quality schools are less likely to drop out (Hanushek et al., 2008). Two studies, in China (Chung & Mason, 2012) and in Pakistan (Shah et al., 2011), indicate that teachers with higher competencies are associated with lower student dropout. Other studies find that a good curriculum (that reflects the needs of the individual and the society as a whole) will retain students at school (Chung & Mason, 2012; Shah et al., 2011). Mirza and Mahmood (2011) find that a lack of instructional material in schools, school councils' inefficiency to tackle the problem of dropout, and lack of co-curricular activities will contribute to school dropouts. In Turkey, good teacher-student

interactions inside school increase the probability of students staying in school (Cemalcilar & Gökşen, 2014).

### **3.3. Dropout at Lower Secondary School Level**

Lower secondary school is considered a fundamental level of education. It is the key stage of transition from primary to upper secondary level (OECD, 2011). Enhancing high academic achievement at this level will reduce students' probability of dropping out of upper secondary school. Therefore, it is important to review previous studies of student dropout. In general, there are almost no differences in the factors that influence student dropout at the lower secondary school level in comparison with the upper secondary school level.

Only one study at the lower secondary school level uses a variable that is not used in previous studies at the upper secondary level, namely the popularity of students. Farmer et al. (2003) classify 7<sup>th</sup> grade students in the US into three groups of popularity: A popular group (where majority of group members are popular), a non-popular group (where only few group members are popular) and a zero-popular group (where no group members are popular). They find that members of the popular and zero-popular groups are more likely to drop out.

#### **3.3.1. Lower Secondary School Dropout Studies in Developed Countries**

##### **A. Individual Characteristics**

At the lower secondary school level, individual factors play an important role in student dropout. A study in Canada by Bergeron, Chouinard, and Janosz (2011) finds that male students are significantly more likely to drop out than girls. Studies in the US (Kaplan, Peck, & Kaplan, 1997) and Canada (Bergeron et al., 2011) explore the

relationship between attitude and school dropout. It is found that attitudes devaluing the importance of schooling significantly correlated with the odds of dropping out.

Another individual characteristic is student behaviour. A study in the US shows that students who associate with other students that are involved in illegal and disruptive activities are more likely to be pushed out of school (Kaplan et al., 1997). Balfanz et al. (2007) indicate that students' misbehaviour led to an increase in the odds of dropping out. With respect to academic performance, there is much evidence that poor academic achievement is positively correlated with dropout (e.g., Balfanz et al., 2007; and Kaplan et al, 1997; for the US, and Bergeron et al., 2011; for Canada). In relation to age, one study shows that students in Canada who are older than their classmates are found to drop out more (Bergeron et al., 2011). Another study in the US suggests that poor attendance in class is associated with a higher likelihood of dropping out (Balfanz et al., 2007).

## **B. Institutional Characteristics**

A study in the Netherlands by Traag and Van der Velden (2011) uses some family characteristics and finds that: (1) Students with a high level of family socioeconomic status tend to stay at school; (2) the students' odds of staying in school increases if the parents are more educated; (3) students who are living with single parents are more likely to drop out of school; (4) parental participation in art activities (such as visits to museums, concerts and the theatre) and pupils with very supportive parents decrease early school leaving; and (5) a higher number of siblings is greatly correlated with higher odds of dropping out.

A study in Canada shows that students with a negative relationship with teachers are found to leave school before graduation (Bergeron et al., 2011). It is also found that schools with a large number of students from ethnic minority groups increased the risk of dropping out (Traag & Van der Velden, 2011). Traag and van der

Velden also find that students residing in highly urbanised regions (as indicated by 1500 – 2500 addresses per km<sup>2</sup> in the region) are more at risk of dropping out than those in moderately urbanised regions (as indicated by 1000 – 1500 addresses per km<sup>2</sup> in the region).

### **3.3.2. Lower Secondary School Dropout Studies in Developing Countries**

#### **A. Individual Characteristics**

Some studies discuss dropout from lower secondary schools in developing countries. For individual factors, a study in China shows that male students are significantly more likely to drop out than female students (Mo et al., 2013). In Kenya, students' poor health background is also found to increase dropout from school (Amadi, Role, & Makewa, 2013). Students' past academic experience also contributes to students' decisions to drop out or stay at school. It is suggested that being held back during primary school will increase the probability of dropping out of lower secondary school (Yi et al., 2012, in China). In Cambodia, it is found that absenteeism leads to drop out in first grade of lower secondary school (No et al., 2016).

#### **B. Institutional Characteristics**

The effect of students' socioeconomic status is a prominent factor in dropout, especially in developing countries. It is found in China (Mo et al., 2013), in Kenya (Amadi et al., 2013) and in Botswana (Makwinja-Morara, 2009) that students with higher level of family socioeconomic status tend to stay in school. The parental education level plays an important role in the dropout decision. In China, the father's education level, but not the mother's education level, is significantly correlated with a lower dropout rate (Yi et al., 2012). Yi et al. also conclude that parents who are away from their children most of the time as migrant workers are associated with higher

dropout. Family size is found to contribute to dropping out. It is found that an increase in the number of siblings is highly positively correlated with higher dropout in China (Yi et al., 2012). In China (Yi et al., 2012) and in Botswana (Makwinja-Morara, 2009), it is found that family member's illness or death contributes to student dropout. Another study for West Africa shows that an older daughter who has siblings less than 5 years of age in the family tends to quit school (Glick & Sahn, 2000).

Communities also play a prominent role in influencing whether students will stay in school or not. It is shown that in most African countries cultural beliefs influence household attitudes and practices with respect to their girl's education and lead female students to drop out of school (Amadi et al., 2013). Another study in Botswana also shows that cultural perspectives which allow early marriage contribute to high student dropout (Makwinja-Morara, 2009).

### **3.4. Dropout at Upper Secondary School Level**

As mentioned before, the research on school dropout is centred at upper secondary school level because compulsory education policy force parents to keep their children in school at primary and lower secondary level. The research on school dropout in developed countries is dominated by US research.

#### **3.4.1. Upper Secondary School Dropout Studies in Developed Countries**

##### **A. Individual Characteristics**

Following the conceptual framework proposed by Rumberger and Lim (2008), the discussion starts from individual characteristics. The first individual characteristic is student background and this is widely associated with student dropout. This includes demographic characteristics, health and past schooling experience. While health

problems are subject to change with some treatments, students with some kinds of unchangeable backgrounds are at risk of leaving school early (No & Hirakawa, 2012).

Students' demographic backgrounds play an important role in student dropout. With respect to gender, some studies in western countries show male students are significantly more likely to drop out than female students, for example in the US (South et al., 2007; Suh & Suh, 2011) and France (Blanchard & Sinthon, 2011). Other demographic characteristics used to determine dropout are ethnicity and race. Several studies show different results regarding the relationship between race and dropout. Studies in the US find higher probability of dropping out for students from minority groups (Rumberger & Thomas, 2000; Suh & Suh, 2011). South et al. (2007) show that black students are less likely to drop out than white students while another study indicates that whites, black and Hispanic students are more likely to drop out than Asians (Roebuck, French, & Dennis, 2004).

Poor mental and physical health also contributes to student dropout. Students with good and excellent health are less likely to drop out (Roebuck et al., 2004), while poor mental health is strongly related to increased risk of dropout. Daniel et al. (2006) state that suicide attempts are strongly associated with school dropout. Depression is also found to be a factor that contributes to dropping out (South et al., 2007). Students with antisocial behaviour and those feeling rejected have a higher probability of dropping out (French & Conrad, 2001).

The other individual characteristic is students' attitudes. This includes self-perception. Students' perceptions of their abilities are a key component of achieving success. Fall and Roberts (2012) test a model to find the indirect link between self-perception and student dropout in the US. This study suggests that students' good perceptions of the level of care and support from parents and teachers creates a willingness to be involved in academic activities and to obey school regulations, which in turn decreases the probability of dropping out of school. Another study in Italy

investigates the relationship between high academic motivation and intention to drop out and finds a negative relationship between the two variables (Alivernini & Lucidi, 2011). One study in the US finds that students with a strong desire to continue their study to college level have a lower probability of dropping out (South et al., 2007). Students' past academic experience may also contribute to the decision to drop out or stay at school (McKee & Caldarella, 2016). Moreover, McKee and Caldarella (2016) indicate that middle school indicators, such as middle school GPA, grades, attendance, and math scores, can be used to predict high school dropout.

Next, another individual characteristic is student behaviour. Behaviour inside and outside of school is linked to the decision to drop out. First, student engagement is one of the most substantial behavioural signals for dropout. Some studies in the US (Fall & Roberts, 2012; South et al., 2007), Australia (Whannell & Allen, 2011), and Italy (Alivernini & Lucidi, 2011) conclude that students who report being engaged academically in their schools are less likely to drop out than others. Absenteeism is found to play an important role in dropping out (Archambault, Janosz, Fallu, & Pagani, 2009; Parr & Bonitz, 2015; Suh, Suh, & Houston, 2007). Another study in the US investigates the relationship between absenteeism – as a specific indicator of engagement – and dropout and finds that a longitudinal pattern of missing more than 10% of regular school days is statistically significantly related to students dropping out (Schoeneberger, 2012).

Students' deviant behaviours inside and outside of school are also prominent factors regarding dropout. These deviant behaviours include criminal behaviour, drug and alcohol use and sexual activity (Rumberger & Lim, 2008). Some previous studies in the US find a positive association between marijuana use and dropout and between cocaine use and dropout (Chatterji, 2006). Two studies show the causal impact of heavy drinking among students on the probability of dropping out (Chatterji & DeSimone, 2005; Roebuck et al., 2004). According to a study in the US by Sweeten (2006), students' involvement in crime during high school increases the probability of

dropping out of high school. Also, a positive relationship with dropout is found if the students were suspended from school at least once. Suh and Suh (2011) show that suspended students are 14% more likely to drop out. Rector and Johnson (2005) find that over 21% of female students who started sexual activity before age 18 dropped out of school.

Relationships between peers also significantly influence students' decision to drop out. For example, in Canada, a qualitative study shows that physical abuse by peers strongly pushes students to drop out and having dropout friends also encouraged students to drop out (Terry, 2008). A study in the US shows that students whose peers have above-average GPA's and who engage in extracurricular activity regularly are less likely to drop out (South et al., 2007).

Educational performance of students as one aspect of individual characteristics consists of academic achievement, attainment and persistence. There seems wide agreement among social scientists that students with good academic achievement are more likely to stay at school (e.g., Alivernini & Lucidi, 2011; Battin-Pearson et al., 2000; Fall & Roberts, 2012; Parr & Bonitz, 2015; South et al., 2007; Tomás, Solís, & Torres, 2012). Tomás et al. (2012) show that better educational achievement causes lower school dropout and has a greater impact on female students. A study by Sweeten (2006) in the US also shows that grade repetition is highly associated with the probability of dropping out. There is a lot of evidence that finishing high school is not solely caused by high school educational experiences only. In some cases, educational experience before high school can predict high school performance (Silver, Saunders, & Zarate, 2008). Rumberger and Lim (2008) argue that early academic performance in both primary and lower secondary school is a good predictor to forecast whether students will drop out or finish high school. Studies in the US (Rumberger & Thomas, 2000) and in France (Blanchard & Sinthon, 2011) find that grade repetition in elementary school increases the probability of dropping out at the secondary school level. Students who are one or two years older than their classmates are identified as

being over-age (Rumberger & Lim, 2008). Some studies find that being over-age leads students to drop out (Roebuck et al., 2004; South et al., 2007; Terry, 2008).

## **B. Institutional Characteristics**

Family background is an institutional factor. It involves family structure, family resources and family practices. The literature has emphasised the importance of family background. It is one of the most important factors that contributes to students dropping out and is continually cited by researchers. The family's socioeconomic status greatly affects children's human capital accumulation (Ingrum, 2006). Ingrum argues that children's human capital accumulation is obstructed not only because of lower resources, but also less human capital transfer from parents to children.

Family structure refers to the number and types of individuals in a household (Rumberger & Lim, 2008). Two indicators of family structure are whether students live with both parents, and number of household members. Students living with both parents had a lower probability of dropping out (South et al., 2007; Whannell & Allen, 2011), and more specifically the likelihood of dropout decreases when a student lives with their biological parents (Suh & Suh, 2011). Tomás et al. (2012) investigate specific living arrangements and find that an absent father has a positive impact on male dropout and an absent mother impacts on female students dropping out, while Suh and Suh (2011) find that having a high number of family members increases the probability of students dropping out.

Previous research has identified several types of family resources and how they impact on student development (Rumberger & Lim, 2008). The most used indicator of family resources is financial resources. Students in families with lower incomes are more likely to drop out (Blanchard & Sinthon, 2011; Parr & Bonitz, 2015; Roebuck et al., 2004). Other research in the US finds that students from high SES are almost 50%

less likely to drop out than students from average-SES families (Rumberger & Thomas, 2000).

The human resources of parents, as reflected in their education, play an important role in improving the cognitive development of their children. Some studies show that higher levels of parental education are associated with lower dropout (Blanchard & Sinthon, 2011; South et al., 2007; Terry, 2008; Tomás et al., 2012). Tomás et al. (2012) predict that over the years the education level of the mother in Spain has become a more important factor influencing their children's educational decisions. Other studies show that when the parents have permanent jobs, it creates a comfortable environment for the child and reduces the odds of students dropping out (Blanchard & Sinthon, 2011).

Previous studies also examine the relationship between parenting practice and school dropout. Students who have a good relationship with their parents and adolescents whose parents are involved in their child's social networks and in the broader community are less likely to drop out (South et al., 2007). Another study for the US indicates that parent involvement in school activities is significantly associated with lower rates of high school dropout (Barnard, 2004). Suh and Suh (2011) find that the odds of dropping out decreases if the mother is a tolerant person. Several studies try to explore the importance of the relationship between students and their siblings for the dropout decision. Students from families in which a sibling has dropped out of school are more likely to drop out (Rumberger & Thomas, 2000; Terry, 2008; Tomás et al., 2012).

Another group of institutional factors concerns schools. Specific school factors are student composition, school structure, school resources and school practices. It is concluded that composition of students in a school can influence students' achievement (Rumberger & Lim, 2008; Wexler & Pyle, 2012). Rumberger and Thomas (2000) find that schools in the US in which more than 40% of the students are black or Hispanic

had 50% higher turnover rates than other schools with lower composition of these minority students.

Structural characteristics of schools also contribute to students' performance. School location contributes to student dropout, for example, in rural areas in the US (Suh & Suh, 2011) and in France (Blanchard & Sinthon, 2011). Rumberger and Thomas (2000) show that in the US there are more dropouts in urban schools than suburban and rural schools. Students who study in a particular type of school may also have a higher probability of dropping out than students who study in other types of school. For example, general high school vs. vocational high school in France (Blanchard & Sinthon, 2011), and private school vs. public school in the US (Rumberger & Thomas, 2000).

Some studies examine how school resources contribute to student dropout. Rumberger and Thomas (2000) find that schools with higher student-teacher ratios had higher expected dropout rates than schools with average student-teacher ratios. They also suggest that higher teacher salaries and higher quality of teachers are associated with lower dropout rates.

School policies and practices also affect student persistence, reflected in whether students stay in a school, transfer to other schools or drop out (Rumberger & Lim, 2008). Studies in the US (Davis & Dupper, 2004; Whannell & Allen, 2011) and in Italy (Alivernini & Lucidi, 2011) show that poor relationships between teachers and other students can contribute to students' decisions to drop out. Fitzgerald (2001) conducts a study in the US and he concludes that teachers have a general lack of knowledge of characteristics of potential high school dropouts.

The third major institutional group of factors is communities, as they play a vital role in student development along with families, schools and peers (Rumberger & Lim, 2008). One specific form of community is the neighbourhood. Neighbourhood plays an important role in terms of the interaction between students and their

neighbours. Mayer (2004) investigates whether there was a significant relationship between the dropout rates of students of Mexican origin who lived in a city in the US with less than 50% Hispanic population and a city in the US with more than 50% Hispanic population. The study concludes that there is no statistically significant difference between dropout rates. However, Mayer (2004) finds a significant difference between the dropout rates in schools in the US with Hispanic students less than 50% of students and schools having more than 50% Hispanic students.

### **3.4.2. Upper Secondary School Dropout Studies in Developing Countries**

There are only a few high school dropout studies for developing countries. They are summarized in this section. For demographic characteristics, it was mentioned in the previous section that male students in developed countries are significantly more likely to drop out than female students. Conversely, there is a higher percentage of dropouts among female students in developing countries, such as in Nigeria (Ajaja, 2012) and Bangladesh (Shahidul, 2013a). In China, Diyu (2001) finds that parents deliberately push their daughters to leave school because they think that sending girls to school wastes time and money. In some under-developed countries, the opportunity cost of sending girls to school is higher than that for boys (Diyu, 2001; No & Hirakawa, 2012; Thanh & Long, 2005). From a cultural point of view, many parents in developing countries place less economic value on girls than on boys. Parents think that daughters do not need a high level of education because they are expected to do more domestic work after they are married. This situation tends to push girls out of school.

Students' attitudes also contribute to the dropout decision in developing countries. In China, Diyu (2001) reports that a high workload in school leads students in poor areas to drop out, and in Botswana's secondary schools, female students tend to drop out due to pregnancy (Hunter & May, 2002), especially those who are from rural areas (Molosiwa & Moswela, 2012). In South Africa, physical abuse by peers strongly

pushes students to drop out (Townsend et al., 2008). In China, Diyu (2001) discovered that a school's poor financial condition and lack of qualified teachers increases dropout.

In relation to family characteristics, studies indicate that students with low-income parents are more likely to drop out (Diyu, 2001; Shahidul, 2013a, 2013b), consistent with studies in developed countries. Students in South Africa whose mothers live together with them are significantly less likely to drop out of school than those whose mothers live elsewhere or are deceased (Grant & Hallman, 2006). In Bangladesh, Shahidul (2013a) shows that lower parental level of education is associated with higher odds of students dropping out. He also shows that if a parent has a permanent job, it will reduce the odds of female students dropping out. One interesting contribution from Shahidul is that higher father's participation in household decision-making increases the odds of a female student dropping out. On the other hand, higher mother's participation in household decision-making decreases the odds of a female student dropping out. Another study reveals that Mexican mothers with larger independence in internal decision-making processes contribute to a lower probability of children dropping out of secondary school (Chakraborty & De, 2011).

A study in Nigeria by Ajaja (2012) focuses on structural characteristics of school and their contribution to school performance. He finds that school location in rural areas contributes to students dropping out. Ajaja also shows that type of school contributes to students dropping out. He finds that the number of dropouts in public schools is higher than in private schools and that the number of dropouts in mixed schools is higher than in single sex schools. A qualitative study in Turkey shows that having teachers who are unfair and having bad peers, influence the students' decision to drop out (Taş et al., 2013).

### **3.5. Dropout at Higher Education Level**

Student dropout occurs not only in primary and secondary school, but also in higher education. Some studies on university dropouts show that first and second year students face difficulties to adjust to the new environment. University education is different from primary and secondary education. First year university students will face situations which are completely different to their previous school experiences. Some of these differences are: More independent learning in university, different experiences in class, different ways of teaching, and different ways of testing. University requires students to take more responsibility for their own study. Therefore, because of the difference in study environment, I believe the dropout experiences at university level are different from those at school level.

Some of the factors contributing to dropout at the higher education level are different from those in upper secondary school. Some obvious differences are: (1) Access to a financial institution's loan to pay tuition fees and (2) homesickness. At university level, there are formal institutions that assist university students by lending some money for paying tuition fees. However, in some developing countries, for example in Indonesia, there are no formal institutions that assist upper secondary school students to pay their monthly tuition fees along with other school expenses. Therefore, some poor families have to borrow money from loan sharks for paying children's schooling expenses because they do not have access to financial institutions.

#### **3.5.1. University Dropout Studies in Developed Countries**

##### **A. Individual Characteristics**

There are no general commonalities in respect of the relationship between gender and university dropout. A study in the US finds that male students are more likely to drop out than female students (Stinebrickner & Stinebrickner, 2013), while

Belloc, Maruotti, and Petrella (2010) conclude that male students in Italy are less likely to drop out than females. Moreover, a study in France by Gury (2011) suggests that female students tend to drop out in their first year of study and male students in their fourth or higher years of study.

Different results exist in the literature in respect to race. A study in England by Vignoles and Powdthavee (2009) shows that ethnic minority students are significantly less likely to drop out than white students. Belloc et al. (2010) discover that non-Italian students have a lower likelihood of dropping out than Italian students. Chen and DesJardins (2010) find that African Americans and Hispanics are more likely to drop out of university in the US in the first year. However, there are also high probabilities of dropout for non-local students in the US (Herzog, 2005).

One predictor of student dropout, older student age, is found to correlate with a higher dropout at university in Italy (Di Pietro, 2006) and in the US (Chen & DesJardins, 2010). Some studies, in the Netherlands (Suhre, Jansen, & Harskamp, 2007), in Israel (Soen & Davidovitch, 2008), in the US (Chen & DesJardins, 2010), in Italy (Belloc et al., 2010), and in France (Gury, 2011) have demonstrated that students will withdraw from university once they have realized that they do not enjoy the course. Moreover, Belloc et al. (2010) show that, in Italy, Economics students are more likely to drop out than others. Suhre et al. (2007) suggest that an increase in program degree satisfaction in the Netherlands is associated with a lower likelihood of dropping out. In addition, some studies conclude that personal problems also contribute to a high probability of dropping out. For example, stress problems in Sweden (Andersson, Johnsson, Berglund, & Öjehagen, 2009), homesickness problems in the US (Stinebrickner & Stinebrickner, 2013) and having no relationship with peers in Canada (Lehmann, 2007) and in Israel (Soen & Davidovitch, 2008). These problems are correlated with a higher probability of dropping out.

High academic performance is correlated with a lower probability of dropping out in the US (Stinebrickner & Stinebrickner, 2012), specifically with high performance in the first year (Chen & DesJardins, 2008, 2010), and in Italy (Belloc et al., 2010). Chen and DesJardins (2008) suggest that the risk of students dropping out in the US is relatively lower in the first year than in other years, while Herzog (2005) finds that high academic performance in second year reduce the probability of dropping out. High attendance in a compulsory course in Italy is found to be connected with a lower likelihood of dropping out (Di Pietro, 2004). In addition, Lehmann (2007) concludes that 'unfamiliarity with the university culture and not feeling a fit with the university' for first-generation students in Canada will lead them to drop out although they have a solid academic performance. Some studies reveal that lower academic performance in high school also contributes to the decision to drop out of university, for example in Italy (Di Pietro, 2006), in Germany (Voelkle & Sander, 2008), in England (Vignoles & Powdthavee, 2009) and in France (Gury, 2011). Finally, recent studies in the US find that students with higher education aspirations are less likely to drop out of university (Chen & DesJardins, 2008, 2010).

## **B. Institutional Characteristics**

Several studies in the US conclude that students from lower income families are more likely to drop out than students from higher income families (Chen & DesJardins, 2008, 2010; Herzog, 2005; Ozdagli & Trachter, 2010). In contrast, Belloc et al. (2010) find that in Italy students from families with a lower income have low probabilities of dropping out. It is found that financial aid, to prevent students from dropping out of university, is likely to reduce dropout (see Herzog (2005) for the US and Gury (2011) for France). Chen and DesJardins (2008) suggest that financial aid in the US is narrowing the dropout gap between students from low and middle income families. Furthermore, minority students in the US who receive financial aid tend to be less

likely to drop out (Chen & DesJardins, 2010). Another way to prevent students from dropping out is by giving them a loan. Loans in the US contribute to a lower likelihood of dropping out (Chen & DesJardins, 2008). However, not all students can access loans. In contrast, some studies in the US claim that borrowing constraints are not the main factor for dropout decisions (Ozdogli & Trachter, 2010; Stinebrickner & Stinebrickner, 2008).

Parental education level plays an important role in dropout decisions. Some studies, in Italy (Di Pietro, 2004, 2006) and in the US (Chen & DesJardins, 2008, 2010), conclude that students' probability of staying at university increases if parents education level is higher. To illustrate the socioeconomic differences in dropout in England, Vignoles and Powdthavee (2009) claim that a student whose parents are in sales and customer service jobs is more likely to drop out than a student whose parents are from a managerial/senior official background. In France, having immigrant parents means students are more likely to drop out (Gury, 2011).

### **3.5.2. University Dropout Studies in Developing Countries**

#### **A. Individual Characteristics**

Female students in Brazil are less likely to drop out than male students and marriage increases the probability of dropping out (Guimarães, Sampaio, & Sampaio, 2010). In contrast, female students in Uganda are more likely to drop out than male students (Aguti, Nakibuuka, & Kajumbula, 2009). Moreover, students of an older age in Brazil (Guimarães et al., 2010) and in Colombia (Melguizo, Torres, & Jaime, 2011) have a higher probability of dropping out. Fozdar et al. (2006) suggest that living away from home in India also contributes to student dropout.

In relation to academic performance, literature suggests that a low GPA, as a measurement of academic performance, is correlated with a higher likelihood of dropping out in Colombia (Melguizo et al., 2011) and in Thailand (Sittichai, 2012). High

school national exit exams and university entrance test scores can also be used as predictors of dropout. Melguizo et al. (2011) find that a higher high school national exit exam in Colombia is related to a lower probability of dropping out. By contrast, a study conducted in Brazil by Guimarães et al. (2010) concludes that a higher university entrance test score is positively associated with dropout. Guimarães et al. argue that the result is a consequence of non-tuition fees system in Brazil that leads the best students (as indicated in high entrance test score) to leave university when they recognize that study at tertiary education is a bad choice. Studies in India (Fozdar, Kumar, & Kannan, 2006), in Uganda (Aguti et al., 2009), in Colombia (Melguizo et al., 2011) and in Thailand (Sittichai, 2012), show that a non-preferred field of study also significantly causes a high probability of dropping out.

## **B. Institutional Characteristics**

Some studies indicate that university location may become a problem for students and increase the probability of dropping out (Fozdar et al., 2006; Sittichai, 2012). For example, Sittichai (2012) shows that there are students' concerns about security when universities are located in Southern Thailand where violent events (fires and bombing) often occur. This leads students to drop out. A study in Colombia finds that students from families of higher socioeconomic status tend to stay at university (Melguizo et al., 2011). A study in Brazil shows that, contrasting general consensus, dropout is positively associated with higher income (Guimarães et al., 2010). Family issues contribute to university dropout problems. Aguti et al. (2009) state that older adults in Uganda, who have large families to look after, were unable to concentrate on their studies and dropped out.

Some studies find that financial burden creates a higher probability of dropping out of university (Aguti et al., 2009; Sittichai, 2012). Therefore, financial aid might become a solution. For example, a study in Colombia shows that giving financial aid to

students will reduce the odds of dropping out (Melguizo et al., 2011). In addition, Melguizo et al. (2011) also show that having work while in high school is associated with a higher likelihood of dropping out.

Factors related to university also contribute to student dropout. For example, poor dormitories and university facilities will lead students to leave university (Sittichai, 2012). Sittichai also finds that unfair assessment by lecturers is associated with a high probability of dropping out. Moreover, not being provided with adequate information by advisors pushes student to drop out (Fozdar et al., 2006; Sittichai, 2012).

### **3.6. Previous Studies on Dropout in Indonesia**

Only a few studies have examined the causes of school dropout at the upper secondary level in Indonesia and most of them use secondary data. Only one study uses primary data (i.e., Ajis et al, 2013). The following review will cover the causes of dropout at all three levels of schooling. There are two different definitions of dropout used in previous studies on Indonesia. The first definition of dropout is students who leave school before graduating. The second definition of dropout is students who did not continue their study to lower secondary school after graduating from primary school.

Most of the previous studies are mainly focused on the impact of the East Asian crisis in 1998 and examine the effect of the Social Safety Net Scholarship to prevent students from dropping out (e.g., Cameron, 2009; Ha & Mendoza, 2010; Sparrow, 2007). This scholarship was part of Indonesia's Social Safety Net Program as a response to the Asian financial crisis. Sparrow (2007) constructs pseudo panel data for 1998 and 1999 to analyse the effects of the scholarship program to help students during

the Asian crisis.<sup>14</sup> One of his empirical results shows that 13% of scholarship holders would have dropped out if they had not got a grant. For primary schools, the effect is 10%. He also estimates that the effect for lower secondary school is 12%. However, Sparrow concludes that there is no effect of scholarships on student dropout at the upper secondary school level. Cameron (2009) uses a linear probability model<sup>15</sup> and concludes that scholarship grants effectively decreased the probability of dropping out only for lower secondary school, but had no impact at all in primary school. Moreover, Cameron fails to find an effect of scholarships on student dropout at the upper secondary school level because the sample size too small to create fixed effects. Sparrow (2007) explains that the insignificant impact of scholarships in his study may occur because the scholarships have been allocated in a pro-poor manner for primary and lower secondary school only. Primary school students from the two poorest quintiles received 70.7% of the scholarships, while 3.2% was received by the richest quintile. Also 56.8% of the scholarships allocations to lower secondary schools were received by the two poorest quintiles, while 6.9% went to the richest quintile. On the other hand, the distribution of the scholarship at upper secondary school was totally not pro-poor. It was distributed quite evenly among all households.

A more recent study of the impact of the crisis is Ha and Mendoza (2010). Although they also examine the impact of scholarships on primary and lower secondary school dropout, this study uses aggregate level data as in Sparrow (2007), while Cameron (2009) uses individual level data. By using probit regression, they find that Indonesia's Social Safety Net Program contributed to keeping students in primary school but not in lower secondary school. This finding is contradicted by Cameron

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<sup>14</sup> Panel data requires information from the same individuals over specific periods for inclusion in a model. However, sometimes it is difficult to trace the same individuals over time, especially in a large survey. Pseudo panel data is used to overcome a lack of genuine panel data where specific individuals are not followed over time (Verbeek, 2008). Pseudo panel data uses a series of independent cross sections that share some common characteristics. For more detailed information about pseudo panel data, see Deaton (1985) and Verbeek (2008).

<sup>15</sup> The Linear Probability Model (LPM) is an Ordinary Least Squares (OLS) technique when the independent variable is a dummy. LPM is discussed later in section 3.10.

(2009). However, Ha and Mendoza (2010) argue that Cameron's study was conducted in the first few months after beneficiaries received the scholarship. They argue that it was impossible to find the impact accurately by observing it only in those few months. They also point out that the data used by Cameron (2009) is not representing the national population. In addition, Ha and Mendoza (2010) note that employment opportunities may lead students to drop out of school to support their family.

Another study on dropout is Toi (2010). She uses covariance structure analysis<sup>16</sup> to pinpoint the determinants of educational environmental factors (such as principal qualifications, teacher qualifications, school budget, and learning circumstances) on the educational outcome (exit examination and dropout rate) before and after the decentralization era in Indonesia in 2001 for lower secondary school. Decentralization in education was implemented by the Ministry of National Education by passing on the educational administrative authority for primary and lower secondary schools to the local government in regencies and cities and transferring the authority for upper secondary school to local government at the provincial level. She finds that before the decentralization era, increases in school expenditure enhanced the quality of the educational environment and caused a lower dropout rate. After the decentralization era had commenced, the relationship between variables became less significant. However, her research does not suggest any solution about how to decrease student dropout. She mentions that it is a subject for future investigation (Toi, p. 119).

Moreover, a study by Gertler, Levine, and Ames (2004) shows that a student whose father has passed away has a higher probability of dropping out of school. A recent small scale study on upper secondary school dropout was conducted by Ajis et al. (2013). However, Ajis et al.'s study has a lot of limitations. The study is only descriptive and it collects information from 19 respondents in one village only. The main finding is

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<sup>16</sup> Covariance structure analysis is a statistical technique for studying the causal relationship of events.

that about 79% of respondents dropped out of upper secondary school because their parents have low income.

Suryadarma et al. (2006) use the probit model to analyse the determinants of low enrolment at lower secondary schools. However, in this study they use a different terminology for dropout. They define dropout students as those who did not continue their study to lower secondary school after graduating from primary school. They find that the final examination score (a proxy of the child's ability), and the presence of more schools in their community increase children's willingness to attend lower secondary school. They also state that being a female, children from Muslim families, higher monthly household expenditure, and higher employment opportunities in a community result in a lower probability of continuing to lower secondary school.

### **3.7. Previous Dropout Studies Using Interaction Effects**

Some studies include interaction effects in their regressions. For example, Traag and Van der Velden (2011) discusses the interaction between gender and intelligence, gender and school performance, gender and school recommendation, gender and motivation, and gender and school perception in their study of lower secondary education in the Netherlands. It is found that there is a significant difference in school performance and motivation that affects male students' odds of dropping out more than female students'. They cannot find any evidence to support the other interactions.

Montmarquette, Viennot-Briot, and Dagenais (2007) examine the interactions between the unemployment rate and living outside metropolitan areas, the unemployment rate and parents with post-secondary education, and the unemployment rate and students who stay with both parents. They find that students with post-secondary educated parents are insensitive to the level of unemployment with respect to their decision on whether to work while in school. They also find similar results for the interaction between students who stay with both parents and the

unemployment rate. Hoffer (1997) studies the interaction between course requirements and SES, but he cannot find any evidence to support the interaction. Similarly, Warren and Edwards (2001) explore the interaction between the graduation test requirement and student achievement levels, but do not find evidence to support it.

### **3.8. Government Policies and Macroeconomic Conditions**

Returning to Rumberger and Lim's conceptual model, there are two missing aspects. Firstly, they did not include government policies. Some previous studies have examined how the impact of certain policies reduces student dropout. This factor can be included as one of the institutional factors. For example, it is found that an increase in government expenditure on education will reduce the dropout rate (Chaudhuri & Maitra, 2008). South et al. (2007), in their study in the US, argue that students from families that receive public assistance are significantly more likely to drop out than other students. South et al. did not explain in detail why this occurred but is it likely because families that receive public assistance are classified as low SES and their children left school to help the family.

Heckman, Humphries, LaFontaine, and Rodriguez (2008) evaluate the effect of innovations in General Education Development (GED) test policy on high school graduation rates in the US. GED certification is equivalent to the traditional high school diploma. They conclude that the GED program encourages students to drop out of school because students simply take the GED test instead of attending school. They show that a six per cent decrease in the probability of passing GED produces a 1.3 point decline in overall high school dropout rates.

It is reported in Uganda that a decline in fees for primary education is correlated with higher primary school attendance (Deininger, 2003). De Kemp (2008) indicates that, based on research in two countries, Uganda and Zambia, the elimination of school fees increases the enrolment in primary school. In contrast, it is found in

Bangladesh that schooling expenditure does not cause dropout (Sabates et al., 2010). In Pakistan, decentralization in education or universalization of primary education significantly decreased dropout (Khan & Mirza, 2010).

Secondly, besides policies, macroeconomic conditions also lead students to drop out. A study for Canada suggests that the decision to drop out is affected by high minimum wages and lower unemployment rates (Montmarquette et al., 2007). It is also found in China that continually increasing wages for low-skilled jobs tends to pull students away from school (Yi et al., 2012). In China, the transition from subsistence agricultural to an industrial market-oriented economy often appears to clash with local values and pushes students to drop out (Chung & Mason, 2012). In Indonesia, as mentioned before, Sparrow's (2007) study indicates that the financial assistance did not significantly reduce dropout during the economic crisis. Especially poor students preferred to join labour-intensive employment provided by the government in order to support their family.

### **3.9. General Conclusions from Previous Dropout Studies**

In this section, general conclusions are drawn from primary and secondary education level dropout studies for every characteristic. For the individual characteristics predictors, although most of the previous studies were conducted in the US, the results for other countries for similar variables show similar patterns. Moreover, it can be concluded that male students in developed countries tend to drop out more than female students (Bergeron et al., 2011; Blanchard & Sinthon, 2011; South et al., 2007; Suh & Suh, 2011). By contrast, female students in developing countries are more likely to drop out than male students (Ajaja, 2012; Hanushek et al., 2008; Lloyd et al., 2000; Regina & Stella, 2010; Shahidul, 2013a). These results are consistent at the high school level and primary school level. However, one study in China at the lower

high school level (Mo et al., 2013) shows that male students are more likely to drop out than females.

Some variables mostly seem to be tested for developed countries only, e.g., changing schools in the US (Roebuck et al., 2004; South et al., 2007; Wexler & Pyle, 2012). Frequently changing school is correlated with a higher probability of dropping out. Deviant behaviour is also almost exclusively tested in developed countries, for example in the US and Canada (Balfanz et al., 2007; Chatterji & DeSimone, 2005; French & Conrad, 2001; Kaplan et al., 1997; Roebuck et al., 2004; and Terry, 2008), with the exception of a study for a developing country, i.e., South Africa (Townsend et al., 2008). They find that deviant behaviour is correlated with dropout.

Similarly, for family characteristics predictors, it is concluded that some variables are only tested in developed countries, for example sibling's dropout (Rumberger & Thomas, 2000; Terry, 2008; and Tomás et al., 2012) and living with an adopted parent (Suh & Suh, 2011). One special feature of family characteristics from previous studies is using parents' answers directly to construct a variable. Although most of the variables on family characteristics can be constructed by asking the student, they can be also constructed based on parents' answers. For example, a study by Shahidul (2013a) uses parents' responses to construct a parents' participation index variable.

For school characteristics predictors, there is a variable that has been tested in developing countries only, i.e., distance to school (see Mason & Rozzelle, 1998; Mike et al., 2008; and Sabates et al., 2010). This suggests that the distance between home and school in developing countries might be a prominent issue because longer distance will create higher costs in terms of time and money and increase students' probability of dropping out.

For community and government predictors, culture is mainly used as a community variable in developing countries (see Amadi et al., 2013; Makwinja-Morara,

2009). It is shown that government policies mainly reduce dropout. However, a study in the US by Heckman et al. (2008) shows that the GED program increases the odds of dropping out. Most previous studies using macroeconomic conditions predictors are conducted in developed countries. Two studies using minimum wage variables show similar results (Montmarquette et al., 2007; Yi et al., 2012). They find that higher minimum wages increase students' probability of dropping out.

Considering all of the results from previous studies, it seems that most previous studies generally show a consistent pattern of the risk factors for school dropout. However, it has been discussed in Chapter Two that there are different definitions of school dropout used in various studies. Therefore, it is difficult to draw more specific conclusions.

### **3.10. Limitations of Previous Dropout Studies**

After reviewing the general findings of previous dropout studies, their shortcomings are discussed. They relate to: (1) The empirical methods used; (2) secondary data usage; (3) issues about sample size; and (4) issues about research respondents.

Firstly, there is an issue about the empirical methods used. Rumberger and Lim (2008) conclude that Logit and Probit regressions have been employed widely for school dropout research. These methods of analysis are suitable for binary response variables such as dropout or graduation. Studies using logit regressions include, for example, Blanchard and Sinthon (2011); McCaffrey, Pacula, Han, and Ellickson (2010); Shahidul (2013a, 2013b); South et al. (2007); Tomás et al. (2012); and Townsend et al. (2008). Those using Probit regressions include, for example, Dearden et al. (2009); Hanushek et al. (2008); Roebuck et al. (2004); and Suryadarma et al. (2006). Pohlman and Leitner (2003) suggest that OLS regression can also be used if the dependent variable is binary (it is also known as linear probability model, LPM) However, Logit

regression has advantages for binary response variables compared to OLS. The main problems with OLS are: (1) Predicted probabilities from OLS can lie outside the 0 – 1 interval, (2) the normal distribution will likely be violated with a binary dependent variable. Logit regression does not make any assumptions about the probability distribution of the variable (Hailpern & Visintainer, 2003). A study by Pohlman and Leitner (2003) try to compare OLS and Logit regression in explaining high school dropout. In both OLS and Logit regression models, the dependent variables are binary. They conclude that Logit regression provides more precise estimates of probabilities of the dependent outcome, and strongly advise researchers to use Logit regression when modelling the probability of binary outcomes.

Secondly, as stated by Hunt (2008), most of the previous studies view dropout as an event rather than a process, as dropping out of school is influenced by a series of correlated problems and differs depending on the cultural background. To overcome this problem, some studies apply longitudinal data to capture the dropout process (e.g., Alivernini & Lucidi, 2011; Fall & Robert, 2012; No & Hiraakawa, 2012; and South et al., 2007, Jimerson et al., 2000, Jimerson et al., 2002, Kaplan, 2007). Although longitudinal data are useful, unfortunately this type of study also has its weaknesses. As explained by Schroder and Borch-Supan (2008), the inconsistencies of answers from respondents in longitudinal data may influence the quality of the data. A study by No & Hiraakawa (2012) confirms this problem. At their second wave of collecting data, they randomly selected some students and asked them to answer the same questions as in the first field work and found some answers changed compared to the previous answers.

Thirdly, a growing body of quantitative research has contributed to more understanding about dropouts. Previous quantitative studies (see, e.g., Blanchard & Sinthon, 2011; Dearden et al., 2009; McCaffrey et al., 2008; Montmarquette et al., 2007; No & Hiraakawa, 2012; No et al., 2012; Roebuck et al., 2004; South et al., 2007; Suh & Suh, 2011; Tomas et al., 2012; Townsend et al., 2008; Traag and van der Velden,

2011; and for the newest, McKee & Caldarella, 2016 and No et al., 2016) have shown the strong effect of some potential determinants on the likelihood of an individual to complete or drop out of school.

Although quantitative analysis is a powerful tool for analysing the decision to drop out, it seldom explains the complete story without help of qualitative analysis. However, only a few studies use a qualitative approach to analyze the dropout decision (see Chi & Rao, 2003, Chung & Mason, 2012, and Liu, 2004, in China; Makwinja-Morara, 2009, in Botswana; Taş et al., 2013, in Turkey; Terry, 2008, in Canada; and Wexler & Pyle, 2012, in the US). Only a limited qualitative literature discusses the process of dropping out, that is the stories behind dropout decisions, and how parents react to their child dropping out of school.

The advantages of the qualitative approach as mentioned by Hunt (2008) are: (1) It might show special features in the local area of research; and (2) it might capture a better understanding of how the student dropout process works. However, Hunt also points out the disadvantage that the qualitative approach may not capture general descriptions about dropping out. Furthermore, No & Hirakawa (2012) argue that nothing can be clarified from the perceptions or opinions of the respondents by doing a qualitative study. They argue that responses might be biased because the respondents use "self-justification", which means that respondents tend to justify their behaviour and deny any negative feedback associated with it. They believe that dishonesty of the respondents might occur and this becomes a limitation in research based on the qualitative approach.

A better way to understand the dropout problem is to use a combination of quantitative and qualitative elements in research. Some studies apply this method (e.g., Diyu, 2001; Okuom et al., 2012; and Mirza & Mahmood, 2011). As mentioned by Hunt (2008), combining qualitative and quantitative studies should strengthen the understanding of the dropout phenomenon.

Fourthly, another shortcoming concerns the use of secondary data. One of the weaknesses of using secondary data is the fact that researchers do not meet the respondents and collect data from them directly. It is difficult to assess the data from a third party in order to clarify whether the dropout student is permanently or just temporarily leaving school. The assumption that people who have dropped out will never complete school and people who have not graduated must be dropouts is wrong. Some previous studies (for example, Chatterji & Desimone, 2002; Roebuck et al., 2004; and South et al., 2007) only determine the status of students who drop out of school based on a particular point in time. In the US, a person who drops out of school can eventually complete high school, either by completing the requirement for a diploma or by examination (Rumberger, 2001). Therefore, a person's status in the US can change over time. So, a researcher must be aware of this when defining school dropout.

Fifthly, sample size also becomes a prominent issue. Sample size significantly impacts on the ability of a model to generalize the results as representative of the population we are studying. Since the number of dropout students varies among countries, there is no general consensus regarding sample size. For logistic regression, there is a rule of thumb that the sample is to be used with a minimum of 10 events per predictor variable (Vittinghoff & McCulloch, 2007). However, some studies of student dropout ignore the importance of sample size. For example, the study by No and Hirakawa (2012) fails to explain the reason behind the number of samples. They use 31 variables in their model to explain student dropout. Sample sizes are 269 students in Grade 1, 271 students in Grade 4 and 328 in Grade 7 (the first year of lower secondary school). However, only two explanatory variables (age at first school entry and father's education) are able to explain dropout in Grade 1, four explanatory variables (age at first school entry, repetition, ethnicity and gender) are able to explain dropout in Grade 4, and seven explanatory variables (repetition, family size, parents' educational aspiration, achievement, and three school dummies) are able to explain dropout in the Grade 7. As a result, they blame the sample size when they only find few significant

independent variables. Section 6.4 later also shows that small sample size in logit models yields biased odds ratios.

Lastly, another problem concerns the research respondents. Some studies use students who are still enrolled in school in comparison to those who dropped out (e.g., South et al., 2007, at the high school level; Cemalcilar & Gökşen, 2012, and Hanushek et al., 2008, at the primary school level). In my opinion, using only enrolled students is incorrect because there is no guarantee that they will definitely complete or graduate from school. For example, when researchers use students who are still enrolled in school and compare them with dropout students, it is possible that respondents currently enrolled will leave school before they graduate. If so, the results reported by the researcher are biased because they picked the wrong respondents. Therefore, it is better to use graduated students, instead of still enrolled students, in comparison with dropout students. There is also a problem with respondents' age. A study in United Arab Emirates (UAE) by Ridge et al. (2013) conducts interviews with dropouts aged 18 to 37. Since the respondents are from different generations, the results may not reflect current educational problems in the UAE. The other weakness is presented in studies by No and Hirakawa (2012) and No et al. (2016). There are two variables in the studies, *parental aspiration* and *family academic support*, that represent parents' perception of their children's education. However, students were asked questions about these two variables, instead of their parents. That could result in bias.

### **3.11. Concluding Remarks**

This chapter summarizes previous studies on students dropout at all levels of education. The review of previous studies aims to get a better understanding of the factors that contribute to the decision to drop out. It has given useful insights for creating variables that capture the factors that influence the decision to drop out. It is concluded that some factors are frequently cited, such as SES, gender, parental

education level, and parents' perception of education. The evidence presented in this chapter suggests that variables that were most cited in previous studies most likely are key variables and they are used as the benchmark model in the quantitative analysis. The discussion about the variables used in this study is presented in Chapter Four and the results of the quantitative analysis are discussed in Chapter Six.

To the best of my knowledge, there is no study on the interaction between *gender* and *sibling rank*, *gender* and *rural home location*, *gender* and *non-working mother* and also between *urban school location* and *rural home location* variables. Their use is one of the original contributions of this study to the body of knowledge. This study explores those interactions and the results are presented in Chapter Six.

An important conclusion of this chapter is that a combination of quantitative and qualitative analysis is likely to provide a better understanding of the dropout phenomenon. Therefore, this study will use both qualitative and quantitative analyses together in order to reduce the research bias because the limitations of one type of analyses are balanced by the strengths of the other. Lastly, it is concluded that primary data collection is likely the best for dropout research. As pointed out before, using secondary data makes it difficult to clarify whether dropout is permanent or just temporarily leaving school. Therefore, this study has conducted primary data collection for qualitative and quantitative analysis to minimise research bias.

## **4. RESEARCH METHODOLOGY AND DATA COLLECTION**

### **4.1. Introduction**

After identifying the importance of the proposed research and introducing the research questions in Chapter One, discussing theories and conceptual aspects of research in Chapter Two and reviewing previous studies on school dropout in Chapter Three, this chapter explains the research methods used in the study. There are two types of research to answer the research questions; those requiring quantitative and qualitative approaches. It is important to use both quantitative and qualitative methods as each method has its strengths and weaknesses. As noted by Creswell (2014, p. 15), collecting both quantitative and qualitative data neutralizes the weaknesses of each form of data.

This chapter concentrates mostly on the quantitative methods used in this study. They were essential for identifying the independent variables that are used in the logit regression model introduced later in Chapter Six. The qualitative analysis is used to supplement the results of the quantitative analysis that form the basis of the discussion of results in Chapter Five. This chapter also contains a description of the pilot study undertaken and presents the main data collection report in the final section.

Data collection in Central Java Province was conducted with the help of 10 research assistants. All of the research assistants are originally from Central Java Province and still reside there. This is advantageous as they understand Javanese culture and know how to be culturally sensitive when interviewing survey participants. They are also fluent in the local language (Javanese) because they were required to assist the respondents who have literacy problems to fill in the questionnaire. All research assistants underwent training in interview techniques and questionnaire completion before they commenced collecting data. Their main roles were to firstly

locate the selected respondents and secondly to assist the respondents to fill in the questionnaires.

Ethical considerations related to the respondent's identity, views and information, privacy settings, and confidentiality were taken into account. This study is considered to involve minimal risk to human subjects. Extensive consultations with the Ph.D. supervisors and an expert on cross cultural communication were made to minimize the ethical problems in the project. Ethics approval was obtained from the Massey University Human Ethics Committee (MUHEC) (Southern B application - 14/32) following the preparation of a detailed application and undertaking an extensive interview with the Human Ethics Committee.

## **4.2. Research Methods**

This section explains the research methods used in this study. The first section discusses the definition of dropout, followed by sections on the location of the study and the research design. The next section explores the quantitative analyses required, explaining in details the data collection methods, the regression models, and goodness-of-fit tests used. The final part of this section discusses the procedure of data collection for the qualitative analysis.

### **4.2.1. Definition of Upper Secondary School Dropout Used in this Study**

The previous discussion in section 3.2 highlights the numerous different and sometimes erroneous definitions of 'dropout' used by researchers. Consequently, it is important for this study to establish a clear and robust definition of 'dropout', as the absence of a clear and robust definition would result in poor quality data and analysis. Therefore, in this research, an upper secondary school dropout is considered to be an individual who:

- (1) Was officially enrolled in an upper secondary school in Grade 10 (first year of upper secondary school) but left school permanently before completing upper secondary school for reasons other than death, and
- (2) is not enrolled in other formal education, and
- (3) does not hold a package-C certificate<sup>17</sup>, and
- (4) does not have a temporary absence from school due to suspension or illness.

The above definition was used as the selection criterion to identify and to select potential respondents. During my field work, I found that some students who were previously classified as 'dropout' students by their schools had actually graduated from upper secondary school by either enrolling in another school or through participation in the Package-C program. This 'dropout' misclassification occurs because schools never trace students once they leave. Whenever this occurred, these students did not fit this study's dropout definition and they were excluded from the list of potential respondents.

#### **4.2.2. Location**

Primary data was used in this research. The primary data collection was conducted in the Central Java Province, Indonesia. Its area is 32,548 km<sup>2</sup> or approximately about 25% of the area of the island of Java. Administratively, Central Java Province consists of 29 regencies and six cities.<sup>18</sup> Primary data for quantitative analysis was collected from all regencies and cities.

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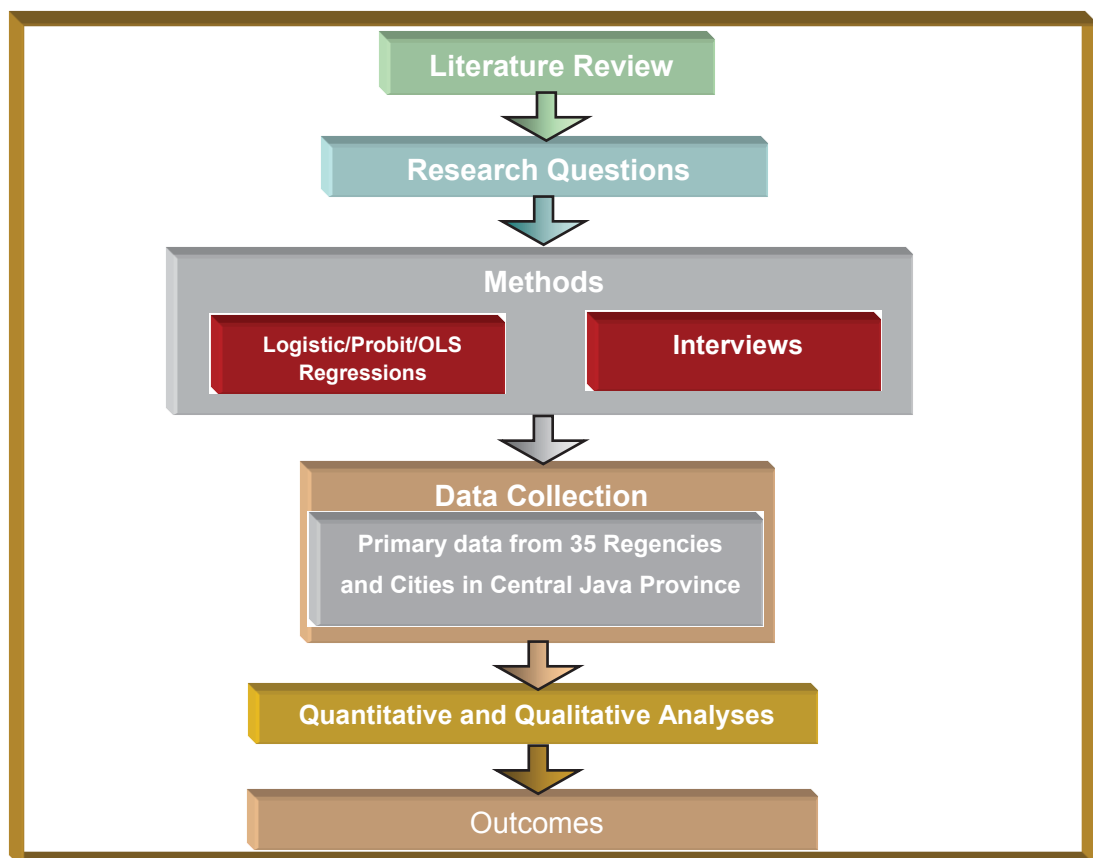
<sup>17</sup> See Section 2.5.5 (page 57) for the definition of Package-C.

<sup>18</sup> Regency (Indonesian: *Kabupaten*) and city (Indonesian: *Kota*) are the third level of administrative divisions in Indonesia, after the central government level and provincial level. In general, cities have a smaller area than the regencies and cities have only a few agricultural economic activities. The head of a regency is called a Regent (Indonesian: *Bupati*) and the head of a city is called a Mayor (Indonesian: *Walikota*).

### 4.2.3. Research Design

The research processes are summarised in Figure 4.1. After having conducted a pilot survey in the Central Java Province, the next step was to collect data for the larger study. In this step, in-depth interviews were conducted by using open-ended questions. The questions were given to respondents, both dropout students and their parents/guardians, about their reasoning, motivations, and feelings about dropout experiences. Also, two types of questionnaires were distributed in 35 regencies and cities to be completed by respondents. Respondents' answers to the questionnaires were tabulated and entered into the Stata Software program that was later used to estimate the regression models.

**Figure 4.1. Research Design**



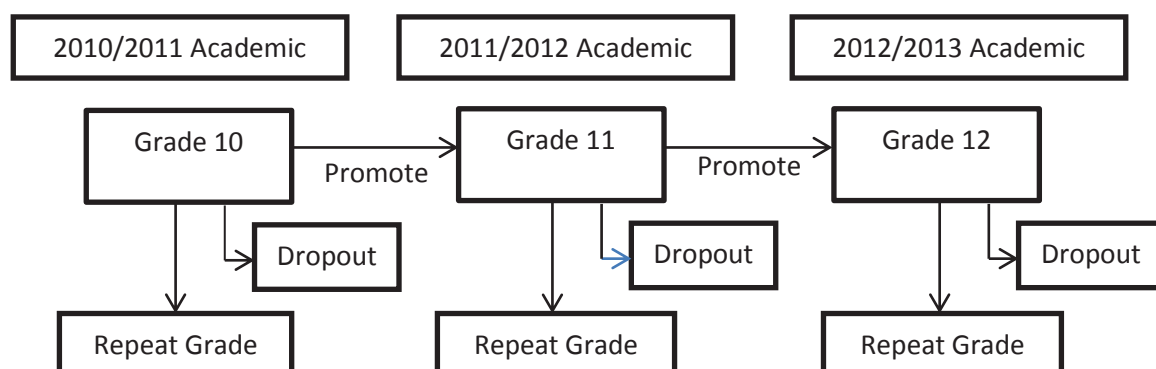
#### **4.2.4. Quantitative Analysis**

This section describes the steps involved in the quantitative analysis. It explains the important steps in assessing the appropriateness of the predictive dropout model, and testing the overall significance of the model and goodness-of-fit to check how well the model describes the observed data. The respondents' profiles are described in detail later in section 4.4.

##### **4.2.4.1. Sampling Technique**

The population of the study is all students in Grade 10 (first year of upper secondary school) from the 2010/2011 academic year in Central Java Province. Every student at upper secondary school level in Indonesia must follow three years of education (from Grade 10 to Grade 12). At Grade 12 (final / third year of upper secondary school) there is a final examination to determine whether a student is eligible to finish their education or not. Figure 4.2 shows the flow of students in upper secondary school. In general, upper secondary school National Final Examinations are held in May every year and the results are announced in June. So, the Grade 10 students of the 2010/2011 academic year had finished their education by June 2013, and the number of graduated students, grade repeaters and dropouts were known. During a student's three years of education, it is possible to drop out of school at Grade 10, Grade 11 or Grade 12. It is important to choose students who have just finished upper secondary school because they still have good memories about their schooling experiences.

**Figure 4.2. Flow of Students in Upper Secondary School**



No data is currently available on dropout students' names and residential addresses in Central Java Province to form a suitable sampling frame. In order to overcome the absence of lists of dropout students' names, Fowler Jr. (2009, p. 28) suggests another procedure. If the students' sampling frame is not available, a researcher could still get the list of students directly from schools in a particular city. Fowler argues that every student in the study population enrolls at only one school. Therefore, a perfectly acceptable sample of students can be selected using a two-stage strategy: Firstly, selecting schools and secondly, selecting dropout students identified by those schools. This strategy was applied by the NCES and is called a two-stage, stratified random sampling design (Werblow, Robinson, & Duesbery, 2010). Werblow et al. (2010) explain the procedures taken by the NCES for the Educational Longitudinal Study of 2002. Their first stage involved 752 public, catholic and other private participating schools from a population of 27,000 schools across the US. In their second stage, approximately 26 students from each school were selected by ethnicity using a random sampling design.

Stratified random sampling is a technique in which a population is distributed into mutually exclusive groups (Johnson & Christensen, 2008). These small groups are known as strata. There are two types of stratified sampling: Proportional stratified sampling and disproportional stratified sampling. Proportional stratified sampling

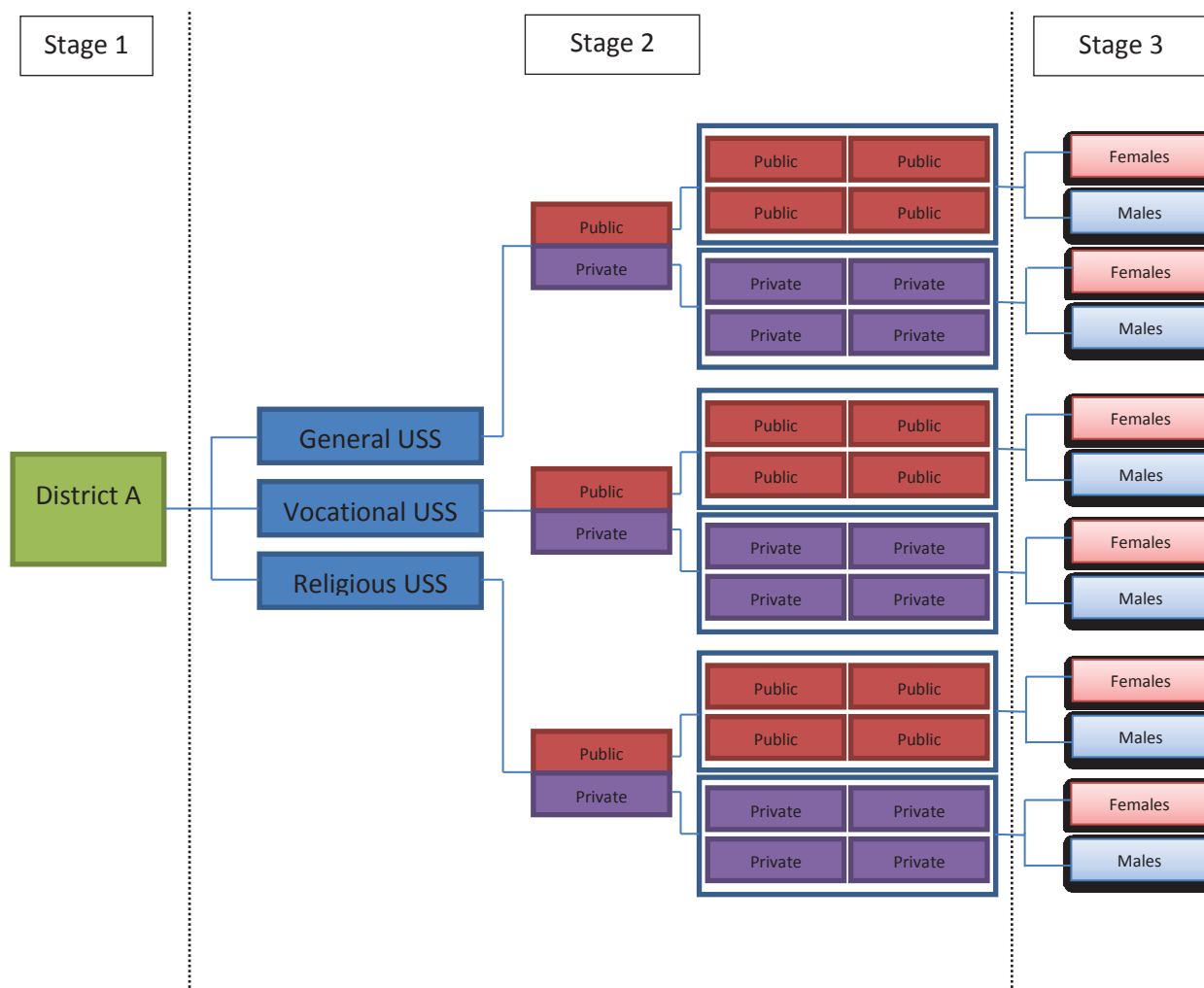
offers increased probability of accuracy by ensuring all groups are represented in the sample in the same proportions as they are in the population. For example, if in a particular school 60% of the students are female and 40% are male, then 60% of the sample are randomly selected from the female subpopulation and 40% of the sample are randomly selected from the male subpopulation. When disproportional stratified sampling is used, the proportion of student samples is disproportionate to the population's proportions identified using proportional stratified sampling.

For this study, three-stage proportional stratified random sampling, as seen in Figure 4.3, was used to obtain the sample for this research. Microsoft Excel 2010 software was used to run the random sampling. In my research, four stratification variables were identified:

1. Regencies and Cities in Central Java Province
2. Type of Schools: General, Vocational and Religious upper secondary school
3. School Ownership: Public or Private
4. Gender: Male or female

At the first stage of sampling, the number of schools sampled in every regency and city was determined proportionally to the total number of schools across the province. At the second stage, every district's schools were randomly selected based on the proportion of the type of schools and on the proportion of the type of ownership of the schools. Two additional schools were also selected as reserves in case any of the selected schools refused to participate. At the third stage of sampling, students from each selected school were selected randomly and proportionally by gender.

**Figure 4.3. Three Stages of Data Collection**



At the third stage of sampling, my research assistants and I visited every selected school in every regency and city. Schools were asked to provide the list of Grade 10 students of the 2010/2011 academic year and students were selected randomly and proportionally by students' gender. In some cases, the schools refused to give the list of students but were able to give random students' names. The proportions of female and male students in the sample were determined by the total number of female students and male students attending the selected school.

### **Sample Size**

A formula proposed by Yamane (1967, p. 886) is used to determine sample sizes:

$$n = \frac{N}{1+(N*e^2)} \quad (5)$$

Where:

n = Number of samples.

N = Number of population.

e = Margin of error.

Number of the population of the study is 359,403 grade 10 students. Therefore, the sample size is:

$$n = \frac{359,403}{1 + (359,403 * 0.05^2)}$$
$$n = 399.6 \approx 400$$

There is another formula to determine the sample size, proposed by Krejcie and Morgan (1970). The formula is:

$$s = \frac{X^2 NP (1 - P)}{d^2 (N - 1)} + X^2 P (1 - P) \quad (6)$$

Where:

s = required sample size.

$X^2$  = the table value of chi-square for 1 degree of freedom at 95% confidence level ( $\chi^2(1) = 3.841$ ).

N = the population size.

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion is 0.05 (or 5% margin error).

Based on the formula, Krejcie and Morgan created a table for determining sample size from a given population (see Krejcie & Morgan, 1970, p. 608). From the table, the sample size required for a population of 359,403 students is about 384 students. There is no significant difference between the sample sizes calculated by Yamane's formula and Krejcie and Morgan's formula because the difference is only 16 students.

514 ex-students from 115 schools throughout Central Java Province participated in this study. However, this study cannot use all respondents' answers in the regressions. This study only uses respondents' answers where both parents filled in the questionnaires. The respondents and their parents were participating in this research voluntarily and could not be forced into completing the questionnaire. As a result, the primary data collected contained answers from 439 ex-students and 878 parents/guardians and these were used in the regression analysis.

### ***Data Management***

The quantitative data from the survey instruments were entered into Excel spread sheets, and these databases were then transferred to Stata Software to be analysed. To minimize the probability of data entry errors, a random check on approximately 10% of observations was applied to confirm data entry accuracy. All hard copies of transcripts and digital copies are stored securely and confidentially. My supervisors and I are the only ones who are able to access the data.

#### 4.2.4.2. Model Specification<sup>19</sup>

The model specification for the dropout decision in general form was introduced earlier (see equation (2), page 26). The vast majority of quantitative high school dropout analyses were undertaken using logistic and probit regressions (Rumberger & Lim, 2008). Logit<sup>20</sup> is a preferred method of analysis in this study because of its advantages compared to other methods, for example its ability to produce odds ratios. The interpretation of logit coefficients is not as direct as in the case of OLS regression coefficients. Gujarati and Porter (2009, p. 555) use term the "log odds" to formally interpret logit models. The term is used as a mechanical interpretation of an estimated logit model, although it is not very appealing (op cit., 2009, p. 558). The common way to interpret logit regressions is by calculating average marginal effects and the odds ratios. As seen later in Chapter Six, this study also uses term 'log odds' to discuss the positive or negative signs of the coefficients of logit regressions. This study uses average marginal effects and the odds ratios for a more meaningful interpretation of the logit models.<sup>21</sup> However, this study also conducts probit and OLS regressions as part of the robustness analysis.

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<sup>19</sup> An earlier version of this section has been published in a paper presented at the 2015 Annual Conference of the New Zealand Association of Economists (NZAE), Wellington, New Zealand, 1-3 July 2015. (The paper can be found at: [http://cdn-asset-lax-1.airsquare.com/nzae/library/andryan\\_setyadharna\\_jwd.pdf?201506190707](http://cdn-asset-lax-1.airsquare.com/nzae/library/andryan_setyadharna_jwd.pdf?201506190707)) and in the Proceeding of 1<sup>st</sup> Unnes International Conference on Research Innovation & Commercialization for the Better Life 2015, Semarang, Indonesia, November 27-28<sup>th</sup>, 2015.

<sup>20</sup> Logit is calculated as follows:

$$L_i = \ln \left( \frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

Where:  $L_i$  = Logit model  
 $P_i$  = Probability of event  $i$   
 $\beta_0$ ;  $\beta_1$ ; and  $\beta_i$  = coefficients  
 $X_1$ ; and  $X_i$  = Independent variables  
 $u_i$  = Error term  
 $i$  = 1, 2, ..., n.

<sup>21</sup> According to Cameron and Trivadi (2010), marginal effect is a method to calculate the effect on the conditional means of  $y$  of a change in one of the regressors,  $x_j$ . For more detailed information about the calculation of average marginal effects, see Williams (2012). Odds ratios are obtained by taking the antilog of the estimated logit coefficients.

The next step is to turn the general model into a structural model that uses cross-section data:

$$D_i = \beta_0 + \beta_1 I_i + \beta_2 F_i + \beta_3 S_i + \beta_4 GM_i + e_i \quad (7)$$

Where:

$D_i$  = 1 if individual  $i$  is a dropout, and 0 otherwise (the dependent variable).

$\beta_1; \beta_2; \beta_3$  and  $\beta_4$  = Vectors of parameters to be estimated

$I_i$  = Vector of individual characteristics

$F_i$  = Vectors of family characteristics

$S_i$  = Vectors of school characteristics

$GM_i$  = Vectors of government policies and macroeconomic condition

$e_i$  = Error term.

$i$  = 1, 2, ...,  $n$ .

The vector of individual characteristics ( $I$ ) contains 11 explanatory variables: *Gender, age at first entry, working experience, perception of education, grade repetition, student's home location, previous academic performance (two variables), changing school experience, deviant behaviour and health.*

The vector of family characteristics ( $F$ ) consists of 13 explanatory variables: *Family's SES, household head education level, father's academic support, mother's academic support, family size, sibling rank, sibling's dropout experience, parents are divorced, non-working mother, time helping family with household chores, time helping family with daily business/work, father's participation in household decision-making and mother's participation in household decision-making.*

The vector  $S$  contains 10 explanatory variables: *School location, relation with teacher (two variables), bullied by peers and/or teachers, school curriculum (general upper secondary school versus vocational upper secondary school versus Islamic upper secondary school), school type (public versus private upper secondary school), distance to school, student's schooling expenditure, and teacher quality.* The vector  $GM$  consists

of five explanatory variables: *Government's cash transfer to poor students, real minimum wages, unemployment rate and spatial dummy* (two variables).<sup>22</sup>

Firstly, I estimate six models and robust standard errors are applied in the regressions to reduce heteroscedasticity problems. Model One is the benchmark model. It includes the 12 explanatory variables that were the most cited variables in previous studies in other countries. This study tries to find out whether these most cited variables also have influence on dropout in Indonesia. In addition, this study also attempts to examine the impact of variables other than the benchmark variables on the dropout decisions. Model Two includes the benchmark model with other individual characteristics variables, Model Three consists of the benchmark model with other family characteristics variables, Model Four contains the benchmark model with other school characteristics variables, Model Five consists of the benchmark model with government policy and macroeconomic conditions variables, and finally Model Six consists of the benchmark model and all other explanatory variables. Secondly, the empirical model is estimated by adding interaction effects in all six models. Four interaction terms are added.<sup>23</sup> They are the interactions between *female* and *sibling rank*, *female* and *rural home location*, *female* and *non-working mother* and also between *rural home location* and *urban school location* variables. To the best of my knowledge, there is no previous study that explores these interacted variables on the probability of dropping out.

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<sup>22</sup> Some of the selected explanatory variables including *number of siblings dropping out, perception of education, and relation with teacher* may suffer from endogeneity or reverse causality problems. These problems might cause potential limitations for this study. For each of these variables, we further added explanations in the following subsections.

<sup>23</sup> The preliminary results initially also included other interaction terms, such as interaction between *female* and *working experience*; *female* and *age*, and others. However, these interaction terms did not improve the overall models. In addition, another interaction term, i.e., the interaction between *female* and *divorced parents* was dropped from the models by Stata because there was a perfect correlation occurring between *female* and *divorced parents* variables. In the end, only four interaction terms improve of the overall models.

In addition, the empirical model is estimated separately for female students and for male students. Numerous previous studies have demonstrated a strong relationship between gender and dropout, but little research has been carried out to investigate whether the factors lead students to drop out vary by gender and how they can be compared. There are only a few previous studies that examine the causes of dropout at upper secondary school level in Indonesia and, to the best of my knowledge, there is no extensive study on dropout according to gender. Therefore, further research that investigates the decision for school dropout based on gender is needed.

### ***Dependent Variable***

As mentioned earlier, the dependent variable is a measure of school completion, equal to:

- 0, if individual has completed an upper secondary school education
- 1, if individual has dropped out of an upper secondary school and has the characteristics as mentioned in section 4.2.1.

### ***Independent Variables***

The independent variables that are used in this study are discussed below. The variables are created from the questionnaires shown in Appendices 1 and 2. Answers from respondents are coded for quantitative purposes (see Appendix Table 6.3 for the coding) and after that, some variables' values are recoded as binary data for regression purposes. Detailed information about the variables used in this study is provided in Appendix Table 6.4.

## **A. INDIVIDUAL CHARACTERISTICS**

### **1. Gender**

The *gender* variable is one of the important variables to be used in this research. Ministry of National Education data for 2001 show that in Indonesia, out of every 10 pupils who dropped out of primary school and lower secondary school, six were females and four were males. At the upper secondary school level, the student dropout ratio was seven females and three males for every 10 students (Ministry of National Education Republic of Indonesia, 2001). In 2006, there was a change in the pattern. Based on Indonesian Central Statistics Agency data, in primary school and lower secondary school, the dropout ratio between males and females was 50:50, while in upper secondary school it was 60:40 (Indonesian Central Statistics Agency, 2007). In 2011, in every basic and secondary level of education, six out of ten dropouts were males (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). Currently, Indonesia is facing a higher male dropout rate than 10 years ago.

In Central Java Province, the 2010 data show that the dropout student ratio between males and females for primary school was 60:40, at the lower secondary school was 70:30, and at the upper secondary school level was 60:40 (Education Agency of Central Java Province, 2010). This study examines whether there is a significant difference between the determinants of male and female students' dropout in Central Java Province. In the models, being a female student was coded as 1 and being a male student was coded as 0.

### **2. Age at First School Entry**

Social capital theory suggests that peers provide psycho-social and academic resources that enhance individual students' academic outcomes (Coleman, 1988b). However, there is a situation where older students are taught in the same class with younger students and it may create psycho-social issues (e.g., self-esteem problem,

bullying, and sexual harassment). Older students sometimes have difficulties engaging with younger students in the classroom. This variable is used in this study because in Indonesia the proportion of students who are older than their classmates in upper secondary school is relatively high. In Indonesia, the ideal age of Grade 10 is about 16 years old, Grade 11 is about 17 years old and Grade 12 is about 18 years old. As presented in Table 4.1, in 2010, about 8% of Grade 10 students were over 18 years old. About 38% of Grade 12 students' ages were 18 years old or older. Surprisingly, at Grade 12 of the general upper secondary school, 51.5% of the students are more than 18 years old (Ministry of National Education Republic of Indonesia, 2010b). This study analyses whether being over-age at first school entry is a prominent variable in the dropout decision in Central Java Province. A variable that represents age at first school entry was created based on the following question to the respondents: "How old were you when you started Grade 10 of upper secondary school?."

**Table 4.1. Percentage of Students' of Each Age at Upper Secondary School in Indonesia, 2010**

Level and Type of School	Grade 1			Grade 2			Grade 3		
	Ideal Age Grade 1 = 16 Years Old			Ideal Age Grade 2 = 17 Years Old			Ideal Age Grade 1 = 18 Years Old		
	< 16 years (%)	16-18 years (%)	> 18 years (%)	< 16 years (%)	16-18 years (%)	> 18 years (%)	< 16 years (%)	16-18 years (%)	> 18 years (%)
<b>Upper Secondary School</b>	<b>21.1</b>	<b>70.9</b>	<b>8.0</b>	-	<b>83.7</b>	<b>16.3</b>	-	<b>62.3</b>	<b>37.7</b>
Public	23.9	71.4	4.7	-	84.4	15.6	-	58.0	42.0
Private	17.9	70.3	11.8	-	83.1	16.9	-	66.8	33.2
<b>General Upper Sec. School</b>	<b>16.5</b>	<b>69.7</b>	<b>13.8</b>	-	<b>77.4</b>	<b>22.6</b>	-	<b>48.5</b>	<b>51.5</b>
Public	21.5	72.3	6.2	-	79.0	21.0	-	49.8	50.2
Private	6.4	64.9	29.7	-	74.6	25.4	-	46.0	54.0
<b>Vocational Upper Sec. School</b>	<b>26.2</b>	<b>72.3</b>	<b>1.5</b>	-	<b>91.0</b>	<b>9.0</b>	-	<b>80.3</b>	<b>19.7</b>
Public	28.8	69.7	1.5	-	95.8	4.2	-	78.2	21.8
Private	24.7	73.9	1.4	-	88.3	11.7	-	81.4	18.6

Source: Ministry of National Education Republic of Indonesia (2010b)

### **3. Students' Working Experience**

There are 3.4 million children aged 10-17 years in Indonesia who are working. About 49% of them work in the agricultural sector, 32.4% in the services sector and 18.4% in the manufacturing sector. In addition, of the 3.4 million working children aged 10-17 years, 58.2% are unpaid family workers. In the agricultural sector, about 39% of working children are unpaid family workers (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). This study investigates whether students who work have increased odds of dropping out. The students were asked whether they ever earned money when they were at upper secondary school (Yes = 1, No = 0).

### **4. Perception of Education**

In order to be successful in school, students must believe that school is good for them, or in other words, they have to value schooling. A bad schooling experience may lead students to drop out. There might be a reverse causality for this specific variable and further endogeneity bias in the model. However, within the limitations of the data collected, this study has no choice but to accept the potential inherent bias. This study investigates whether good schooling experience as reported by students is related to lower student dropout.

Two questions were asked of the respondents: (1) "Did you like school?" and (2) "Do you think school was a waste of time?" Answers from respondents were combined into one variable. Respondents answers for both questions are classified into Good = 1, if (1) respondents said that they liked school and they did not think that school was a waste of time; or (2) if respondents said that they did not like school, but they said that school was not a waste of time; or (3) if respondents said that they liked school, but they said that school was a waste of time; and Bad = 0 if respondents said that 'they did not like school' for question no. 1 and 'they said that school was a waste of time' for question no. 2.

## **5. Students' Home Location**

Although poverty rates show decreasing trends in the last 10 years, the GOI is still struggling to fight poverty, especially in rural areas. In 2003, poor people in the rural areas of Indonesia accounted for about 20% and in urban areas 13.6% of the population. The latest data, for September 2013, show about 14.2% of people who reside in rural areas and 8.5% of people who reside in urban areas are poor (Indonesian Central Statistics Agency, 2014c). Moreover, as seen in Table 4.2, in 2010 0.9% (aged 7-12), 2.5% (aged 13-15) and 2.8% (aged 16-17) of students located in rural areas dropped out. In contrast, 0.5% (aged 7-12), 2.0% (aged 13-15) and 2.0% (aged 16-17) of students located in urban areas dropped out (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). In addition, World Bank (2013) states that dropout students are mainly from rural and isolated areas, indicating that the distance from home to a school becomes an issue for enrolment. This study explores whether students' home location is correlated with dropout in Central Java Province. Parents were asked about their home's location. In addition, since the research assistants and I visited their homes, we also noted the location of homes. By using the information from Indonesian Central Statistics Agency, it was possible to determine respondents' exact location, i.e., whether they were located in a rural area or an urban area (Rural = 1, Urban = 0).

**Table 4.2. The Student Dropout Rate by Location in Indonesia, 2010**

Type of Location	Aged Group		
	7 - 12	13 - 15	16 -17
Urban:			
Male	0.5	2.4	2.4
Female	0.4	1.5	1.6
Male + Female	0.5	2.0	2.0
Rural:			
Male	1.1	3.2	3.2
Female	0.7	1.8	2.5
Male + Female	0.9	2.5	2.8
Urban + Rural:			
Male	0.8	2.8	2.7
Female	0.5	1.6	1.9
Male + Female	0.7	2.2	2.3

Source: Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency (2012)

## 6. Repeating a Grade

In Indonesia, there are some students who must repeat a grade during upper secondary school, although it was only a small proportion of students, with about 0.4% at national level and 0.3% of students in the Central Java Province (Ministry of National Education, 2010b). This study tests whether students in this province who repeat a grade have an increased likelihood of dropping out. Respondents were asked the question: "Have you ever repeated a grade while at upper secondary school?" A binary variable was created indicating whether they did so (Repeated a grade = 1, No = 0).

## 7. Previous Academic Performance

As official upper secondary academic records for respondents were unavailable, I use the lower secondary school's national final examination grade results as a proxy for previous academic performance. The final grade of lower secondary school is a prerequisite for enrolling at upper secondary school. The average grade of the lower secondary school national final examination in 2013 was 6.1 out of 10, while in 2012 the average grade was 7.5 out of 10. This study examines whether the lower secondary school national final examination grade is a significant factor contributing to upper

secondary school dropout. Respondents were hesitant to share their precise grade and therefore, in the questionnaire the examination grade is divided into three groups as proxies of previous academic performance (see Appendix 1 ex-student questionnaire question no. 12). They are: low (between 5.01 – 7.00) lower secondary school final examination grade, middle (between 7.01 – 8.50) lower secondary school final examination grade, and high (above 8.50) lower secondary school final examination grade. This study uses the middle grade as the benchmark.

## **8. Changing Schools**

Students who resign from their previous school because of a variety of reasons, and then enrol in a new school, might have greater odds of dropping out of their new school. This study explores whether students changing schools contributes to dropping out. Respondents were asked how many times they changed school since primary school. The answers were coded as 0 if students never changed school; up to 4 if students changed school four times since primary school.

## **9. Deviant Behaviour**

In Indonesia, there are no data available on deviant behaviour at school. But, in general, data show that crimes committed by students increased significantly. In 2009, there were 9,486 students who were arrested for committing a crime and that number increased to 16,728 in 2011 (Indonesian Central Statistics Agency, 2012). This study explores whether students' deviant behaviour is correlated with dropout in Central Java Province.

Respondents were asked about six forms of deviant behaviour. They are: *Fighting with other peers, smoking or drinking alcohol, using illegal drugs, getting a warning from the school principal or teachers because of deviant behaviour (including bullying other students), having been arrested by police, and getting suspended from school.* An affirmative answer to any of these questions has a value of 1, a negative answer has a value of 0. The *deviant behaviour* variable was created by

adding up all values from students' responses to the six deviant behaviour questions, assuming an equal weight of each specific behaviour.

## **10. Health**

Like other middle-income countries, Indonesia still faces numerous health issues (Economist Intelligence Unit, 2010). One of the health problems is uncontrolled smoking habits among youth. A report states that 78% of Indonesians start smoking before age 19 (Barber, Adioetomo, Ahsan, & Setyonaluri, 2008). Poor health often negatively causes students' academic achievement. This study examines whether having bad health conditions contributed to dropout. Lacking objective data on health, this was assessed by students' subjective evaluation of their own health. Respondents were given five options ranging from poor health (coded as 0) up to excellent health (coded as 4).

## **B. FAMILY CHARACTERISTICS**

### **1. Family's Socio-Economic Status**

Data from Indonesia National Socioeconomic Survey (*Survei Sosial Ekonomi Nasional*, SUSENAS) in 2011 show that many children who dropped out came from the lowest SES families. 64% of primary school students and 50% of lower secondary school students who stopped schooling were from the poorest family income quintile (ACDP, 2013b). Table 4.3 shows some socioeconomic indicators for Indonesia.

**Table 4.3. Some Socioeconomic Indicators in Indonesia, 2011**

Socio-economic Indicators	Indonesia	Central Java Province
Percentage of Households with Decent Clean Water as Source of Drinking Water	42.8	57.3
Percentage of Households Possessing Electricity as Source of Lighting	94.8	99.4
Percentage of Households Possessing Own Toilet	65.2	64.5
Percentage of Households still using Earth/Soil as Main Floor Material	9.2	21.3
Percentage of Poor People	12.4	16.2
Number of Households that Received the Government's Temporary Direct Cash Assistance Program, in 2013 (Million) <sup>*)</sup>	15.5	2.5
Gini Ratio	0.41	0.38

Source: Indonesian Central Statistics Agency (2013c) Except <sup>\*)</sup>

<sup>\*)</sup> Source: Pos Indonesia (2013)

It is essential to find out whether SES is contributing to dropout. To measure SES, a previous study in Indonesia by Cameron (2009) uses ownership of a range of assets, such as own toilets, electricity, motor bike, car, and type of walls. Beside using some ownership of assets as mentioned above, this study also asks several questions relating to the SES, i.e., family's total income, total expenditures and the data of the number of households receiving the government's temporary direct cash assistance program (in Indonesian: *Bantuan Langsung Sementara Masyarakat* or BLSM) in 2013 (see parent questionnaire question numbers 8 up to 13 in Appendix 1).

Only one question is selected as a proxy of SES.<sup>24</sup> The question was: "Did you receive money from the government's temporary direct cash assistance program at the time your child was at upper secondary school?" The background of BLSM was the GOI raising the subsidized fuel price on 22 June 2013. At the same time, the government also announced BLSM for poor households to reduce the negative impacts of the raising of the subsidized fuel price. As the recipients of this BLSM are

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<sup>24</sup> Variables as proxies for SES were constructed based on the questions and were inserted into the logit regression models. Preliminary results indicate that only one SES variable improves the overall models, i.e., the *families are in the lowest socioeconomic status* variable (Parents Questionnaire, question no. 11).

households of low SES, BLSM can be used as a proxy of SES. A binary variable was created to indicate whether families are in the lowest socioeconomic status group (Yes = 1) or not (No = 0).

## 2. Parental Education Level

Although Indonesia's Law No. 2/1989 and Government Regulation No. 28/1990 clearly state that all Indonesian citizens must attend nine years of compulsory education, current data (see Table 4.4) shows that the average years of schooling in Indonesia is only 5.8 years (UNDP, 2013). In other words, the average education level of Indonesian citizens is only primary school. Among other ASEAN countries, Indonesia's average schooling years are only better than those of Vietnam, Lao People's Democratic Republic and Myanmar.

**Table 4.4. Average Years of Schooling of Adults in 10 ASEAN Countries, 2012**

Country	Mean Years of Schooling (In Years)
Singapore	10.1
Malaysia	9.5
Philippines	8.9
Brunei Darussalam	8.6
Thailand	6.6
Cambodia	5.8
Indonesia	5.8
Viet Nam	5.5
Lao People's Democratic Republic	4.6
Myanmar	3.9

Source: UNDP (2013)

Moreover, in line with UNDP's findings, other data also point out that 72.2% of Indonesia's population hold lower secondary school certificate or below, as seen in Table 4.5. This data shows that the educational attainment of Indonesians is very low.

This study examines the impact of parents' education level on the decision to drop out in Central Java Province. Parents were asked about their highest education level achieved. Then, a binary variable was created to determine whether the household head has at least university degree (coded as 1) or otherwise (coded as 0).<sup>25</sup>

**Table 4.5. Educational Attainment of Indonesians Aged 25 Years and Older, 2009**

Education Level	Male	Female	Male + Female
No schooling (%)	5.4	13.3	9.5
Incomplete primary (%)	16.6	18.7	17.7
Primary (%)	30.6	30.6	30.6
Lower secondary (%)	15.4	13.6	14.4
Upper secondary (%)	24.0	16.9	20.3
Tertiary (%)	8.1	6.9	7.5
Total	100.0	100.0	100.0
Population (25 years and older) (000)	63,427	65,702	129,128

Source: UNESCO-Institute for Statistics (2010)

The literature has emphasised the importance of parents' higher education level on their children's dropout (see Appendix Table 6.5). This study uses university degree as a threshold because it is believed that a student born to a parent with a university degree is more likely to perform better at school. In addition, parents' experiences with

<sup>25</sup> The preliminary models used *fathers' education level* and *mothers' education level* variables (coded as 1 = Never attend School/ not finished primary school up to 7 = Postgraduate degree) (see Appendix Table 6.3 for details). However, both variables were highly correlated and replaced with *fathers with at least university education* variable and *mothers with at least university education* variable. But, these variables also cannot be inserted into logit regression because the *mothers with at least university education* variable has no variation within the variable. The failure occurs because in the data set all 99 dropouts do not have a mother with at least a university degree. If I try to predict dropout on the basis of ex-students who have a mother with at least a university degree, the predicted probability for *mother with at least university degree* variable = 1 category would have to be zero. This means that the logit coefficient must be negative infinity (StataCorp, 2015, p. 1280). Stata fixes the problem automatically by removing the variable from the model. Instead, a variable named *Household head with at least university education* is created as a proxy of parents' education level.

higher education strongly influence their children's educational outcomes (Sclafani, 2004).

### **3. Parental Academic Support**

According to Coleman (1988a), parents' human capital is transferred to the child through interaction between parents and child. One of the forms of interaction is the parental support of children's educational progress. Undoubtedly, parent involvement in children's schooling activities is vital and shows their children that they fully support and believe in the value of a good education (Smink & Reimer, 2009, p. 11). This study examines whether higher parental involvement in children's academic activities is associated with lower odds of dropping out. There are three questions asked of Parents/Guardians: (1) "Have you ever encouraged your child to study well in school and stay in school?" (2) "Have you ever talked/discussed with teachers about your child's development/activities in school?" and "Have you ever been able to help with your child's homework?" Every question has six choices (see Appendix 1 parent questionnaire question numbers 18 to 20 for details). This study used answers both from father and mother (or the guardians) and created two variables, firstly to indicate father's academic support and secondly to indicate mother's academic support (see Appendix Table 6.4 for details). This study examines the impact of both parents' academic support, so when only one parent answered this question that respondent was dropped from the sample.

### **4. Number of family members**

In the case of Indonesia, the *United Nations Population Fund* (UNPFA) presented an award to President Soeharto in 1989 to "recognise the important work and international influence of President Soeharto in (controlling) population (growth)" (*Population*, 1989, in Smyth, 1991, p. 781). This award was given because of his famous national program of Family Planning policy (in Indonesian: *Keluarga Berencana*) which began in the early 1970s with its slogan "Two children are enough." This

program reached its success during the 1990s. The average number of children born in 1967 was 5.6, and decreased to 3.3 children per women in 1987, and again diminished to 2.7 in 1997 (Chandani, O'Hanlon, & Zellner, 2006). However, the GOI admitted that in the last 10 years, the Family Planning project has failed to control the fertility rate (Antara News, 2013, April 9).

In fact, in traditional Javanese culture, big families are highly valued because it is believed that the presence of children can carry luck and joy (Megawangi, Zeitlin, & Colletta, 1995) and there is also a famous statement among Javanese: "Many children, many fortunes." However, Koentjaraningrat (1985, p. 101) claims that the Javanese desire to have a lot of children started to change. Table 4.6 shows that only 0.4% of married women in Indonesia have 10 or more children. This study explores whether the number of family members positively contributes to dropout. Respondents were asked in the questionnaires about the number of family members.

**Table 4.6. Number of Children by Ever Married Women 10 Years of Age or Above, 2010**

Number of Children	Indonesia			Central Java Province		
	Urban	Rural	Urban + Rural	Urban	Rural	Urban + Rural
0	11.7%	9.2%	10.4%	9.5%	8.3%	8.8%
1	24.0%	23.6%	23.8%	23.7%	23.8%	23.7%
2	26.9%	25.4%	26.1%	27.5%	28.0%	27.8%
3	17.5%	17.2%	17.3%	18.1%	18.0%	18.0%
4	9.3%	10.6%	10.0%	9.8%	10.2%	10.0%
5	4.9%	6.3%	5.6%	5.3%	5.7%	5.6%
6	2.7%	3.7%	3.2%	3.0%	3.2%	3.1%
7	1.4%	2.0%	1.7%	1.6%	1.6%	1.6%
8	0.8%	1.0%	0.9%	0.8%	0.8%	0.8%
9	0.4%	0.5%	0.4%	0.4%	0.3%	0.3%
10+	0.3%	0.4%	0.4%	0.3%	0.2%	0.2%
Not Asked	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Indonesian Central Statistics Agency (2010)

## **5. Sibling Rank**

In Javanese culture, parents expect older siblings who display maturity and responsibility to look after their younger siblings during their spare time. The everlasting tie is made between the older sister and younger siblings as they will act like their mother showing unconditional love (in Javanese: *Tresna*) to their younger siblings. Because of the older children's devotion to their younger siblings, based on the interviews, sometimes the older child in a poor family decides to drop out of school to increase their siblings' chances to gain a better education. This could happen because the oldest child thinks that if they take on some of their parents' responsibilities they can reduce the burden on them. Parents then use the savings from the oldest child's share of education cost to help fund their younger children's education. This study explores whether being the oldest child in a family contributes to dropout.

## **6. Divorced Parents**

Data show that 1.8% of Indonesian citizens are divorced (Indonesian Central Statistics Agency, 2010). This study investigates whether there is any difference in dropout between students of divorced parents and students of non-divorced parents in Central Java Province. A binary variable was created to indicate whether or not respondents' parents were divorced while they were attending upper secondary school (Divorced = 1, Not divorced = 0).

## **7. Non-Working Mother**

There is no information about the number of mothers in Indonesia working outside the home. The percentage of working women aged 15 or more (regardless of being married or not) was 47.9% in 2012 (Indonesian Central Statistics Agency, 2013b). Social capital theory suggests that parents' human capital is transferred to the children through positive interaction between the parents and the children, and the theory emphasises the importance of parents being present in children's lives. Therefore, this study examines whether mothers who are not working outside their homes have an

influence on their children's decision to drop out. Respondents' mothers were asked about their occupation. Mothers that are housewives are classified as not working outside homes. A binary variable was constructed to indicate whether or not mothers were working outside the home while ex-students were attending upper secondary school (Not working outside = 1, Working outside = 0).

## **8. Sibling's Dropout Experience**

Previous studies find that students from families in which a sibling dropped out of school are more likely to drop out themselves. This study investigates whether siblings' dropout is contributing to higher students' odds of dropping out. All respondents were asked how many children in the family dropped out of school at any level of schooling. The factors that affect one student's odds of dropping out surely also affect their sibling's odds as well. This might create an endogeneity problem. However, to the best of my knowledge and based on the covered literature, I tried to incorporate all the other variables which might also impact one's sibling's odds of dropping out in order to reduce this problem.

## **9. Helping Family**

Data from Indonesia shows that 58.2% of working children are family workers/unpaid workers. There are 78.6% of children aged 10-14 years old who work as family workers, while there are 41.0% of children aged 15-17 years old who work as family workers/unpaid workers (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). This study determines whether students who devote their time to help the family are significantly associated with dropout.

For this study, two variables were constructed. Firstly, for the *helping family with household chores* variable, respondents were asked whether they helped their parents / guardians with household chores after returning from school (Yes = 1, No = 0). Respondents were given six different answers (see Appendix 1, ex-student

questionnaire, question number 26). Secondly, for the *helping family with daily business/work* variable, respondents were asked whether or not they helped their parents'/guardians' daily business/work after returning from school (Yes = 1, No = 0). Respondents were given six different answers (see Appendix 1, ex-student questionnaire, question number 27). Respondents' answers were divided into two groups, i.e., Yes equal to 1 (if respondents answered "rarely", "sometimes", "often", "most of the time" and "always" in the questionnaire) and No equal to 0 (if respondents answered "never" in the questionnaire).<sup>26</sup>

## **10. Household Decision-Making**

In contrast to some Asian countries, it is believed in Javanese culture that a wife has an equal position to a husband. In other words, the wife is not the husband's subordinate in marital affairs or decision-making. The husband rarely controls the household affairs as this is the wife's domain (Megawangi et al., 1995, p. 113). The wife takes most of the household decisions, including controlling the family's finances. However, in some cases she also consults with the husband on major issues. The husband plays an important role in controlling the children and it is common for the children to follow their father's will (Irawanto, Ramsey, & Ryan, 2011, p. 357). This study examines influence of household decision-making participation by fathers for the child's dropout decision and also investigates whether the mother's participation in the decision-making processes influences students' decision to drop out. There are four questions asked of Parents/Guardians about decision making: (1) Decisions on household expenditures; (2) Decisions on educational matters regarding the children; (3) Decisions on household labour regarding the children; and (4) Decisions regarding health care for children. Respondents were given five possible answers (see Appendix 1,

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<sup>26</sup> In preliminary analysis, I also created different variables reflecting *helping family with household chores* and *helping family with daily business/work* variables. The variables were constructed by grouping "Never" and "Rarely" answers into the same group (equal to 0), and other answers ("sometimes", "often", "most of the time" and "always") into another group (equal to 1). However, the results indicate that there was near singular matrix error problem in the Male only regressions. Therefore, I decided not to use these variables in this form.

parent questionnaire, question number 15). Respondents' answers were summed up and two variables for participation in decision-making were created for each parent, father and mother. The detailed information about the questions can be seen in Appendix Table 6.4.

## **C. SCHOOL CHARACTERISTICS**

### **1. School Location**

Indonesia's Presidential Instruction (*Inpres*) No. 10/1973 clearly ordered local governments to establish at least one primary school in every village in Indonesia so that parents can easily send their children to a nearby school (Ministry of Women Empowerment and Child Protection & Indonesian Central Statistics Agency, 2012). However, the instruction was only for primary schools, not for lower and upper secondary schools, which are mostly located in urban areas. This study investigates the role of school location for dropout decisions in Central Java Province. It is also important to find the interaction between students who reside in rural areas but study in urban areas and the dropout decision. Respondents were asked about their school location. Respondent's locations were double-checked to determine whether they were located in rural areas or urban areas based upon information from the Indonesian Central Statistics Agency. A binary variable was created indicating urban = 1 and rural = 0.

### **2. Relation with Teacher**

This variable is used to test the social capital theory. As mentioned before, the social network and social interaction occur not only within the family but also with the community, especially within the school. This study wants to investigate the impact of the interaction between the teachers and the students on dropout. Croninger and Lee (2001) suggest that teachers are an important source of social capital for students. Muller (2001) states that teachers' attitudes and actions are keys for students' academic

progress. Muller (2001) argues that one vital element in students' academic progress is reflected in teachers' perceptions of students' academic effort and it was found that students study harder when they think their teacher cares about them. Developing good teacher-student relationships is a good way to reduce students' deviant behaviour. If teachers treat students with respect, they will respect the teachers as well. If teachers expect students to succeed academically, they are more likely to graduate.

Having a good relationship with teacher might also be correlated with one's attendance rate. However, due to questionnaire limitations about attendance which will be explained later in section 4.2.5, I cannot observe attendance as one of the explanatory variables and this might cause a degree of endogeneity as well. As before, due to limitations of the data collected, we have no choice but to accept the potential inherent bias.

This study explores whether better teacher-student relationships are contributing to lower student dropout. Three variables were constructed. The first variable indicates students who had a good relationship with their teachers, the second variable indicates students who had neutral relationship with their teachers, and the third variable indicates students who had bad relationship with their teachers. This study uses the neutral relationship with their teachers as the benchmark.

### **3. Bullied by peers and/or teachers**

As previously mentioned, a study by Hinitz et al. (2010) shows that students can be bullied not only by other peers, but also by their teachers. However, it is unknown what proportion of students are being bullied by their peers and what proportion are bullied by their teachers. This study examines the impact of peers' and teachers' bullying on students' decision to drop out. Respondents were asked whether they got bullied by peers and/or teachers. A binary variable was created indicating Yes = 1 and No = 0 (see Appendix 1, ex-student questionnaire, question number 36 point g).

#### 4. School's Curriculum and Types of School

The dropout proportions from each type of school's curriculum in Central Java Province are 52.76% (vocational USS), 29.61% (general USS), and 17.63% (Islamic USS). It can be seen in Table 4.7 that Vocational USS contributes more than half of the dropout students in Central Java Province. On average, an upper secondary school contributes about 2.81 dropout students. The average contribution based on types of school is 2.23 students per school (general USS), 3.40 students per school (vocational USS) and 2.55 students per school (Islamic USS) (Education Agency of Central Java Province, 2010). ADCP (2013, p. 56) claims that vocational USS students are from lower economic status families than general USS students.

**Table 4.7. Number of Students Who Dropped Out by Types of School in Central Java Province, 2009/2010 Academic Year**

No	Regency/City	General USS	Voc. USS	Islamic USS	Total	No	Regency/City	General USS	Voc. USS	Islamic USS	Total
1	Cilacap Regency	179	134	20	333	19	Kudus Regency	11	46	56	113
2	Banyumas Regency	74	140	4	218	20	Jepara Regency	119	106	122	347
3	Purbalingga Reg.	34	97	20	151	21	Demak Regency	25	18	133	176
4	Banjarnegara Reg.	65	132	63	260	22	Semarang Regency	8	207	21	236
5	Kebumen Regency	9	212	41	262	23	Temanggung Reg.	60	93	54	207
6	Purworejo Reg.	23	130	0	153	24	Kendal Regency	99	11	47	157
7	Wonosobo Reg.	100	63	10	173	25	Batang Regency	48	39	67	154
8	Magelang Regency	20	112	36	168	26	Pekalongan Reg.	112	124	51	287
9	Boyolali Regency	43	115	12	170	27	Pemalang Regency	91	45	8	144
10	Klaten Regency	17	188	0	205	28	Tegal Regency	117	0	8	125
11	Sukoharjo Regency	34	158	22	214	29	Brebes Regency	171	165	55	391
12	Wonogiri Regency	36	115	0	151	30	Magelang City	54	83	0	137
13	Karanganyar Reg.	57	126	4	187	31	Surakarta City	12	181	11	204
14	Sragen Regency	27	124	1	152	32	Salatiga City	18	204	19	241
15	Grobogan Regency	4	51	47	102	33	Semarang City	79	98	13	190
16	Blora Regency	40	20	0	60	34	Pekalongan City	27	146	49	222
17	Rembang Regency	82	48	73	203	35	Tegal City	69	63	33	165
18	Pati Regency	90	66	123	279	36	Central Java Prov.	2,054	3,660	1,223	6,937

Source: Education Agency of Central Java Province (2010)

In this study, respondents were classified into specific types of schools based on the curriculum. There are three variables, a *vocational school* variable, an *Islamic religious school* variable, and a *general school* variable. The *general school* variable

was used as the benchmark. Another binary variable is also constructed to indicate whether students studied at private schools (coded as 1) and public schools (coded as 0).

## 5. Distance to School

A study in rural Java shows that students who reside at longer distances from school have lower school attainment, because they are affected by higher costs and longer travel times (Mason & Rozelle, 1998). Maryati (2009), for example, discovered that about 28% of students live more than 10 km from their school, as seen in Table 4.8. Since not all the students have their own transportation to get to and from school, then the greater the distance the greater the difficulty. Increased competition to get into public schools encourages some students to choose a school further from their home. However, it adds to costs, travel times, and transport difficulties.

**Table 4.8. Distance from Students' Residence to Public Vocational Upper Secondary School in Semarang City, Central Java Province**

School Name	< 5 Km	%	5 - 10 Km	%	> 10 Km	%	Total Samples
SMKN 1	94	37.0%	89	35.0%	71	28.0%	254
SMKN 2	86	42.6%	75	37.1%	41	20.3%	202
SMKN 3	81	26.1%	140	45.0%	90	28.9%	311
SMKN 4	75	18.7%	185	46.1%	141	35.2%	401
SMKN 5	65	37.1%	60	34.3%	50	28.6%	175
SMKN 6	54	21.6%	113	45.2%	83	33.2%	250
SMKN 7	176	35.3%	198	39.7%	125	25.1%	499
SMKN 8	59	22.7%	125	48.9%	76	29.2%	260
SMKN 9	57	35.2%	71	43.8%	34	21.0%	162
SMKN 10	87	44.2%	64	32.5%	46	23.4%	197
SMKN 11	114	45.6%	68	27.2%	68	27.2%	250
Total	948	32.0%	1188	40.1%	825	27.9%	2961

Source: Maryati (2009)

Another reason is that some students desire to study at a more prestigious and higher quality school far from their home. A possible reason is that students might not

be accepted at their local schools because of poor grades gained in their lower secondary school final examinations and schools willing to accept those students are located further from home. This study identifies whether a greater distance to school enhances the odds of dropping out. The respondents were asked a question: "How far was your last school from your home?" Response options were: Less than 5 Km, between 5 and 10 Km and more than 10 Km. A binary variable is constructed to indicate school distance more than 10 Km (coded as 1) and less than 10 Km (coded as 0).

## **6. Students' Schooling Expenditure**

Many parents in Indonesia, especially those from poor families, regard tuition fees and other costs of schooling as a financial problem. In 2005, the GOI introduced the Free Basic Education Policy to support nine years of basic education in Indonesia. This policy eliminates students' regular private expenditures, such as tuition fees, at primary and lower secondary school levels. The aim of this policy is to alleviate costs incurred by students' parents to encourage students to stay in school. This policy was voluntary for schools (UNESCO, 2010). However, the Free Basic Education policy reduces a portion only of students' direct education expenses, but not all, thereby reducing but not eliminating school fees. Students' schooling expenditure is predicted to be one of the essential dropout factors based on the following reasons:

- a. An Indonesian Central Statistics Agency Survey Report notes that in 2008 about 57% of students dropped out of school due to financial problems (Ministry of Education and Culture Republic of Indonesia, 2012).
- b. The Indonesian Statistics Agency Survey in 2009 indicates that lower secondary school and upper secondary school education costs for poor households were approximately 30% of all household spending (Larasati & Howell, 2014, p. 3; Ministry of National Development Planning Republic of Indonesia, 2012).

- c. At the upper secondary level, the school fee expenditure of the poorest households rose from Rp. 167,000 (about NZ\$17) in 2003 to Rp. 365,000 (about NZ\$39) in 2009 (an increase of about 118% during 2003-2009) and for the wealthiest households from Rp. 517,000 (about NZ\$55) in 2003 to Rp. 746,000 (about NZ\$79) in 2009 (Pettersson, 2013).<sup>27</sup>
- d. Parents have to pay almost double as much for upper secondary education than for lower secondary education (OECD & Asian Development Bank, 2015, p. 144).

Tuition fees are still an expenditure component that students and their parents have to bear at upper secondary school in Indonesia. In addition, they are also burdened by building levies, compulsory textbooks, uniforms, extracurricular activities costs, and also final year exit examination costs. Other than these expenditures, students must also spend money on other costs, such as for transportation and school supplies. Sometimes parents are also charged money for collecting their child's certificate of completion from the school. This study analyses the impact of students' schooling expenditure on student dropout in Central Java Province. The respondents were asked about their expenditures on eight items. The expenditures were then summed up to get total expenditure. The detailed information about the questions can be seen in Appendix 1, ex-student questionnaire, question number 11.

## **7. Teacher Quality**

Hanushek (2009) emphasises the importance of teacher quality for student achievement and argues that the failure to explain the determinants of student achievement is due to a lack of attention to teacher quality. He also suggests that an improvement in teacher quality is needed in order to improve student achievement.

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<sup>27</sup> NZ\$1 = Rp. 9,477.29 as per 4 November 2013.

If the premise that “qualified teachers produce qualified students” is accepted by the public, then in Indonesia the poor achievements of students in the 2006 Program for International Student Assessment (PISA) reflect the poor quality of teachers in Indonesia (Jalal et al., 2009). An earlier study in 1999 showed that out of 1,455,507 Indonesian elementary school teachers, only 51% fulfilled the national standard requirements (Ramdhani, Ancok, Swasono, & Suryanto, 2012). This study investigates whether or not teachers of higher quality (as perceived by students) are contributing to lower student dropout. The respondents were asked to rate the average quality of their teachers (see Appendix 1, ex-student questionnaire, question no. 33 for details). A binary variable was created to denote their teachers’ quality (Good=1, Not Good = 0).

#### **D. INDONESIAN SCHOOL POLICY AND MACROECONOMIC CONDITIONS**

##### **1. Poor Students Assistance Program**

Indonesia has the Poor Students Assistance program. This program (in Indonesian: *Bantuan Siswa Miskin*, or BSM) was introduced in 2008 in the form of cash transfers to assist students from poor families in order to gain access to better education. This program covers all education levels from primary school to tertiary education. The cash transfer is given to cover educational expenditure (such as costs for books, transportation to school and uniforms), but not school fees. At the upper secondary school level, selected poor students receive Rp. 780,000.00 (NZ\$82) per year. However, this cash transfer only covers one-third of total educational costs (Ministry of National Development Planning, 2012). It is possible to add a new variable to the model to capture current Indonesian schools’ policies and find the impact of the Poor Students Assistance program on the decision to drop out. A binary variable was

created based on the ex-student questionnaire question no. 37: "Did you receive money from the government's Poor Students Assistance program?" (Yes = 1 and No = 0).<sup>28</sup>

## 2. Spatial Dummies

Compared to other provinces on Java Island, Central Java Province's Gross Regional Domestic Product (GRDP) was ranked fourth in 2011, after the Capital City of Jakarta, East Java Province and West Java Province (Indonesian Central Statistics Agency, 2014b). Table 4.9 shows GRDP in Central Java Province. Kudus Regency has the highest GRDP in Central Java Province, while Grobogan Regency has the lowest.

**Table 4.9. Gross Regional Domestic Product Per Capita by Regencies and Cities in Central Java Province, 2011**

No	Regency/City	Gross Regional Domestic Product Per Capita		No	Regency/City	Gross Regional Domestic Product Per Capita	
		Indonesia Rupiah	New Zealand Dollar*			Indonesia Rupiah	New Zealand Dollar*
1	Cilacap Regency	8,323,005.21	878.2	19	Kudus Regency	16,724,862.37	1,764.7
2	Banyumas Regency	3,137,245.45	331.0	20	Jepara Regency	4,037,465.57	426.0
3	Purbalingga Regency	3,119,632.39	329.2	21	Demak Regency	2,955,193.75	311.8
4	Banjarnegara Regency	3,462,629.76	365.7	22	Semarang Regency	6,220,059.17	656.3
5	Kebumen Regency	2,658,180.79	280.5	23	Temanggung Regency	3,522,020.35	371.6
6	Purworejo Regency	4,550,965.11	480.2	24	Kendal Regency	6,293,012.80	664.0
7	Wonosobo Regency	2,600,964.91	274.4	25	Batang Regency	3,483,147.93	367.5
8	Magelang Regency	3,593,874.22	379.2	26	Pekalongan Regency	4,002,961.33	422.4
9	Boyolali Regency	4,773,817.22	503.7	27	Pemalang Regency	2,864,796.57	302.3
10	Klaten Regency	4,349,935.08	459.0	28	Tegal Regency	2,715,966.10	286.6
11	Sukoharjo Regency	6,257,331.14	660.2	29	Brebes Regency	3,317,523.66	350.1
12	Wonogiri Regency	3,370,559.63	355.7	30	Magelang City	9,859,052.16	1,040.3
13	Karanganyar Regency	7,000,251.91	738.6	31	Surakarta City	10,788,223.50	1,138.3
14	Sragen Regency	3,793,833.04	400.3	32	Salatiga City	5,567,315.44	587.4
15	Grobogan Regency	2,559,703.51	270.1	33	Semarang City	14,340,792.48	1,513.2
16	Blora Regency	2,602,819.92	274.6	34	Pekalongan City	7,738,140.66	816.5
17	Rembang Regency	3,995,400.86	421.6	35	Tegal City	5,566,261.48	587.3
18	Pati Regency	4,027,510.35	425.0				

Source: Central Java Central Statistical Agency (2012)

\* Exchange Rate (quoted from the Central Bank of Indonesia): NZ\$ 1 = Rp. 9,477.29 as per 4 November 2013

<sup>28</sup> The BSM program is measured differently to the BLSM program. There are three possibilities: (1) Poor students received BSM and parents also received BLSM; (2) Poor students received BSM but parents did not receive BLSM; and (3) Poor students did not receive BSM but parents received BLSM.

This study examines whether there are any significant differences in dropout between areas in Central Java Province. The respondents reside in specific regencies and cities and every regency and city is classified into three different areas. First area is northern part of Java Island, second area is middle part of Java Island and third area is southern part of Java Island. This study uses middle part of Java Island as the benchmark.

### **3. Minimum Wages**

Every year, Governors and Mayors in all regions in Indonesia set the minimum wage level on the recommendation of Wage Councils in every region. Table 4.10 shows the 2013 minimum wages in Central Java Province. The inflation rate is used as the benchmark for the increase in minimum wages. In addition, there exists a minimum wage standard that varies by sector or occupation within each province and the wages change every year. The Wage Council members are government officials, employers and representatives of labour unions.

A higher minimum wage can attract students to leave school and go to work. This study tests whether higher real minimum wages influence students to drop out. This study uses real minimum wages from each regency and city in Central Java Province. It is obtained by deflating nominal minimum wages by Central Java Province's consumer price index. The detailed explanation of the variable can be seen in Appendix Table 6.4.

**Table 4.10. List of 2013 Minimum Wages by Regencies and Cities in Central Java**

No.	Regency/City	Monthly Minimum Wages		No.	Regency/City	Monthly Minimum Wages	
		Indonesian Rupiah (Rp.)	New Zealand Dollar*)			Indonesian Rupiah (Rp.)	New Zealand Dollar*)
1	Semarang City	1,209,100	127.58	17	Sukoharjo Regency	902,000	95.17
2	Semarang Regency	1,051,000	110.90	18	Magelang City	901,500	95.12
3	Demak Regency	995,000	104.99	19	Purbalingga Regency	896,500	94.59
4	Kudus Regency	990,000	104.46	20	Karanganyar Regency	896,500	94.59
5	Cilacap Regency			21	Rembang Regency	896,000	94.54
	1. City Area	986,000	104.04	22	Boyolali Regency	895,000	94.44
	2. Eastern Area	861,000	90.85	23	Wonosobo Regency	880,000	92.85
	3. Western Area	816,000	86.10	24	Banyumas Regency	877,500	92.59
6	Pekalongan City	980,000	103.41	25	Jepara Regency	875,000	92.33
7	Salatiga City	974,000	102.77	26	Klaten Regency	871,500	91.96
8	Batang Regency	970,000	102.35	27	Sragen Regency	864,000	91.17
9	Pekalongan Regency	962,000	101.51	28	Tegal City	860,000	90.74
10	Kendal Regency	953,000	100.56	29	Tegal Regency	860,000	90.74
11	Magelang Regency	942,000	99.40	30	Brebes Regency	859,000	90.64
12	Temanggung Regency	940,000	99.18	31	Purworejo Regency	849,000	89.58
13	Blora Regency	932,000	98.34	32	Grobogan Regency	842,000	88.84
14	Pati Regency	927,600	97.88	33	Kebumen Regency	835,000	88.11
15	Surakarta City	915,900	96.64	34	Banjarnegara Regency	835,000	88.11
16	Pemalang Regency	908,000	95.81	35	Wonogiri Regency	830,000	87.58

Source: The Governor of Central Java Province (2012)

\*) Exchange Rate (quoted from the Central Bank of Indonesia): NZ\$ 1 = Rp. 9,477.29 as per 4 November 2013

#### 4. Unemployment Rate

Table 4.11 shows the unemployment rate by regencies and cities in Central Java Province. The unemployment rate in Central Java Province in August 2012 reached 5.6%, lower than the rate in February 2012 (5.9 %) and August 2011 (5.9 %). A lower unemployment rate might attract students to drop out of school because it might be easier to find work. This study tests whether a lower unemployment rate has a relationship with higher dropout. This study collected unemployment rates for each regency and city in Central Java Province. The appropriate unemployment rate is applied to the student based on student's home location and last year of study. For example, a student residing in Cilacap Regency who drops out of school in 2012 has an unemployment variable based on the unemployment rate in 2012 for Cilacap Regency.

**Table 4.11. Unemployment Rate by Regencies and Cities in Central Java Province, 2012**

No	Regency/City	Unemployment Rate (%)			No	Regency/City	Unemployment Rate (%)		
		Urban	Rural	Total			Urban	Rural	Total
1	Cilacap Regency	8.6	6.9	7.4	19	Kudus Regency	5.4	7.5	5.9
2	Banyumas Regency	5.0	5.1	5.1	20	Jepara Regency	4.2	4.2	4.2
3	Purbalingga Regency	5.6	5.0	5.1	21	Demak Regency	8.1	8.6	8.4
4	Banjarnegara Regency	9.2	2.3	3.8	22	Semarang Regency	8.4	2.8	4.9
5	Kebumen Regency	8.0	2.4	3.7	23	Temanggung Regency	6.6	2.4	3.4
6	Purworejo Regency	3.9	3.1	3.3	24	Kendal Regency	7.5	5.4	6.3
7	Wonosobo Regency	9.3	4.3	5.4	25	Batang Regency	5.7	6.0	5.9
8	Magelang Regency	6.3	3.7	4.7	26	Pekalongan Regency	4.6	5.6	5.1
9	Boyolali Regency	4.3	4.6	4.5	27	Pemalang Regency	5.8	3.8	4.8
10	Klaten Regency	3.9	3.3	3.7	28	Tegal Regency	6.5	5.3	6.1
11	Sukoharjo Regency	6.3	5.1	6.0	29	Brebes Regency	9.6	7.2	8.2
12	Wonogiri Regency	6.6	2.9	3.6	30	Magelang City	8.7	-	8.7
13	Karanganyar Regency	5.3	6.3	5.8	31	Surakarta City	6.1	-	6.1
14	Sragen Regency	5.9	5.6	6.0	32	Salatiga City	6.7	-	6.7
15	Grobogan Regency	7.0	3.8	4.3	33	Semarang City	5.9	4.3	5.8
16	Blora Regency	5.8	4.6	4.9	34	Pekalongan City	7.4	-	7.4
17	Rembang Regency	7.8	5.1	5.8	35	Tegal City	8.5	-	8.5
18	Pati Regency	12.0	12.2	12.2	<b>36</b>	<b>Central Java Province</b>	<b>6.4</b>	<b>5.0</b>	<b>5.6</b>

Source: Central Java Central Statistical Agency (2013)

#### **4.2.4.3. The Possibility of Correlation between Variables**

The independent variables in logistic regressions should not be highly correlated with each other because it can create estimation problems (Bewick, Cheek, & Ball, 2005, p. 117). Highly correlated variables cause higher standard errors of the coefficients, which mean that some independent variables may not be found to be significantly different from zero. If there are some highly correlated independent variables, the solution is to eliminate some variables from the model. Wooldridge (2016, p. 98) suggests the cut-off value for VIF is 10. If VIF is above 10, then it can be assumed that multicollinearity is a "problem." This study has checked for

multicollinearity using the Variance Inflation Factor (VIF) test.<sup>29</sup> Appendix Table 6.6 provides the result of the VIF test (including the interacted variables). It is concluded that there is no sign of multicollinearity in the models. It also can be seen in the appendix table that most of the variables have VIF less than 4, except variables that interacted with other variables. For example, *Gender* variable has VIF = 5.86, but it interacts with *sibling rank*, *home location*, and *non-working mother* variables.

#### 4.2.4.4. Testing the Overall Significance of the Models

After obtaining the logit output, the next step is to assess the overall significance of the estimated coefficients of the independent variables in the model. Hosmer, Lemeshow, and Sturdivant (2013, pp. 39-42) suggest three tests. Firstly, this study conducts Likelihood Ratio (LR) tests.<sup>30</sup> LR is defined as the difference between the  $-2 \times \log$  likelihood of the null model (with the constant only) and the model with the intercept plus one or more independent variables, or  $LR = -2LL_{null} - (-2LL_k)$ . The null hypothesis ( $H_0$ ) is that all the coefficients are equal to zero ( $\beta_1 = \beta_2 = \dots = \beta_K = 0$ ) and the alternative hypothesis ( $H_A$ ) is that at least one or more coefficients are different from zero. The distribution of LR test is also chi-square with  $k$  degrees of freedom. We reject  $H_0$  if the  $p$ -value is smaller than 0.10. In other words, it is concluded that at least one or more independent variables are different from zero (Hosmer et al., 2013). The interpretation of LR test is similar to the  $F$ -test in linear regression (Hosmer et al., 2013, p. 40; Menard, 2010, p. 47; Wooldridge, 2016, p. 529).

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<sup>29</sup> Appendix Table 6.6 shows the VIF for the models after removing some variables that are highly correlated. Please see footnote 25 (page 128) for details.

<sup>30</sup> In Stata, it is called LR. However, LR has various names in the literature. It is known as G in Hosmer et al. (2013, p. 40), it is denoted as  $G_M$  in Menard (2002, p. 21; 2010, p. 47) and it is referred to "Model chi-square" (in the Omnibus Tests table) in the SPSS logistic output (Menard, 2002, p. 21; Osborne, 2015, p. 48).

Secondly, this study performs Wald tests. Wald  $\chi^2$  is obtained from a vector-matrix calculation (Hosmer et al., 2013, p. 42; Peng & So, 2002, p. 42).<sup>31</sup> Similar to LR test, the null hypothesis ( $H_0$ ) is  $\beta_1 = \beta_2 = \dots = \beta_K = 0$  and  $H_A$  is that at least one or more coefficients are different from zero. The Wald test has a chi-square distribution with  $k$  degrees of freedom. If the  $p$ -value of the Wald test is smaller than 0.10 ( $p$ -value < 0.10), there is not enough evidence to accept  $H_0$ , which implies that we cannot accept the hypothesis that the model is not significant (Hosmer et al., 2013, p. 42).

Lastly, this study assesses the significance of the combined effects of the independent variables in the model with Score tests.<sup>32</sup> The Score test is based on the distribution of the  $k^{th}$ -derivative of the likelihood function of the fitted model with respect to all coefficients (Peng & So, 2002, p.42; Hosmer et al., 2013, p. 42). According to Hosmer et al. (2013, p. 42), the calculation of this test is as complicated as the Wald test. Stata does not provide the Score test and therefore, SPSS is used to get the Score test. Like the other two tests, the Score test has a chi-square distribution.

Menard (2002, p. 34 and 2010, p. 99) clearly mentions that the LR test is the best method due to its accuracy. Moreover, Menard (2010, p. 58) also suggests that it is important to use the LR test as the main criterion to check whether a model is worthwhile. Hosmer et al. (2013, p. 15) also recommend the LR test over the Wald test. Therefore, this study uses the LR test as the main test but also conducts Wald tests and Score tests to check whether these three tests provide similar results or not.

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<sup>31</sup> The calculation of the Wald test to assess the overall significance is different from the Wald test for checking the significance of individual parameters in the model. Wald test statistic for an individual parameter test is (Hosmer et al., 2013, p. 40):

$$W_j = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)}$$

<sup>32</sup> The Score test is also known as Lagrange Multiplier test (Wooldridge, 2016, p. 529).

#### **4.2.4.5. Goodness-of-Fit Measures**

Goodness-of-fit (GOF) tests are conducted as a part of the evaluation of logit regressions. There is no guarantee that a logistic model is the best model to use. It is wrong if someone is just doing a logistic regression without checking the GOF of the model (Hosmer, Taber, & Lemeshow, 1991, p. 1634). Referring to Hosmer et al. (2013, p. 153), the GOF test is a method to assess whether the predicted values obtained by the model precisely reflect the observed values in the data. Menard (2010, p. 49) suggests that the term GOF is best suited to check the discrepancy between the observed model and the best possible model, including interaction effects. While Peng and So (2002, p. 43) state that GOF statistics are used to assess the fit of a logistic model against the data. Hosmer et al. (1991, p. 1630) claim that the possibility to misinterpret the coefficients of independent variables may occur if we do not assess model fit.

This study uses McFadden's  $R^2$ , McFadden's Adjusted  $R^2$ , Deviance GOF test, Classification table, Area under Receiver Operating Characteristic (ROC) Curve and Akaike's Information Criterion (AIC). This study also reports Pearson GOF test and Hosmer-Lemeshow GOF test. However, they will not be commented on because of their limitations. The details of the limitations are discussed below. It is also important to note that many previous studies rarely discuss GOF (e.g., Roebuck et al., 2004; South et al., 2007; McCaffrey et al., 2008; Townsend et al., 2008; Dearden et al., 2009; Blanchard & Sinthon, 2011; Suh & Suh, 2011; Traag & van der Velden, 2011; No & Hirakawa, 2012; No, Taniguchi & Hirakawa, 2016).

#### ***McFadden's $R^2$ and McFadden's Adjusted $R^2$***

There is a general consensus in multiple OLS regression analysis that the coefficient of determination, or  $R^2$ , is one indicator of model fit to measure how well the set of explanatory variables explains the dependent variable (Menard, 2000, p. 17). There are at least six measures of pseudo  $R^2$  for logistic regressions (e.g., McFadden's

$R^2$ , Efron's  $R^2$ , McKelvey & Zavoina's  $R^2$ , Cox-Snell  $R^2$ , Cragg-Uhler/Nagelkerke  $R^2$ , and Tjur's  $R^2$ )<sup>33</sup>, but only little consensus on which is preferable (Allison, 2014, p. 1; Menard, 2000, p. 17; Shtatland, Kleinman, & Cain, 2002, p. 1). Hosmer et al. (2013, p. 182) argue that Pseudo  $R^2$  measures do not assess GOF because it is only comparing the predicted probability values from the model with 'intercept only'.<sup>34</sup> So, it is not in line with the definition of GOF. Greene (2012, p. 573) also believes that there is no connection of the Pseudo  $R^2$  with the fit of the model. Osborne (2015, p. 51) suggests not reporting pseudo  $R^2$  as he does not recommend any pseudo  $R^2$  estimates because they seem to be quite volatile. In addition, Hosmer et al. (2013, p. 185) also state that reporting pseudo  $R^2$  values to readers who are only familiar with  $R^2$  in linear regressions might create a problem because they will incorrectly interpret the pseudo  $R^2$  values as  $R^2$  in linear regressions.<sup>35</sup>

However, Shtatland et al. (2002) disagree with Hosmer et al.'s claim. According to Shtatland et al. (2002), their claim is correct for other Pseudo  $R^2$ s in logistic regressions, but not for McFadden's  $R^2$ . They point out that McFadden's  $R^2$  is considered as one of the GOF measures because it also compares the current model with a saturated model (Shtatland et al., 2002, p. 4).<sup>36</sup> Moreover, Menard (2000, p. 24) states that McFadden's  $R^2$  is superior to other pseudo  $R^2$ s mainly because it has "the most intuitively reasonable interpretation as a proportional reduction in error measure, parallel to classical  $R^2$ ". Menard (2010, p. 49) suggests that  $R^2$  in OLS regressions can be inferred as the proportional reduction in the error sum of squares,  $R^2 = 1 - (SSE/SST)$ , in parallel McFadden's  $R^2$  can be interpreted as the proportional reduction

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<sup>33</sup> McFadden's  $R^2$  is also denoted as  $R^2_L$  in Hosmer et al. (2013, p. 184) and in Menard (2010, p. 48). It is also known as  $R^2_2$ ,  $R^2_{MF}$ , the deviance  $R^2_{DEV}$  and the entropy  $R^2_E$  (Shtatland et al., 2002, p. 1).

<sup>34</sup> The 'intercept only model' (or the null model) is the model containing the intercept only (without any independent variables). For the calculation of the log-likelihood of the 'Intercept only model', see StatSoft Inc. (2015).

<sup>35</sup> In the second edition of their book, Hosmer and Lemeshow (2000, p. 167) state: "Thus we do not recommend routine publishing of  $R^2$  values from fitted logistic regression models."

<sup>36</sup> Saturated model is a model that includes all predictors plus all possible interactions among them (Menard, 2002, p. 20).

in the  $-2\text{Log Likelihood}$  statistic, because McFadden's  $R^2$  is calculated based on the comparison of the full model with a model in which there are no independent variables,  $R^2_L = 1 - [\ln(L_M)/\ln(L_0)]$ . In addition, Shtatland et al. (2002) state that McFadden's  $R^2$  can also be interpreted as "The ratio of the estimated information gain when using the current model (M) in comparison with the null model to the estimate of the information potentially recoverable by including all possible explanatory variables" (Shtatland et al., 2002, p. 2).

Based on the arguments by Shtatland et al. (2002) and Menard (2010), this study uses McFadden's  $R^2$  as one of the GOF measures. In addition, this study also uses McFadden's adjusted  $R^2$ . Similar to  $R^2$  in OLS regression, McFadden's  $R^2$  also tends to increase with additional independent variables in the model. Shtatland et al. (2002) suggest that it is important to use McFadden's adjusted  $R^2$  because it penalizes the model when independent variables are added. The McFadden's adjusted  $R^2 = 1 - [\ln(L_M) - k / \ln(L_0)]$ , where  $k$  are the number of parameters (including the intercept). The McFadden's adjusted  $R^2$  is important because it shows whether or not a model contains independent variables that add sufficiently to the model. If additional independent variables are not efficient, the McFadden's adjusted  $R^2$  can decrease, even if McFadden's  $R^2$  increases slightly (Institute for Digital Research and Education, 2011).

### ***Deviance Goodness of Fit***

The Deviance ( $D_M$ ) GOF has traditionally been applied as a measure of goodness of fit (Menard, 2002, p. 20).<sup>37</sup>  $D_M$  is calculated as  $= -2 \cdot \log \text{Likelihood of the fitted}$

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<sup>37</sup> Deviance GOF is also known as  $D_M$  or  $-2LL$  statistic for the full model (Menard, 2002, p. 22; 2010, p. 47),  $D$  (Hosmer et al., 2013, p. 12), summed deviance statistic (Gill, 2001, p. 61), and  $-2 \log \text{likelihood}$  (in SPSS). Stata provides the deviance statistic under the name  $D$  by using the *fitstat* command. However, the *fitstat* command does not provide the *p-value* of the deviance statistic. The deviance GOF test with *p-value* can be obtained by using command *ldev*. *ldev* command is not part of the default commands in Stata. I installed the *ldev* command in Stata based on the information from the Institute for Digital Research and Education University of California, Los Angeles (UCLA) website:

model (Hosmer et al., 2013, p. 12).  $D_M$  is similar to the error sum of squares (SSE) in linear regression (Hosmer et al., 2013, p. 12; Menard, 2002, p. 21; 2010, p. 47). The null hypothesis of the deviance test is that the fitted model is acceptable and fits the data well. If the output of a  $p$ -value is greater than 0.10, it is concluded that one cannot reject the null hypothesis. Gill (2001, p. 61) claims that deviance GOF is superior to Pearson GOF test because it gives the most intuitive indication of contributions from each data point (each observation) to the fit. The limitation of Deviance GOF is that if the number of cases per covariate pattern<sup>38</sup> is too small or if there many empty cells, Deviance GOF will not have a chi-square distribution and it will be ineffective as a GOF test (Menard, 2002, p. 23). Fortunately the deviance tests for the logit regressions reported in Chapter Six have a high number of covariate patterns (minimum = 420 and maximum = 435 covariate patterns).

### ***Pearson Goodness of Fit***

The Pearson GOF is the sum of the squared differences between the observed and expected frequencies in each cell, divided by the expected frequencies in each cell (Menard, 2010, p. 21). The Pearson hypothesis test is similar to deviance GOF. The null hypothesis and the alternative hypothesis of Pearson GOF are similar to Deviance GOF. If the  $p$ -value is larger than 0.10 then we should accept  $H_{null}$ . Hosmer et al. (1991, p. 1633) argue that Pearson residuals are easier to visualize and compute than deviance residuals. However, Hosmer et al. (1997) suggest there is a problem with the way software packages compute its  $p$ -values. Moreover, Gill (2001, p. 63) suggests that the Pearson test should not be used if the model has relatively small sample size. Because

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(<http://www.ats.ucla.edu/stat/stata/examples/alr2/alr2stata5.htm>).

<sup>38</sup> A covariate pattern is a combination of values of the predictors (Menard, 2002, p. 23). For example, if a model only contains *gender* and *home location* variables, where the *gender* variable is coded as male equal to 0 and female equal to 1 and the *home location* variable is coded as urban equal to 0 and rural equal to 1, there are only four possible covariate patterns. In a data set containing values of, for example, *gender*, *home location* and *age* variables, the combination of these variables may result in many different covariate patterns.

of the limitations noted by Hosmer et al. (1997) and Gill (2001), this study prefers to use Deviance GOF over the Pearson GOF. This study provides the Pearson GOF statistics; however, they will not be referred to in the discussion.

### ***Hosmer – Lemeshow Goodness of Fit***

The Hosmer-Lemeshow (HL) GOF statistic is obtained by grouping the predicted values obtained from the logit regression model and ranking them into several groups of equal size from lowest values to highest values. Ten groups are the standard groups. The hypothesis test is similar to Deviance GOF and Pearson GOF. There are some disadvantages with HL GOF. Firstly, as noted by Allison (2014), there is a problem with the choice of the number of groups. There is no guideline to choose a specific number of groups that is fit to the number of observations. Allison indicates that by changing the number of groups, sometimes the  $p$ -values change significantly. For example, Allison shows that an estimation of HL GOF with 10 groups has the  $p$ -value 0.049, which is statistically significant. He changes the groups into 9 groups and 11 groups and the  $p$ -values are 0.11 and 0.64 respectively, which are not statistically significant. Allison claims that it is not acceptable that the results change significantly because of a minor change in the number of groups.

Secondly, another problem is indicated by Bewick et al. (2005, p. 117). They suggest that the HL GOF test has low power with small sample sizes. According to Bewick et al. (2005), Hosmer and Lemeshow recommend sample sizes that are more than 400. More importantly, Allison (2014, p. 6) points out that Hosmer and Lemeshow also acknowledge that HL GOF has some problems. Therefore, although this study provides HL GOF statistics, they are not given much weight in the discussion.

### ***Classification Table***

The classification table is considered as a simple way to assess GOF (Osborne, 2015, p. 51). According to Wooldridge (2016, p. 530), the percentage of correctly predicted values is a useful GOF measure. The percentage of correctly predicted values is the percentage of time that  $\hat{y}_i = y$  (Wooldridge, 2016). The classification table is used to summarize the result of a fitted logistic regression (Hosmer et al., 2013, p. 169). This table is the result of classifying the predicted value ( $\hat{y}_i$ ) into a dichotomous outcome (observed) variable ( $y$ ) (0 or 1 value). Firstly, a cutpoint should be defined, for example  $\alpha$ . Then, compare each estimated probability that is derived from a logit regression to  $\alpha$ . If an estimated probability from the fitted logit regression exceeds  $\alpha$ , then it is classified as equal to 1; if an estimated probability from the fitted logit regression is less than  $\alpha$ , then it is classified as equal to 0. It is suggested that the common use value for the cut point is 0.5 (Menard, 2010, p. 65, Hosmer et al., 2013, p. 170). This study also uses 0.5 as a cut point. It is chosen because it is the midpoint value where it gives a 50-50 chance for fitted values to be classified as 0 or 1.<sup>39</sup>

### ***Area under ROC Curve***

The area under the ROC curve is a measure to check how well the models can discriminate between two groups. It is considered as "a more complete description of classification accuracy" (Hosmer et al., 2013, p.173). It plots the probability of detecting the true signal and the false signal. Hosmer et al. (2013, p. 177) provide general guidelines to describe good discrimination as follow:

- If ROC = 0.5, it is considered as no discrimination
- If  $0.5 < \text{ROC} < 0.7$ , it is considered as poor discrimination
- If  $0.7 \leq \text{ROC} < 0.8$ , it is considered as acceptable discrimination

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<sup>39</sup> This study has examined different cut points, i.e., 0.4, 0.6, 0.7 and 0.8, and concludes that there is no significant difference in the percentage of correctly predicted values.

- If  $0.8 \leq \text{ROC} < 0.9$ , it is considered as excellent discrimination
- If  $\text{ROC} \geq 0.9$ , it is considered as outstanding discrimination

### ***Akaike's Information Criterion (AIC)***

AIC is the most popular criterion in model selection (Shtatland et al, 2002, p. 5). AIC is useful to assess the fit of the model and to compare models with different samples. According to Gill (2001, p. 65), AIC is more suitable for comparing models where sample size differs, even when the models are not nested. In this case, one has different numbers of observation for every model and therefore, AIC becomes important to assess the fit of the models. The AIC formula is:

$$\text{AIC} = -2\text{Loglikelihood} + 2k \quad (9)$$

Where  $k$  = the number of independent variables in the model (including the intercept).

The important feature of AIC is that it gives penalties for adding independent variables that do not significantly improve fit of the model. Moreover, it penalizes smaller samples less than models with larger samples (Gill, 2001, p. 65). The model with the smaller value of AIC is considered to be the better fitting model. Stata produces two types of AIC by using the *fitstat* command: AIC\*n and AIC. AIC\*n is basically obtained by using above formula, while AIC is obtained by dividing the formula by the numbers of observations.

### ***Link Test***

The Link test is used to check whether or not there is a specification error. It is assumed that the logit of the dependent variable is a linear combination of the independent variables. The idea behind the link test is that if a regression is properly specified, one should not be able to find any additional independent variables that are statistically significant, except by chance (StataCorp, 2015). There are two conditions in

the link test. The first condition is that the linear predicted value ( $\hat{y}$ ) in the models is statistically significant. The second condition is the linear predicted value squared ( $\hat{y}^2$ ) is not statistically significant. If  $\hat{y}^2$  is statistically significant, it shows us that there is a specification error in the model. It is often interpreted as indicating that the independent variables are specified incorrectly (StataCorp, 2015).

#### **4.2.5. Qualitative Analysis**

It is considered that the qualitative analysis would usefully supplement and extend our understanding about dropout decisions. In general, the aim of qualitative research is to get an in-depth understanding of a specific phenomenon rather than a surface description of the big sample of a population (Wahyuni, 2012). Why is qualitative analysis important when studying school dropout? Dei (2003, p. 245) states that “there is a human side to stories that statistics do not tell us.” It is vital to get dropouts’ perspectives for a fuller understanding of the dropout decision. The perspective of dropout students and their parents are analysed using behavioural economics and pullout and pushout theories. This study also uses the connection between behavioural economics and Javanese culture to explain the dropout decision.

Moreover, this study also uses qualitative analysis to capture the important dropout factors that cannot be explained by quantitative analysis. There are three important variables that are widely used in dropout prevention in the US. They are known as the ABC’s of disengagement: Attendance (i.e., number of absences), behaviour, and course performance (or academic achievement) (Hoff, Olson, & Peterson, 2015). The US National High School Center only focuses on two variables, attendance and course performance, because these two variables are considered to be the most powerful predictors of dropout (Heppen & Therriault, 2008). This study has constructed a *deviant behaviour* variable and uses the lower secondary school final examination grade as the proxy variable for *academic performance* in the quantitative

analysis. However, attendance is not included in the quantitative analysis. The pilot project indicates that respondents cannot remember exactly how many times they were absent from class during their schooling. I also could not get any information about students' attendance records from schools because some schools refused to provide this information and other schools claim they no longer kept dropouts' records or attendance information. So, it is difficult given the absence of sufficient information regarding absences to determine whether frequent absenteeism influences the decision to drop out. Therefore, this study tries to determine whether qualitative information obtained from interviewing dropout respondents provides evidence about the absence from class as a signal to drop out.

To ensure the validity and reliability of the qualitative analysis, some procedures were applied. Firstly, a pilot project was undertaken to identify potential problems before the larger study was conducted. Secondly, interview processes and the expected outcomes of the research were explained as clearly as possible to the participants to increase the external validity and reliability. All the steps of the interviews were clearly described in the information sheet (see Appendix 3). Thirdly, the brief description of the types of questions respondents were expected to answer was given to them before the interviews to reassure them that they could answer the questions and that they would not be embarrassed or suffer harm. Fourthly, the transcribed interviews were sent to the participants and they could amend the transcript if they wished. Authority for the Release of Transcripts was signed by the participants if they agreed with the contents. Lastly, some findings in the qualitative analysis were tested in the quantitative analysis to check whether the quantitative analysis also finds similar results or not.

### ***Profiles of Interview Participants***

The intended participants for interview are dropout students who initially enrolled at Grade 10 in the 2010/2011 academic year in Central Java Province and their parents or guardians. There were 16 dropouts, three males and 13 females, among the respondents in the survey (see Table 4.12).

**Table 4.12. Respondents' Reasons for Dropping Out**

<b>ID</b>	<b>Gender of dropout</b>	<b>Main Reason for Dropping out</b>	<b>Last Grade</b>	<b>Sibling Rank</b>	<b>No of Sibling (s)</b>
Dropout 1	Female	Pregnancy	10	1	1
Dropout 2	Male	Financial problem	10	5	5
Dropout 3	Male	Financial problem and problem with teacher	10	2	1
Dropout 4	Female	Pregnancy	11	2	1
Dropout 5	Female	Financial problem	11	4	7
Dropout 6	Female	Problem with a powerful teacher and financial problem	10	3	4
Dropout 7	Female	Financial problem	10	2	1
Dropout 8	Female	Health problem	11	3	4
Dropout 9	Male	Never wanted to continue upper secondary school	10	1	1
Dropout 10	Female	Financial problem	11	5	8
Dropout 11	Female	Pregnancy	12	3	2
Dropout 12	Female	Problem with teachers	12	3	4
Dropout 13	Female	Financial problem	11	4	4
Dropout 14	Female	Bad influence by friends	12	3	3
Dropout 15	Female	Pregnancy	12	1	2
Dropout 16	Female	Financial problem	10	6	5

44% of respondents dropped out while they were at Grade 10 and 31% of respondents dropped out while they were at Grade 11. It is important to note that all respondents who dropped out because of financial problems left school during their first or second year of upper secondary school education. This indicates that poor students were struggling with financial conditions since their first year of education and they could not survive until the final year. 25% of respondents dropped out in their

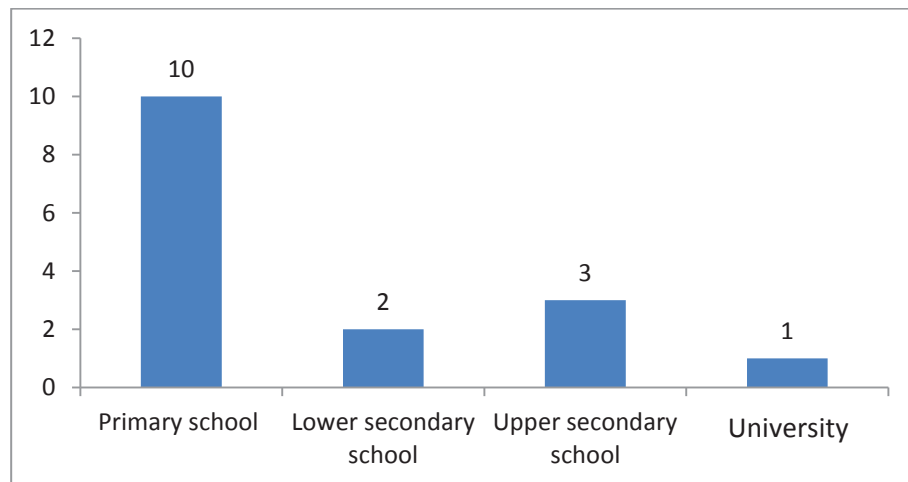
final year of upper secondary school and half of those dropped out because of pregnancy.

This study also interviewed one of the parents of each dropout. 12 mothers and four fathers participated in the interviews. Table 4.13 and Figure 4.4 show the profiles of the dropouts' parents who participated in the interviews. Ten respondents only held a primary school education certificate. Two respondents had a lower secondary education certificate. Only one respondent held a university degree. From table 4.13, there seems to be a general relationship between parents' low education level and student dropout that needs to be tested in the quantitative analysis.

**Table 4.13. Profiles of Parents of Dropouts**

<b>ID</b>	<b>Respondent's Gender</b>	<b>Respondent's Highest Education level</b>	<b>Husband/wife's Highest Education Level</b>
Parent of Dropout 1	Female	Primary school	Lower secondary school
Parent of Dropout 2	Male	Primary school	Primary school
Parent of Dropout 3	Male	Upper secondary school	Primary school
Parent of Dropout 4	Female	Primary school	Primary school
Parent of Dropout 5	Female	Primary school	Upper secondary school
Parent of Dropout 6	Male	Lower secondary school	Primary school
Parent of Dropout 7	Male	Upper secondary school	Lower secondary school
Parent of Dropout 8	Female	Primary school	Never attended school
Parent of Dropout 9	Female	Primary school	Primary school
Parent of Dropout 10	Female	Primary school	Upper secondary school
Parent of Dropout 11	Female	University	Upper secondary school
Parent of Dropout 12	Female	Upper secondary school	Upper secondary school
Parent of Dropout 13	Female	Primary school	Primary school
Parent of Dropout 14	Female	Lower secondary school	Upper secondary school
Parent of Dropout 15	Female	Primary school	Upper secondary school
Parent of Dropout 16	Female	Primary school	Lower secondary school

**Figure 4.4. Highest Education Level of Parents of Dropouts**



In addition, some schools in Central Java Province were also visited. Informal interviews and discussions with ten upper secondary school principals and teachers were conducted. The information collected from principals and teachers was useful to get more information about how they dealt with students who wanted to drop out, decisions made by the school to expel the pregnant students and the lack of grants for the poor students. More importantly, the schools could clarify students' claims. For example, some respondents claimed that their schools never traced them when they did not come to school. Schools were asked what they would do when a student did not come to school anymore.

The qualitative data were transcribed and typed in Microsoft Word in Indonesian and were analysed later. All transcripts were cleaned of any potentially identifying information. As required by the Massey University Human Ethics Committee, all hard copies of transcripts are stored in locked file cabinets, and digital copies are stored on a password-protected hard drive and external disk.

### **4.3. Pilot Project Report**

Prior to the general application of the survey, a pilot study was conducted in Central Java Province. The pilot project was conducted in three different cities from the third week of December 2013 to the first week of January 2014. Its objective was to test respondents' understanding of the questions and the order of questions prior to commencing the larger study. This pilot study also tested whether any question in the questionnaire or part of the interview process was likely to cause discomfort, embarrassment, or psychological or spiritual harm to the participants. As mentioned in the Pilot Project Information Sheet, respondents' answers were not used for any other purpose (see Appendix 3). I also held a group discussion with several teachers at an upper secondary school in Central Java Province about dropouts, the questionnaire, and the survey process. During the pilot project, some interesting facts and problems emerged, as discussed below.

#### ***The Beginning of the Pilot Project***

At the beginning, I had eight confirmed dropout students who were willing to be my respondents for the pilot project. But after I visited them, only five dropout students participated. The other three potential respondents did not participate for the following reasons:

- a. One respondent did not show up at his home when I tried to visit him although we had an appointment at an agreed time. I got information that he travelled to another city without giving prior notice. I thought he did not have a good attitude and decided to drop the respondent from the pilot project.
- b. The second respondent changed her mind when I visited her. She and her mother decided not to continue their participation after they read the information sheet. They did not give any clear reasons why they cancelled it. Later, I came to know that the respondent dropped out of school because she was pregnant before

marriage. This is considered a disgraceful thing in Indonesia and contrary to the cultural norms (the discussion about out of wedlock pregnancies is presented in Chapter Five). I believe that they declined because of this. However, one of my respondents who signed the consent form and answered the questionnaire and also had an interview with me was pregnant before marriage, but she had no problem with my research.

- c. The last respondent asked for some money before answering the questionnaire. I was doubtful whether his request complied with the code of ethical conduct. To avoid future problems, I decided to refuse his request and dropped him as a pilot test respondent.

It was not possible for me or my team to find new respondents to replace the cancelled respondents due to the short time available.

### ***Final Pilot Project***

My final respondents can be categorised into four types, those who:

- a. Dropped out due to financial conditions (one respondent)
- b. Dropped out due to being bored with school (two respondents)
- c. Dropped out due to helping in the family business (one respondent)
- d. Dropped out due to pregnancy (one respondent).

There were also some problems with the respondents, as follows:

1. Some respondents did not show up on time. I had to wait about 30 minutes to two hours from my appointment time before they finally showed up.
2. There was a problem when the parents could not read because they never attended school. To solve the problem, I had to read out all the questions in the questionnaire to them.

3. There was a case where parents could not speak my national language (Indonesian) and only spoke the local language (Javanese). In addition, they also could not read. Therefore, they could not answer the questionnaire. This was a problem for me because I am not fluent in Javanese.<sup>40</sup> To solve it, one of my team members had to read the questionnaire and translate it into Javanese. This condition also affected my direct communication with the pilot test respondents during the interview. Thus, my team member acted as a translator during this interview.
4. There were two cases where I encountered difficulties in getting answers during the interview with the dropout students. The shortest interview was only one minute and 50 seconds. The respondent seemed shy about answering my questions. Another interview was only two minutes and 13 seconds due to the respondent starting to be tearful when I began the first question. Both of them answered the questions only with short answers (they only replied with one sentence). Therefore, I decided to finish the interview early.
5. I only met two out of five pilot test respondents' parents. Parents of two dropouts refused to meet me while the other parent resided in a different island.

## ***The Assessment of Questionnaires***

### **A. Students**

1. Three out of five dropout students rated the questionnaire as "easy to understand", while the other two dropout students assessed the questionnaire

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<sup>40</sup> There are at least nine levels of speech in Javanese language (Koentjaraningrat, 1985). It depends on differences in status, rank, seniority and others. Three out of nine styles (familiar (*ngoko*), semi-formal (*madya*) and formal (*krami*)) are the most basic. Javanese etiquette requires the correct use of the proper style of speech when someone talks to other people (Koentjaraningrat, 1985, p. 18). For example, young people must use semi-formal or formal styles of speech when talking to older people to show their respect. I am not fluent in semi-formal or formal styles of speech, but the interviews require these styles of speech to show respect to parents of dropouts.

as “somewhat difficult to understand.” When I asked them which questions were difficult to understand, one respondent thought all the questions were difficult to understand.

2. In my observation, none of them could exactly remember their school expenses and the number of absences. So all of them skipped these questions.
3. All participants declared that the questionnaires did not cause any discomfort, embarrassment, or psychological or spiritual harm to them when they read it, but some respondents had discomfort during the interview process.

## **B. Parents**

1. In my observation of the pilot test parents, I realized that the questionnaire is difficult to understand for uneducated parents (no schooling), while parents who had attended school had no problem with the questionnaire.
2. It was difficult for parents to calculate their monthly income as their jobs were casual non-permanent jobs and consequently they found it difficult to estimate their monthly family expenses as they varied every month.
3. Some parents did not know the exact location of the school, knowing only the school’s name. They then asked their son/daughter for the exact location. As a result, I moved the school’s location question from the parents’ questionnaire to the ex-students’ questionnaire.
4. Similar to the dropout students, all parents also stated that the questionnaire did not cause any discomfort, embarrassment, or psychological or spiritual harm to them, but some parents experienced a level of discomfort during the interview process.

## ***The Assessment of Interviews***

The objective of the interviews was to check whether the list of questions would cause discomfort, embarrassment, or psychological or spiritual harm to the respondents. I developed seven main questions for the interview with the students. The other questions were given to respondents based on their answers to the main questions. The main questions were:

- When did you start thinking of dropping out of school?
- What was the reason?
- Can you explain the processes of dropout?
- Did you consult with your parents before you decided to drop out?
- Was it you who decided to drop out or did your parents ask you to drop out?
- What do you feel now after dropping out of school?
- What are your future plans?

Short interviews were also conducted with parents. The questions were:

- Can you explain what happened before your son/daughter decided to drop out?
- What did you feel after your son/daughter dropped out of school?
- Was it your decision to let your son/daughter drop out of school?
- What is your future expectation for your son/daughter?

During the pilot test interviews, I observed respondents' reactions to the questions and I saw that some respondents were reluctant answering certain questions. After the interviews, I also asked respondents about their impression of the questions. My evaluation of them is as follows:

### **A. Students**

1. Only two out of five students agreed to have the interview recorded on camera, while the other three respondents did not permit me to do this.

2. The interview conducted with the girl who got pregnant before marriage was challenging. I knew that the interview might be difficult and might cause her discomfort. When I visited her, she was accompanied by her mother. Her mother asked me to tell her the list of questions before the interview was held. Finally, I convinced them to participate in the interview and the girl allowed me to record the interview on the recorder. The pregnant student participant seemed uncomfortable with some questions. The solutions to overcome respondents' discomfort are discussed in the following section on implications of the pilot study, point no. 5.

## **B. Parents**

1. One parent agreed to have the interview recorded by cam recorder and the other just wanted to have the interview without recording.
2. The parent of the pregnant student was hesitant to answer some questions.

### ***Implications of the Pilot Study***

Conducting the pilot test interviews on location in Indonesia was a good experience for refining the final questionnaires and interview questions. A lot of useful information was obtained. Direct involvement by going into the field, communicating with the respondents, and observing their reactions to the different aspects of research became a valuable experience. Based on the above problems found in the field, and the assessment of the pilot project, I can conclude the implications of the pilot study were as follows:

1. It is important to test whether the questions are fully understood by the respondents and whether there are problems with the wording. The pilot project provided the information that some questions were not fully understood by uneducated parents. It enabled me to develop and revise the questionnaires.

2. In addition, the pilot project also gave the opportunity to see the acceptability of the wording of the questions from the respondent's perspective. The wording of questions was important in order to avoid discomfort, embarrassment, or psychological or spiritual harm to the respondents.
3. Language problems also arose during the pilot project. To solve this problem during the pilot test, I used my trusted research assistants to translate the conversations. The use of research assistants familiar with Javanese speech and etiquette helped overcome this problem with the main survey.
4. The pilot project allowed me to observe participants' reactions to the presence of a researcher. Some respondents were not comfortable with directly communicating with the researcher. It appeared that the presence of an older interviewer distracted the participants, especially when they knew that I am a lecturer. To deal with this problem, I decided to use research assistants of a similar age to the dropouts, to gain a greater level of acceptance and openness when respondents answered the questionnaire.
5. The pilot project highlighted the importance of first gaining cooperation from the respondents before the interview and completing the questionnaires. I realized that the interview is a social interaction between two strangers, in which one person tries to obtain specific and often sensitive information from the other, and I fully understand that they might be embarrassed, fearful and feeling uncomfortable in talking to a stranger. Therefore, the challenge of the interview was to get the respondents' cooperation and to make the respondents feel comfortable before they disclosed personal information. As a result of conducting the pilot test interviews, the following strategies have been devised to avoid discomfort during the interviews:
  - a. Another person, i.e., a research assistant, would be the interviewer instead of me.

- b. Research assistants must be very fluent in the local language and aware of local etiquette.
  - c. Research assistants need to be close to the dropout's age.
  - d. Where possible the research assistants need to be of the same gender. The strategy is to use female interviewers to ask female dropouts the questions. Research assistants need to be reasonably persuasive.
  - e. It was suggested by an expert to send the list of questions before the interview is held. Potential respondents sometimes hesitate with the interview because: they do not have any clue about the questions; they do not know what kinds of questions are asked of them; and they wonder if the questions will embarrass or cause harm. Sending a list of questions to potential respondents before an interview will give them a brief understanding and reassures them that the interview is not harmful or embarrassing.
6. The pilot study highlighted the issues of respondents often being late for the interviews. The pilot study gave me some ideas how to handle the late arrival of the respondents. Research assistants had to check the appropriate time when a respondent is available and avoid wasting time to await the arrival of the respondents.
7. The pilot project allowed me to determine what resources (financial support and team members) were required for the larger study.
8. The pilot project gave me a broad picture of how to conduct the larger study. It included how to find the respondents and their location. Also it helped me to determine how much time is needed to do the activity.

#### **4.4. Main Data Collection Report**

There were some obstacles during main data collection. The first problem was the potential respondents' addresses were not clear. In most areas in Central Java Province, especially in rural areas, there are no house numbers. Mostly, students' data received from schools only contain village names and sub-district names for the addresses. In such cases, it was difficult and time consuming to find them. The second problem was the long distances between respondents' homes. Sometimes it took more than one hour to reach the next potential respondent. The third problem was that even if I could find the potential respondents' homes, sometimes they were not at home. Many of them had moved to other places. Most of them moved outside Central Java Province for work. On average, the research assistants and I collected data from about two to three ex-students in a day. We considered ourselves lucky if we could gather information from five ex-students in a day.

For the questionnaires, the research assistants and I have collected information from 514 ex-students from 115 schools throughout Central Java Province. 39 schools (33.9%) are general upper secondary schools, 24 schools (22.1%) are religious upper secondary schools and 52 schools (45.2%) are vocational upper secondary schools. The details of the visited schools' are shown in Table 4.14.

There were only a minor number of rejections from schools. The rejections were mainly in the case where schools had negative experiences with student lists previously used by other parties, for example where alumni had been deceived in the past and the school received many complaints. Therefore, some schools had a policy not to distribute student lists to outsiders. A few schools also had other reasons for not distributing student lists. In such a case, I selected a new school to replace the previous school. However, most schools gave me the lists, showing interest in the research and asked me to give them the research results when the study is finished.

**Table 4.14. Numbers of Schools Visited**

<b>Type of School</b>	<b>Ownership of School</b>	<b>Number of Schools</b>
<b>General</b>	Public	16
	Private	23
	Sub Total	39
<b>Religious</b>	Public	4
	Private	20
	Sub Total	24
<b>Vocational</b>	Public	10
	Private	42
	Sub Total	52
<b>Total</b>		<b>115</b>

Table 4.15 indicates the numbers of participants by type of school and ownership of school. There were 514 ex-students who agreed to participate in the research. 226 ex-students are males and 288 ex-students are females. 174 respondents (33.9%) were from general upper secondary schools, 110 respondents (21.4%) were from religious upper secondary schools and 230 respondents (44.7%) were from vocational upper secondary schools.

**Table 4.15. Numbers of participants by Type of School and Ownership of School**

<b>Type of School</b>	<b>Ownership of School</b>	<b>Number of Participants</b>
<b>General</b>	Public	75
	Private	99
	Sub Total	174
<b>Religious</b>	Public	23
	Private	87
	Sub Total	110
<b>Vocational</b>	Public	44
	Private	186
	Sub Total	230
<b>Total</b>		<b>514</b>

Table 4.16 shows the number of dropouts by type of school and ownership of school in the sample. There were 113 dropout students out of 514 ex-students. 31 dropout students (27.4%) were from general upper secondary schools, 25 dropout

students (22.1%) were from religious upper secondary schools and 57 dropout students (50.5%) were from vocational upper secondary schools. Moreover, 20 dropout students were from public schools and 93 dropout students were from private schools. In addition, 59 dropout students (52.2%) are males and remaining 54 dropout students (47.8%) are females.

**Table 4.16. Numbers of Dropouts by Type of School and Ownership of School**

<b>Type of School</b>	<b>Ownership of School</b>	<b>Number of Participants</b>
<b>General</b>	Public	7
	Private	24
	Sub Total	31
<b>Religious</b>	Public	5
	Private	20
	Sub Total	25
<b>Vocational</b>	Public	8
	Private	49
	Sub Total	57
<b>Total</b>		<b>113</b>

#### **4.4.1. Description of Variables and Summary Statistics of Full Model**

##### **Regressions**

It has been mentioned previously that only questionnaire answers from 439 ex-students and 878 parents/guardians are used for the regression analysis. Appendix Table 6.4 presents the description and summary statistics for all variables used in the analysis. 21% of respondents are dropout students, consisting of 44 males and 48 females. Almost 60% of the ex-students respondents are female. Ex-students respondents' ages when starting their first year of upper secondary school ranged from 14 years to 20 years. 54% of data were collected from respondents, i.e., ex-students and their parents, who reside in rural areas. 63.6% of ex-students studied at upper secondary schools located in urban areas.

About 26.4% of respondents were from families that have the lowest socioeconomic status. Only 6% of household heads hold at least a university degree. Family size ranges from three members to twelve, while sibling rank varies from first child to tenth child in the family. The high number of large families indicates that the traditional Javanese preference for large families still exists.

#### 4.4.2. Reasons for Dropping Out Reported by All Dropout Respondents

In the survey, I asked the dropout students why they left school. Table 4.17 reports the reasons they gave for dropping out. Financial problems were the main reason for leaving school. Pregnancy and marriage also contribute to the high number of dropouts in Central Java Province. Almost all schools that I visited, except one school, have strict regulations that students are not allowed to get married and pregnant while they attend school.

**Table 4.17. Reasons for Dropping Out Reported by All Dropouts**

<b>Reasons of Dropping Out</b>	<b>All Dropouts</b>	<b>Female</b>	<b>Male</b>	<b>chi-square statistic</b>
Financial Problems	25.5%	24.6%	26.4%	0.09
Pregnancy	13.9%	29.2%	-	-
Bored	13.9%	9.2%	18.1%	2.40
Marriage	13.1%	18.5%	8.3%	3.06*
Problems with teacher(s)	5.8%	1.5%	9.7%	4.30**
Expelled (other than because of pregnancy and marriage)	5.8%	3.1%	8.3%	1.80
Got a job	4.4%	3.1%	6.9%	1.10
Running/Helping family's business	2.9%	3.1%	4.2%	0.13
Failing classes	2.2%	-	4.2%	-
Illness	1.5%	1.5%	2.8%	0.29
Problem with Peer(s)	1.5%	3.1%	2.8%	0.01
Others	9.5%	3.1%	8.3%	-
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	
<b>No. of respondents</b>	<b>113</b>	<b>54</b>	<b>59</b>	

Notes: \*\*  $p \leq 0.05$ ; \*  $p \leq 0.10$ .

I also divide the reasons given for dropout by gender. The results indicate that pregnancy is the main reason for female students to drop out, followed by financial problems and marriage (see Table 4.17). Financial problems are the main reason for most male dropouts, followed by being bored with school, and problems with teachers. The percentage of male students who dropped out of school because of being bored is twice as high as that of female students (18.1% to 9.2%). Seven male dropouts and one female dropout stated that they left school because they had problems with teachers. This could be a strong indication that male students are more likely to have problems with teachers than do female students.

Table 4.17 also presents Pearson *chi-square* tests to check whether there are statistically significant differences in proportions between the genders. For example, we want to investigate whether there is a gender difference in terms of financial problems. The Pearson *chi-square* statistic indicates that there is no statistically significant difference. Similarly, it is found that there is no statistically significant difference between females and males in terms of being bored. The results show that there is a significant difference between the genders for marriage, i.e., females are statistically significantly more likely to drop out due to marriage than males; and the Pearson *chi-square* test suggests that males are statistically significantly more likely to drop out due to problems with teachers.

#### **4.5. Concluding Remarks**

The focus in this chapter is on research methods and data collection processes. For the quantitative analysis, as the centre of this study, logit regressions are used to determine the factors that cause school dropout. This chapter discusses the model specification and the independent variables that are used. The model specification is an extension of the conceptual model of high school performance proposed by Rumberger and Lim (2008). This study uses 11 explanatory variables of individual characteristics

(*I*), 13 explanatory variables of family characteristics (*F*), 10 explanatory variables of school characteristics (*S*), and five explanatory variables of government policy and macroeconomic condition (*GM*). In addition, four interaction effects that focus on female students are also included. This chapter also explains the tests used to assess the overall significance of the coefficients of the independent variables in the model and the goodness of fit.

The second method used in the study is qualitative analysis. The importance of using qualitative analysis is discussed. It is important to understand the processes of dropping out because statistics fail to tell the whole story behind dropout decisions. Qualitative analysis is used to supplement the quantitative analysis. In-depth interviews were conducted by using open-ended questions. The perspective of dropout students and their parents are analysed using the behavioural economics and pullout and pushout theories.

Having discussed the research methods, this chapter also addresses ways of data collection. The primary data collection was conducted in Central Java Province. This study clearly defines upper secondary school dropout, and used the definition as guidance for selecting and approaching potential respondents. Before doing the larger fieldwork, a pilot study was conducted. This chapter reports on the pilot testing process and the impact it had on the main data collection. The objective of the pilot study was to examine whether the questions in the questionnaires and the interview process were likely to cause misunderstanding, discomfort, embarrassment, or psychological or spiritual harm to the participants. The pilot study proved important in gathering information critical to the success of the larger study. I conclude that conducting the pilot project in Indonesia was a worthwhile experience and helpful in refining the final questionnaires and interview questions as well as refining the main data collection and identifying obstacles likely to be encountered during fieldwork.

The data collection procedures in this study were designed to avoid any bias. All the steps of the data collection processes were carefully followed in order to get a good response rate and create a good dataset. The student and parent questionnaires were revised many times before the main fieldwork to ensure that all important information needed from respondents was incorporated in the questionnaires. Once fieldwork commenced, it would have been difficult to change the questionnaires' questions due to time, the large scale of the research, and the various locations involved. The outcomes of the quantitative and qualitative analyses on school dropout are presented in the next two chapters. The qualitative study's results are presented in Chapter Five and the findings of the quantitative analysis are presented in Chapter Six.

## **5. QUALITATIVE ANALYSIS: UNDERSTANDING STUDENTS' DECISIONS TO DROP OUT**

### **5.1. Introduction**

The purpose of the qualitative analysis presented in this chapter is to understand why students drop out of school in Central Java Province, Indonesia. The experiences and the perceptions of students and their parents about dropping out are examined. Qualitative analysis is used to get useful information that cannot be captured in quantitative analysis. Thus, the qualitative findings are used to provide context and explanations for the quantitative findings. Additionally, qualitative analysis results are also expected to strengthen the quantitative analysis reported in the next chapter. As mentioned earlier in Chapter Four, interviews were conducted and two types of questionnaires were also distributed to the respondents. The information used in the qualitative analysis was collected from the interviews. While not claiming representativeness, the interviews give interesting insights into the complexities of dropping out.

The questionnaires also indicate that pregnancy is a significant cause of dropout. However, it cannot be tested in the quantitative analysis because an independent variable representing pregnancy in the quantitative analysis cannot be established since all of the respondents who were pregnant while they were in school dropped out of school. The pregnant respondents were not allowed to stay in school. I have tried to insert a pregnancy variable in the model. However, it was dropped automatically by Stata due to the variable having no variation in the regressions. In the sample, there are 16 pregnant students and all of them dropped out of school. Therefore, the *pregnant* variable predicts the success event (drop

out=1) perfectly and it is dropped from the regression analysis.<sup>41</sup> Therefore, the experiences of the pregnant students will be discussed more deeply in this chapter.

As discussed in Chapter Four, I could not get any information from respondents in questionnaires about their attendance because they had already forgotten and I also found it difficult to get students' attendance records from schools due to some schools refusing to give them, and other schools claiming that they no longer kept the records. Thus, it is impossible to create a variable to represent attendance in the quantitative analysis. However, in this qualitative analysis there is evidence that frequent absenteeism leads to dropout. The result is presented in Section 5.2.2.

The discussion about behavioural economics in section 2.2.2 tries to explain the deviation from the traditional human capital investment model, borrowing from neighbouring social sciences, mainly the sociological approach to culture. The respondents of the study are Javanese people and the unique Javanese culture strongly influences their daily lives. The association between behavioural economics and cultural factors may also be able to explain the decision to drop out.

## **5.2. Experiences and Perceptions of Dropouts**

The respondents shared their dropout experiences and perceptions about their education in upper secondary school. Firstly, the reasons for dropping out stated by respondents were described and focussed on the two main reasons of dropping out. There were also discussions about the process of dropping out, based on the information gathered from respondents. Students who had dropped out were also asked about the possibility of returning to school, and their feelings after dropping out of school.

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<sup>41</sup> For details see StataCorp (2015, pp. 1279-1281).

### **5.2.1. Main Reasons for Dropping Out**

Table 4.12 in Chapter Four presents the reasons for dropping out reported by respondents during the interviews. Financial problems are the main reason for leaving school. Eight respondents stated that they dropped out of school because of lack of financial support. Four respondents dropped out of school because they were pregnant when they were at upper secondary school. Other reasons stated by dropouts were: (1) Had problem with teachers (one respondent); (2) frequent blackouts due to having severe illness (one respondent); (3) bad influence of friends (one respondent); and (4) never wanted to continue upper secondary school (one respondent). The reasons for dropping out stated by dropouts in the interview sessions are similar to the reasons for dropout stated by other respondents in the questionnaires. Both findings suggest that financial problems and pregnancy are the two main reasons to drop out of upper secondary school. A qualitative study in China found that one of the reasons for dropping out was 'demanded or persuaded by the parents to quit schooling' (Liu, 2004, p. 12). In contrast, no respondent reported that reason. The main focus of the following discussion is on the two main reasons for dropping out stated by respondents, i.e., financial problems and pregnancy.

#### **5.2.1.1. Financial Problems**

The most cited reason for dropping out is financial pressure faced by poor students. Questionnaire results also show that many respondents dropped out of school because of family's financial limitations. However, little is known about the story behind this. The interview results suggest that there are two reasons behind it. The first type is that the students voluntarily leave school in response to their financial problems, in line with pullout theory. The interviews also found that it was not only school expenses that pull poor students out of school. Number of siblings also was a strong influence on the decision to drop out. The second type

was that poor students were being pushed out by the school, either intentionally or unintentionally, supporting pushout theory.

### ***Background***

Education expenses do not consist merely of tuition fees, but also include other related costs such as extracurricular costs, books, uniforms, transportation and school supplies. In addition, schools sometimes impose additional “informal” fees for teachers’ welfare. These costs create barriers to poor children in Indonesia because they reduce their access to education and these combined costs have often created school absence, dropout and entry to child labour (Human Rights Watch, 2005, pp. 6-7).

The school participation of poor students has been encouraged by the central government and local governments through financial assistance for reducing the school fee costs (OECD & Asian Development Bank, 2015, p. 145). There are four national policies aimed at preventing dropout in Indonesia (Ministry of Education and Culture Republic of Indonesia, 2013, p. 37): (1) Raising public awareness of the importance of education; (2) providing financial assistance for poor students continuously from primary school up to university level; (3) increasing the monetary value of financial assistance for poor students and (4) increasing the number of poor students being awarded assistance at university level.<sup>42</sup> These dropout prevention policies are demand-side interventions to stimulate school enrolment and encourage students to continue their education to the next level and finish their education. The financial assistance programs are targeted solely at poor students. The legal standing for providing assistance for the

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<sup>42</sup> It looks like policies number two and four overlap. However, policy number four is intended to support students from poor families who are currently enrolled in universities or just graduated from upper secondary school, while policy number two is a policy in order to give financial support to currently enrolled primary students from poor families so they can continuously study up to university level.

poor is explicitly stated in the National Education System Law no. 20 of 2003 Article 12. The Law states that the government should provide educational grants for students whose parents cannot afford the costs of education.

In 2005, the government of Indonesia launched a school-based education subsidy program known as School Operational Assistance (BOS) to cover some direct educational costs such as tuition fees and free poor students from all types of charges, both in public and private schools. BOS is a program to expand education access to every citizen and to improve the quality of education. It has the indirect objective to reduce dropout. The discussion with school teachers indicates that BOS contributed to reduce dropout. The World Bank (2014a, p. 79) reviewed the implementation of BOS and concluded that the program has contributed to increased enrolment rates at lower secondary schools among the poorest students. The World Bank indicated that there was a reduction in families' financial burden of sending their children to school. There are some achievements of the program, such as: (1) 6% less expenditure in the first year for families with children in primary and lower secondary school; (2) the poorest 20% of families with children enrolled at government schools had the biggest reductions in expenditure; (3) the poorest families with children at the lower secondary level had more savings because the spending dropped by 30%, compared to 5% at the primary school level.

Beside these achievements, the World Bank (2014a, p. 80) also reviewed the current problems of BOS and its policy suggestion to overcome these problems. The World Bank suggests strengthening the poverty focus of BOS by providing schools that serve poor and disadvantaged students with additional funds. Also, it seems the World Bank disagreed with the use of BOS to provide direct support for the 'out of pocket' school expenses of poor students because there are other cash transfer programs that are intended to finance them. The World Bank (2014a, p. 80) recommended "to phase out the use of funds to cover poor children's 'out of pocket' expenses." However, the other cash transfer program, i.e., KIP, has its

limitations as well. Therefore, the policy suggested by the World Bank should not be applied until the improvements to other cash transfer programs have been implemented.

The study by the World Bank (2014a) also indicates that some schools were not able to cover all operating costs by BOS funds only and, furthermore, pointed out that some schools did not get the full amount of BOS funds. Therefore, schools still had to depend on parental contributions to cover the full costs. In addition, the fieldwork reveals that parental contributions are still needed because schools want parents to show their responsibility. This condition impacts poor parents because it has been shown earlier that education costs burden poor households influencing dropout. Therefore, BOS should be strengthened. The current problems for BOS must be addressed by simplifying the regulations and increasing the amount of BOS, especially for schools in slums and remote areas where the poverty rate is high.

In 2008, the government implemented the grant known as the Cash Transfers for Poor Students (*Bantuan Siswa Miskin*—BSM)<sup>43</sup> Program to cover students' indirect costs. BSM covers 20.5 million students in 2015 and decreases to 19.5 million in 2016 (TNP2K, 2016). This program, as well as BOS, is intended to address both supply side and demand side constraints to education. However, there are some limitations of BSM: it is important to note that the BSM program cannot cover all students from poor families. In 2014, the BSM program only covered 60 per cent of poor students (Larasati & Howell, 2014). Larasati and Howell also pointed out that the selection of the grant's recipients is subject to schools' own criteria and as a result the BSM recipients are more likely to come from wealthier families because the selection can only be done from students who

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<sup>43</sup> BSM was replaced by another program named Indonesia Smart Card (*Kartu Indonesia Pintar* – KIP) on November 2014 by the new government. Previously, BSM only covered the formal education system and now KIP covers both the formal and informal education systems. The use of both terms is interchangeable.

are already enrolled and attending classes, while children who are not enrolled are more likely to be poor. In addition, World Bank (2013) found that BSM amounts did not cover all of the true costs of education, especially in upper secondary school. It created more problems for poor students because a common feature of the upper secondary schools is reliance on parental contributions, especially for private schools (ACDP, 2013, p. 1), and parents need to pay double the amount for upper secondary school compared to lower secondary school (OECD & Asian Development Bank, 2015, p. 144). The limited number of BSM recipients, the problem of selecting recipients and the limited amount of BSM affects the overall performance of the BSM program.

In 2007, the Indonesian government launched a financial incentive program for poor families. It is called Family Hope Program (*Program Keluarga Harapan – PKH*), the first conditional cash transfer program in Indonesia. The program provides cash transfers conditional on households accessing specified health and education services. However, a limitation of this program is that it is not covering poor families who have children attending upper secondary school.<sup>44</sup> In other words, the program only covers poor families with children attending school up to and including lower secondary school.

The limitations of BOS, BSM and PKH result in vast numbers of poor students not receiving financial assistance and being more likely to drop out. Referring to the Ministry of National Development Planning Republic of Indonesia (2012), lower secondary school and upper secondary school education costs contribute almost one third to all poor households' spending and the highest priority of poor households spending is on food and housing, not on education. It seems that the existing grant for poor students is not enough to cover all

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<sup>44</sup> The Ministry of Social Affairs plans to expand the recipients of PKH to poor families who have children attending upper secondary school by 2016. See Chapter Seven for details.

educational expenses; therefore, without educational funding from other parties, the education of poor students is likely to be affected.

### ***Interview Results and Discussion***

The discussions conducted with principals and teachers as part of the fieldwork for this study reveal three issues with the government's BSM. Firstly, BSM funding is insufficient to fund all students needing financial support. It was found from the discussion that the distribution of those limited BSMs is not equal between public schools and private schools. According to a principal and a teacher in two private schools, BSM is being mainly distributed to public school students in priority over private school students because public schools are owned by the government. Another private school principal also admitted the unequal distribution. He argued that it is because numbers of students at public schools are a lot more than students at private schools. He was not bothered that his school received less BSM than public schools and he was even grateful to receive some BSM rather than nothing. As a result, the limited amount of financial assistance received by private schools left many students no choice but to leave school, bringing their education to an end. This finding is supported by the questionnaire results.

The quantitative survey shows that only two out of 16 dropout students from public schools left school because of financial problems, compared to 32 out of 84 respondents from private schools. It is important to know that public schools cannot accommodate all new students because of limitations in class room space and number of teachers. Therefore, public schools carry out a selection in order to choose their new students based on the students' academic records at the previous school level. Unfortunately, poor students who do not have an excellent academic record rarely get accepted into public schools. Some poor students who are not

accepted into public schools but still want to continue to upper secondary school must enrol in private schools. They can only enrol in low quality private schools because they cannot afford good quality private schools.

The second issue shows that some dropout students did not want to receive any financial assistance, because they would still be burdened by other costs not covered by the financial assistance, such as transportation and school supplies costs. Thirdly, even when students were nominated to receive financial assistance, some students still decided to leave school. One school principal stated that students refused to receive the financial assistance because their family still did not have enough money for daily living. Students try to reduce the family's burden by going to work and stop going to school.

This study tried to get a better understanding about the dropout decisions made by poor students and the interviews with poor dropout students revealed some interesting facts about their financial problems. It is important to understand the processes behind the decision to drop out. Based on the interviews, there are two reasons behind it: (1) Students' initiatives and (2) schools' intentional and unintentional actions that push poor students to drop out. These findings are in line with pullout and pushout theories.

The interviews show that some dropout students dropped out of school voluntarily. The initiative to drop out was driven by students with some family consideration, supporting pullout theory. Some dropouts said that their parents still asked them to continue their education although they had financial problems. According to the dropouts, their parents would do anything to get money for financing their study. However, they still dropped out of school. The first reason stated by respondents is they did not want to burden their parents. They know how much money they have spent on their schooling and how much it will cost them in future. Dropout 7 left school when she was at first year of vocational upper

secondary school. She explained that she did not want to continue her study because of the school expenses and she decided to find a job instead. She says:

*There are lot of (school's) expenses. [ ...] . I don't want to burden my parents anymore.*

The number of siblings in poor families also influences the decision to drop out. Dropout 7 only has one sibling, but other stories are told by Dropout 10 and Dropout 5. Both Dropout 10 and Dropout 5 took their siblings' future education into consideration in their decision to drop out. For example, Dropout 10 had eight siblings and when her father had difficulties paying school expenses, she left her school. She said:

*(I) really want to help (my family). (Initially,) I only worked to earn pocket money for myself. I could not earn enough to support my whole family as we have a big family and (all of my siblings) are still in school. Hence, there are a lot of expenses like food and pocket money. I think it was not right for me to go to school (if I can actually help them financially).*

It is undoubted that Javanese children desire to make their parents' lives easier and some of them think it is their responsibility to help their parents to earn money for the family. Dropout 10 believed that her other siblings should get a better education than her and she wanted to help her family financially by finding a job. In the same way, it is common in Javanese culture that older siblings show unconditional love (in Javanese: *Tresna*) to their younger siblings and sometimes the older child in a poor family gives up their education and decides to drop out of school in order to give a chance to younger siblings to get a better education. Similarly, Megawangi et al. (1995) states that older Javanese children are expected to look out for their younger siblings if the family has financial problems. For example, Dropout 5 had four younger siblings and she said:

*I still have younger siblings and they need more attention and also better education (than me).*

While some dropout students said that they dropped out voluntarily due to financial conditions, two dropout students told different stories, but they were still related to financial problems. The interviews revealed that there are other factors influencing the poor students' decisions to drop out. Those are actions by schools to push poor students out of school. For example, strict action by the school pushed Dropout 3 out of school. Dropout 3 stated that he dropped out because he had difficulty paying compulsory non-tuition fees and his teachers were frequently pushing him to pay them. He could not face it and decided to leave the school. Private schools' operational costs heavily rely on students' tuition and non-tuition fees and sometimes schools force out students who have not paid the fees. Another example was stated by Dropout 6. Initially, she said that she had a problem with a powerful religious leader (or *Ustād*) in the school and she was forced to leave. A parent of Dropout 6 said:

*I was forced to transfer (her) to another school, but I cannot afford the new school's fees.*

Changing school sometimes is not a solution to the dropout problem. Based on the interviews, Dropout 6 could not simply move to another school. The main reason was her family's weak financial situation. If she moved to a new school, she would be required to pay some amount of money for compulsory non-tuition fees, such as building fees and registration fees, which usually poor parents cannot afford. This finding confirms pushout theory.

To summarize, many quantitative studies have presented strong relationships between low financial condition and dropout, but only a few studies have identified the causes behind the decision by poor students to drop out. In other words, it is known that students drop out of school because of financial problems, but the reasons behind the decision are still unknown. This study examines the interviews in order to get more insights about the root causes of dropout because of financial problems and concludes that some poor students

dropped out of school voluntarily, or pulled-out, because they realize that their parents were not able to pay for their education due to low financial conditions. This study also found that poor students were forced by schools to drop out, or pushed-out.

#### **5.2.1.2. Pregnancy**

The expulsion of pregnant students occurs in many countries. According to Lloyd (2005), pregnant students in some countries dropped out of school due to schools not allowing pregnant students to stay in school. By contrast, for example in the US, under Title IX of the Education Amendments of 1972, it is prohibited to expel pregnant students (US Department of Education - Office for Civil Rights, 2013). However, research demonstrates that the number of dropouts due to pregnancy in the US is still high (e.g., Ehrlich & Vega-Matos, 2000; National Women's Law Center, 2007; and Shuger, 2012). Some experts believe that there is discrimination against pregnant students in the US that leads to dropout (Mangel, 2010; National Coalition for Women and Girls in Education, 2012).

This study shows that the pregnant students left school because they were not allowed to stay in school. It is shown that even though there are no state laws, regulations or policies in Indonesia explicitly allowing schools to expel pregnant students, such practice still exists. The findings suggest that most of the pregnant students would stay in school if schools permitted it.

### ***Background***

UNICEF (2008) defines teenage pregnancy as a young female between the ages of 13-19 becoming pregnant. According to a United Nations Population Fund (UNFPA) Report in 2013, about 19 per cent of teenagers in developing countries

become pregnant before age 18 (UNFPA, 2013). UNFPA concludes that one of the underlying causes of teen pregnancy is child marriage. Plan International and Coram International (2015) also conducted surveys in Indonesia and report that about 40 per cent of women respondents were married before they reached 18 years and 7.8 per cent of women respondents were married before age 15. The study also reveals that 45.5 per cent of respondents in Indonesia believe that there are advantages for girls to marry before the age of 18. In some countries, there are traditional and cultural practices where a girl is expected to marry soon after puberty, which leads to early marriage. Along with cultural practices, poverty is also often blamed for child marriage. UNICEF (2001) argues that early marriage for the poor is mostly about a strategy for economic survival. Marriage is considered to benefit poor children financially and socially, and also reduces the financial burdens on the family (UNICEF, 2005).

Early marriage almost certainly means early pregnancy. Girls' pregnancies have obvious, direct and permanent consequences, such as health problems, loss of education and lost income-earning potential. The 2013 UNFPA Report also highlights the consequences of teen pregnancies, as mentioned by UNFPA Executive Director Babatunde Osotimehin. He writes:

“When a girl becomes pregnant, her present and future change radically, and rarely for the better. Her education may end, her job prospects evaporate, and her vulnerabilities to poverty, exclusion and dependency multiply.” (UNFPA, 2013, p. ii)

In most parts of Indonesia, early marriage is generally linked to poverty and it commonly occurs in rural areas. Plan International and Coram International (2015) show that parents from poor families believe that marrying their daughter off at a young age is an acceptable practice because it can shift the burden of financial problems in the family. Surprisingly, the study also finds that girls from poor families accepted marriage because they also believe it is a better way to avoid

more burdens on their families. It is likely to be true that child marriage can reduce the family burden if poor girls marry more prosperous older men. A dowry from a wealthier son in law may help the family financially and other financial assistance from the son in law after marriage may create better conditions for a poor family. However, a study by Dahl (2010) shows that girls who marry early are 31 percentage points more likely to stay poor when getting older. So, it is likely that the marriage also creates new poor families. This is because not all poor girls marry wealthier men but they may marry poor men instead. This situation often occurs in Indonesia. Hence, it might be true that girls' early marriage can reduce their family's financial pressure because parents do not need to finance or feed their married children anymore, but the problem is now shifted to the new poor families. They are still poor and therefore, poverty persists.

A few parts of Indonesia still practice early marriage as a cultural tradition. For example, child marriage is widespread across West Sulawesi Province of Sulawesi Island. The province has the highest rate of girls married at 15 years or younger in Indonesia (Baker, 2015). It is common in this area that girls get married to follow the family tradition as mothers and grandmothers were also married at 14. Another example is found in some villages in the south part of Sulawesi Island. There is a tradition where a girl must accept the first marriage proposal, regardless of whether the girl loves the male or not, otherwise there is a belief in the society that the girl will never find a husband. Moreover, rejecting the first marriage proposal or postponing marriage should be avoided because it is a family shame (Widiadana, 2016). In Indonesia, the marriage law states that the official minimum age to get married is 16 years for females and 19 years for males. However, Plan International and Coram International (2015) suggest that there is no consequence for violating this law. This also helps explain why early marriage still exists.

There is also early marriage due to out of wedlock pregnancy. Pregnancy out of wedlock is taboo in Indonesia. One of the major issues in Indonesia is that

some upper secondary school students have premarital sex and some sexually-active female students become pregnant. In turn, female students get married because of the pregnancy. Although a study by Plan International and Coram International (2015) shows that marriage before age 18 is acceptable, the study also shows that the respondents of the research disapprove of pregnancy before marriage. In their opinion, any unmarried pregnant girl should be married immediately. The cultural belief is that sexual activity only occurs within exclusively committed relationships, i.e., marriage. Indonesian society asserts that immoral behaviour has occurred when pregnancy occurs outside marriage. As premarital sexual behaviour is traditionally regarded as intolerable in Indonesia, entering a marriage is the only solution for young pregnant girls to legally continue premarital pregnancy (Shaluhayah & Ford, 2014).

Previous studies have shown that pregnancy is a significant cause of dropout (see Hunter & May, 2002, and Grant & Hallman, 2006, for South Africa; Bridgeland et al., 2006 for the US; Cardoso & Verner, 2007, for Brazil; Dunne & Leach, 2005, for Botswana and Ghana; Makwinja-Morara, 2009, and Molosiwa & Moswela, 2012, for Botswana; Grant, 2012, for Malawi). Although there are many factors indicating the potential to drop out, in fact, many students who dropped out due to pregnancy do not come from groups typically thought of as at-risk.

Being pregnant while in school has big consequences for young female students. Whatever the background of the pregnancy, in some countries the punishment for them is the same and clear: They are not allowed to continue their education. Hunt (2008) suggests that there is an institutionally-led discriminatory practice of pushing pregnant students out of school.

It is essential to understand that the negative stigma from society, mainly from their peers and teachers, towards students who got pregnant before marriage, leads them to drop out of school (Ministry of Women Family and Community

Development Malaysia, 2010). There is a belief that the girl is responsible for preventing pregnancy and there is an assumption in the society that if she does become pregnant, she is at fault (UNFPA, 2013). In Indonesia, pregnant students only have one choice: Withdraw voluntarily from school. If they do not want to withdraw, schools are going to expel them. Schools demand every student to show good morals and commonly schools view pregnancy before marriage as indicating 'immoral behaviour' and instead of finding a 'win-win' solution that works for schools and pregnant students, schools prefer to solve the problem as soon as possible by discharging the students. The discrimination against female students arises when only pregnant students are being expelled by schools.<sup>45</sup> There are some cases where the males who get the female students pregnant are still in school. A school administrator states that if both the male student and pregnant female student are from the same school, both of them will be expelled. However, based on an interview with a school administrator, if the male student is at a different school, the female student's school cannot do anything about it.<sup>46</sup>

There is a debate in Indonesia whether pregnant students should leave or stay in school. Teen pregnancy is not a new issue, but the Indonesian government and schools still struggle with the challenges surrounding this situation. Pregnant students and parents have no voice in this, and they always become the losing party. Schools argue that pregnant students must leave because they violate school policy.

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<sup>45</sup> The other form of discrimination against female students occurs when they are victims of sexual abuse. For example, there was a case in Jakarta City where a female student was raped. Her school, instead of giving psychosocial support to her, encouraged her to move to another school because the school was afraid that her friends would bully her (Setiawati, 2013). In the worst case, a female student was kidnapped for a week and raped and her school, a private school near Jakarta City, immediately expelled her and told her that she has stained her school's image (Herald Sun, 2012). There are many similar cases reported by Indonesian Newspapers.

<sup>46</sup> In addition, there is a case stated by the mother of Dropout 11 where parents of a male student who got her daughter pregnant pleaded with her and her husband not to report the male student to his school and asked them to let the male student finish his study. She did not report the male student, considering that the male student would marry her daughter.

It is important to note that no religion approves sex before marriage (Fleming & Worden, 2004, p. 72). Sex before marriage is explicitly forbidden in the Qur'an and it is also forbidden in Christianity (including Catholicism), Hinduism, Buddhism and other religions. Although Indonesia is not an Islamic nation, Islam has a strong influence on Indonesian daily life as most Indonesians are Muslim. Islam forbids sex outside of marriage and since out of wedlock pregnancy is a result of sex before marriage, it violates Islamic law.

The other issue surrounding pregnant students is about re-entry to school. While in Indonesia, school policy requires expulsion from school at the time of pregnancy, some developing countries have school policies that allow pregnant students to continue or re-enter school.<sup>47</sup> Even though Indonesian schools strictly prohibit pregnant students from staying in school, it is unclear whether pregnant students can re-enter school after delivery. Re-entry to school in Indonesia is not a common event and it is not considered by pregnant students as an option. Pregnant students are usually encouraged to obtain certificates through the Package-C program without attending formal education.

Students' married status also becomes one of the prominent issues in Indonesian education. As described earlier, most of the female students entered marriage due to pregnancy and it is a compulsory action to legally continue a premarital pregnancy and more importantly, to reduce family shame. However, entering a marriage leads pregnant students to another problem. Besides the pregnancy, schools also have a strict regulation that a student cannot marry if he/she is registered as a student. If the school found students had married then they were assumed to have violated school regulations and they were prohibited from continuing their schooling. Therefore, although pregnant students entered

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<sup>47</sup> For example, countries such as Cameroon, Peru, Madagascar, Namibia, Chile and Burkina Faso let pregnant students stay in school during their pregnancy. Countries such as Kenya, Botswana, Malawi, South Africa and Zambia allow pregnant students to re-enter school under certain conditions (Lloyd, 2005).

marriage, they still are not allowed to stay in school. Again, there are no national-level laws, regulations or policies in Indonesia explicitly requiring the expulsion of married students. Moreover, Indonesia's Marriage Law No. 1/1974 has set the minimum age for marriage at 16 years for females. Therefore, 16 year olds or older students, either pregnant or not, who legally enter marriage, shall not be expelled from school. Marriage should not limit a student's access to education.

As discussed earlier, pregnant students are expelled from school due to violation of school policies. However, students who are married do not violate any religious or Indonesian laws (an exception is male students who, if they marry before the age of 19, are violating the state law). According to Islamic Sharia law, girls can marry once they reach puberty. However, schools argue that they have established strict regulations that married students cannot stay in school anymore and all students must comply with these regulations. There is a clear consequence if a student gets married. One of the arguments of expulsion is that married students can negatively influence other students (Simanjuntak, 2015). From the schools' perspective, since there are no state laws, regulations and policies that explicitly forbid expulsion of married students, it is right for them to establish such a rule. It seems that the discrimination against married students occurs because there are no state level regulations that prohibit expulsion of married students. If there were such regulations, the expulsion of married students might not occur.

### ***Interview Results and Discussion***

The interviews with pregnant students showed that they know the consequences of being pregnant while in school. Dropout 1 stopped coming to school when she found herself pregnant. She was in the first grade of vocational upper secondary school. Dropout 11 left school when she was in the last grade (Grade 12) and she decided to stop going to school. Dropout 15 also left school

when she was in the last grade and she told us that she stopped going to school about three months before the final year examination. In such a case, some schools still allow pregnant students to sit the examination in the name of humanity, as mentioned by one public school principal during my fieldwork, but it was not in case of Dropout 15.

Most of Indonesian society believes that an out of wedlock pregnancy is an intolerable 'sin' and schools play their part by expelling pregnant students from school. Based on the discussion with principals and teachers, the idea of expelling pregnant students from schools is mainly because schools see pregnancy before marriage as a bad behaviour against the school regulations and policies. One teacher said that it is not related to the violation of religious law. It is simply because the students have breached the school regulations. In addition, schools argue that they want to protect the pregnant students and also other female students psychologically. If schools allow pregnant students to stay in school, it is not good for their emotional development due to the negative stigma of out of wedlock pregnancy. It also would become a bad example to other students. It would send the wrong message that out of wedlock pregnancy is acceptable or tolerable. In other words, schools try to prevent other students from temptation. Schools want to send a clear message to other students what would happen if they got pregnant while in school. Schools hope that students would have second thoughts about the problem they would face if they got pregnant. However, 'hate the sin but not the sinner'. Out of wedlock pregnant students have got their social punishment from society. Therefore, any other punishment from schools is not needed.

It is also important to know whether pregnant students would like to stay in school even though they are pregnant. One respondent, Dropout 11, clearly stated that she did not want to go back to school even if her school permitted it. However,

Dropout 1 and Dropout 15 said that they would have stayed if their school had allowed them to stay. Dropout 1 said:

*I really hope the school allows me to continue (my study).*

However, other respondents tried to be realistic. Dropout 4 said she would have stayed in school but she believed that her school would never have given her any opportunity to stay. She said:

*Yes, (I would stay in school), but it is unusual (for me to continue my study) as I had dishonoured my school.*

One respondent, Dropout 11, clearly states that she does not want to go back to school. She said:

*(I) don't want (to go back to school). I am embarrassed.*

It seems that punishing pregnant students by sending them out of school is not a solution. It creates more problems. Pregnant students still need the upper secondary school certificate to get a chance to improve their future by getting a good job. It is almost impossible to get a job without it. How to keep pregnant students in school? Most of the responses from pregnant students indicate that they would like to stay in school even though they were pregnant.

In addition, this study also obtained a useful insight from the schools' perspective. A discussion with a private school principal in Klaten Regency revealed that the school had an experience of letting a pregnant student continue her study in the school. In the beginning of the discussion, the principal did not tell anything about his experience. He asked me why he should keep pregnant students in the school. After some time he became more open and told me that he once kept a pregnant student in school. The female student was allowed to deliver the baby and she returned to the school within two weeks after delivery. The principal said that the number of new students enrolled in the school gradually decreased after

the event of keeping the pregnant student in the school. Strict competition with other schools is one reason but he believes that keeping the pregnant student in school was the prominent cause. He also believed that parents did not want to send their children to his school because of the event. The story implies that keeping pregnant students might have big consequences for schools. In this case, the school faced the dilemma of whether or not to keep a pregnant student. When the decision was made in the name of humanity, society, it seems, did not approve of the decision.

### **5.2.2. Processes of Dropping Out**

In this section, the processes of dropping out are examined. Firstly, qualitative analysis is used to determine whether frequent absenteeism is one of the warning signs of students in the process of dropping out of school. Secondly, this study explains who made the final decision to drop out.

#### ***Frequent Absenteeism***

Frequent absenteeism is often regarded as one of the obvious signs that a student is at risk of school failure and dropout (Heppen & Therriault, 2008; Hoff et al., 2015). In this study, some dropouts stated that they started to frequently skip school before they finally dropped out, supporting the above claim. For example, Dropout 9 admitted that he actually never wanted to go to upper secondary school. He said that before he dropped out of school, he rarely went to school. Dropout 14 also told a similar story. She said:

*I had been skipping school for a few days. My teacher came to my house and kindly asked me to go to school, so I did the next day (after she came). At the end, I skipped it again (the following days).*

Principals and teachers were asked the question during the fieldwork whether frequent absenteeism was one of the warning signs of dropout. Principals and teachers confirmed it. They understand that frequent absenteeism is a bad sign and they claimed that they immediately tracked the students and asked them for an explanation why they had skipped class.

### ***Final Decision to Drop Out***

Who made the final decision to drop out? Even though there are many reasons for dropping out, there is a pattern where dropout students always make the final decision, not their parents. Some of them say that they never consulted with their parents before they dropped out. They just told their parents that they did not want to go to school anymore. Some respondents said:

Dropout 3:

*I did not consult (with my parents). I just told (them) I hate being at that school.*

Dropout 8:

*My parents did not (involve in the decision). I had enough as I kept on fainting at school (note: She had a severe health problem).*

Dropout 14:

*I told my parents that I want to quit (school).*

Some dropouts consulted with parents before dropping out and they were asked by parents to stay in school. However, they still decided to drop out. Some respondents said:

Dropout 2:

*Actually (my parents) did not allow me (to quit), but I had no choice. I cannot afford it (the fees) anymore.*

Dropout 5:

*My parents did not allow me (to quit); my parents encouraged me to continue my school.*

Dropout 16:

*(My parents) asked (me) to stay in school. (They said) do not worry about family's financial (condition) as it is dad's responsibility.*

Some dropouts consulted with parents before dropping out and dropouts claimed that parents let them make their own decision. So, they dropped out of school. Some respondents said:

Dropout 7:

*(I have) consulted (this with my parents) but they told me it is up to me whether to continue or not.*

Dropout 13:

*(My parents) tried to prevent (me from dropping out). Since there were some circumstances and I also insisted to quit (school, at the end they said) it is up to me.*

In a comparison by gender, it can be seen from the interviews that male dropouts never consulted with parents about the decision to drop out, while only one female dropout said she never consulted with parents before she dropped out.

Based on the interviews, the decision to drop out seems to have been made by students. They claimed that their parents were not in a position to influence the decision to drop out. Some dropouts consulted with their parents before deciding to drop out and some did not. Some dropouts decided to drop out in order to reduce parents' burden and some dropouts wanted to help parents by earning money for the family.

Furthermore, another reason stated by one respondent is that he actually never wanted to go to upper secondary school after he graduated from lower secondary school. He said:

Dropout 9:

*After I finished lower secondary school, I never wanted to continue to upper secondary school and just wanted to work, but my parents told me to continue my study.*

As a Javanese child, he showed respect to his parents by trying to continue his study at upper secondary school when his parents asked him. However, he only stayed in school for four months and decided to drop out.

### 5.2.3. Return to School and Reaction of Schools

This section examines whether there is any possibility for dropouts to return to school. It is found that some students want to return to school but some obstacles prevented them from doing so. Dropouts were also asked about their schools' reaction when they decided to leave school permanently.

#### ***Return to School***

Some dropouts say that they did not want to go back to school as they earn money now and it is difficult for them to leave their current jobs. They worry that if they returned to school, they would not earn money for the family. However, the interviews suggest that most dropouts are willing to go back to school but there are some obstacles that discourage them to do so, such as:

- a. They were embarrassed because they were too old to go to school.

Dropout 2:

*Actually, I still want to back (to school) but I thought it was embarrassing (to come back to school).*

Dropout 3:

*It has been three years (since I quit). (It) did not feel right (to come back to school now).*

Dropout 4:

*Yes, (I still want to go to school) but I felt embarrassed (to come back to school).*

- b. She was required to start upper secondary school from the first grade but she did not want to do this.

Dropout 8:

*Actually, I want to (go to school) but (I thought) it is embarrassing to start from year 10 again.*

- c. Parents did not have money.

Dropout 9:

*I have asked (my parents) before, but they cannot afford it anymore.*

Lastly, schools' strict rules for pregnant and married students have obstructed the chance for dropout students to return to school. The evidence suggests that it is almost impossible for dropout students to re-enter regular school.

There is a return-to-school program as a solution provided for dropouts by government. Usually dropout students are encouraged to obtain a certificate equivalent to formal education through the Package-C program. As mentioned in Chapter Two, the Package-C program, along with Package-A and Package-B programs, are a part of the EE system. The EE system is a non-formal education system in Indonesia. However, this study suggests that the EE system is not suitable for dropouts. Firstly, a study by International Labour Organization (2011) suggests that EE graduates have difficulty in finding decent work in comparison to their counterparts who hold formal education certificates. The problem is that graduates from non-formal education programs are not recognized as being equivalent to graduates from formal education by the companies hiring. This situation means EE graduates, like dropout students, tend not to get decent jobs. Secondly, it was found also that the EE system is not cost free for students. EE candidates need to pay tuition fees and non-tuition fees for joining EE programs. It is believed that it is also difficult for poor students to join the EE system. In conclusion, the EE system is not a best solution to reduce dropout in Indonesia.

### ***Reaction of Schools***

In case of dropout due to financial problems, some schools encourage dropouts to return to school. For example, Dropout 5 said that her school did not allow her to quit. She said:

*(The school) did not allow me to quit. (The school) is very kind to me and sympathized (my condition).*

In contrast, other respondents claimed that their schools did not try anything, especially for pregnant students and students dropping out because of problems with teachers. Dropout 3, who left school only a month after his first day of upper secondary school, said:

*(They) did not try (to stop me) and did not even keep in contact (with me).*

There are always cases where students are in a weak position if they have a problem with a teacher. Even though some schools have tried to encourage students to return to school, mainly they were not successful. The interviews indicate that most schools had not done their best to encourage students to return to school.

Different stories were stated from the schools' side. All schools I visited claimed that they always tracked students who were not coming to school, regardless of the problem. They disagreed with students' claims that the school did not care. For example, two teachers from a private school in Magelang Regency, who were responsible for handling student counselling, shared their stories. Firstly, they talked about their experiences dealing with the pregnant students. The school's regulation did not allow pregnant students to stay but they claimed that they were not just letting the pregnant students go. They introduced them to a school that accepted pregnant students and accompanied them to the new school and made sure they were enrolled in the new school. Secondly, they talked about their experience dealing with a returned student. They said that they once had successfully persuaded a dropout student to return to the school. However, the student faced difficulty in the learning process because he had left the school for several months and he could not catch up with the material after he left. Finally, he decided to leave the school again.

Based on the interviews, both from students and schools, it seems that school practices to keep or bring back dropout students vary from one school to another. There are no uniform actions facing dropout students. The evidence suggests that schools' efforts to keep or bring back students to school are facing some problems. Thus, it is suggested that schools must aggressively encourage students to go back to school as soon as they leave. However, there is doubt

whether schools can do better than the present situation. It is difficult to encourage teachers to do something outside of their job tasks. Therefore, dropout alleviation programs that incorporate additional tasks for teachers to stop students from dropping out will be discussed in Chapter Seven.

#### **5.2.4. Feelings of Dropouts after Dropping Out of School**

Cultural aspects strongly affect individuals' behaviours. By using concepts from Javanese culture, this study tries to get a better understanding about the decision to drop out. Firstly, it is important to understand dropouts' feelings after dropping out of school. From the interviews, it is known that all dropouts express different feelings after they have dropped out of school. In general, they were upset and full of regret about the decision to drop out. Some respondents said:

Dropout 4:

*I regret that I cannot fulfil my parents' wish.*

Dropout 5:

*I felt disappointed and regret (that I cannot continue my study) but it is what it is.*

Dropout 6:

*I felt sad but what else can I do? It is embarrassing to go back to my old school.*

Dropout 12:

*I felt sad as I was in my final year.*

This is in line with Bridgeland et al. (2006). Their report shows dropouts regret their decision to drop out later on. However, this study is in contrast with Taş et al. (2013). They found that some dropouts had no regret about dropping out. The feeling of regret after dropping out of school can be interpreted as supporting the relevance of behavioural economics for this study. As discussed in Section 2.2.2, students did not consider the long term consequences of being dropouts before they dropped out of school. The dropouts' feeling of regret is the outcome of not considering well the benefit of education for future life.

Is the behaviour of dropouts rational or not? The cost and benefits of education are not limited to monetary costs and benefits. The decision to drop out is rational for students if they have calculated all costs and benefits and the expected costs (including non-monetary costs) of continuing school are higher than the expected benefits (including non-monetary benefits). However, as mentioned earlier in Chapter Two, Lavecchia et al. (2016, p. 14) argue that students make decisions that do not always maximize lifetime well-being. They calculate the costs based on the noticeable costs at present, but they cannot calculate the future benefits as they are more abstract. Therefore, I conclude that the behaviour of dropouts is unlikely to be rational.

Next, it is also important to explore the association between behavioural economics and the Javanese cultural view. As discussed in Chapter Two, some Javanese concepts of life may explain that the decision is consistent with behavioural economics. As mentioned in Chapter Two, one of the characteristics of Javanese culture called *nrimo* (acceptance) resembles the concept of external locus of control. The statements by Dropout 5 and Dropout 6 above indicate implicitly the concept of *pasrah* (surrender) and *nrimo*.<sup>48</sup> Javanese parents believe that hardships and misfortunes continuously exist in life. Therefore, they teach their children a pessimistic view about life and they also teach children to be in a state of forever feeling concerned about the hardships of life (Koentjaraningrat, 1985). Javanese children are demanded to prepare themselves to accept hardships and misfortunes of fate willingly. So, in this case respondents accept the event of dropping out as their fate (and so do their parents). In other words, the event of

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<sup>48</sup> Von Vacano and Schwarz (2014, p. 254) explain in detail the difference between *pasrah* (surrender) and *nrimo* (acceptance) but suggest that the concepts of *pasrah* and *nrimo* are closely interrelated and almost interchangeable. According to them, *pasrah* is related to transcendent (in case of the Javanese, surrender to God), so is translated to surrender, whereas *nrimo* is detailed by an object, referring to the acceptance of a situation as someone's fate.

dropping out is their external locus of control. Moreover, Dropout 7 explicitly showed her *pasrah* and *nrimo* behaviours in her statement:

Dropout 7:  
*Sometimes (I) regret it. Neighbours talked (bad things) about me and they told me that nowadays you must at least hold upper secondary school qualification to get a job. ... . I told them that whether I will get a job or not is up to God. I just surrender (myself to God).*

It is important to note that in Central Java Province, almost 97% of the population are Muslim (Indonesian Central Statistics Agency, 2010) and even though Dropout 7 is a Muslim, the statement above does not reflect the religion's view. Barnes (2006) suggests that Javanese people have a very wide variety of ways to express both their personal version of Islam and the depth of their individual commitment to the religion. According to Boogert (2015), Javanese Islam is considered to be different from 'pure', 'pious' or 'legalistic' Islam. Moreover, Boogert (2015, p. 11) suggests that "a Javanese Muslim is someone who besides being a 'pious Muslim' also adheres to Javanese tradition." Koentjaraningrat (1985, p. 317) also depicts the same condition when he states: "Javanese Muslims also believe in a great many other religious concepts, supernatural beings, and powers, and they also perform many religious ceremonies, which have little connection with the official religious doctrines of Islam." This type of Javanese are called *abangan* (commoners). It can be argued that Dropout 7's statement is mostly reflecting her attitudes of *pasrah* and *nrimo* that are strongly influenced by Javanese culture, not her religion.

In Javanese society, as stated by Schwarz (2014), *pasrah* and *nrimo* are an expression of a belief that someone will be saved under the protection of God as long as he/she believes in God. In addition, *pasrah* and *nrimo* also bring out a sincere (*ikhlas*) attitude (Schwarz, 2014). Referring to Schwarz (2014, p. 237), *ikhlas* is faithfully accepting something adverse. Therefore, it can be said that although the respondents express their remorse for being a dropout, their attitude

of *pasrah* and *nrimo* bring out a thought that it is their fate to be a dropout and that it is not to be fought against. At this stage, they are not showing rational behaviour. They think that if God wants them to be dropouts, then that is to become their fate.

### **5.3. Experiences and Perceptions of Dropouts' Parents**

In a study of rural China, Liu (2004) classifies parents into three types based on their responses to their child dropping out of school. They are: (1) A parent who supports the dropout; (2) a parent who neither supports nor opposes the dropout; and (3) a parent who opposes the dropout. Liu states that some parents in China demand or persuade their child to drop out. The main reason is because parents believe that "the child is not made for education" (Liu, 2004, p. 12). However, in this study there is a pattern in all interviews with parents that they believe it is important for their children to get a better education than themselves. Koentjaraningrat (1985) writes that most of the rural Javanese understand the importance of education and believe that education is necessary for today's life. After 30 years, the finding is still consistent with the description in Koentjaraningrat's book. Some parents share their thoughts:

Parent of dropout 3:

*I don't like the fact (that he dropped out). (I believe) every parent wants their kids have a good education.*

Parent of dropout 5:

*I'd hoped that she could have finished her study.*

Parent of dropout 9:

*I was upset (that he dropped out). As a parent, I really tried to support him in his study as I do not want him to end up like me, (not having a proper education).*

Parent of dropout 10:

*We would never say: "Get a job. There is no point going to school." As parents, our dream is to see our children finishing their study.*

Parent of dropout 11:

*I tried to stop her from being expelled from school (despite the fact that she was pregnant).*

This study also shows that there are three types of parental responses to their child's decision to drop out. The first type is the parent who supports the dropout decision due to a specific circumstance. Dropout 12, who had problems with her teachers, claimed that her parents supported her decision to drop out. Liu's study shows that parents support their child to drop out because they think that the education is not for their child. In contrast, parents of Dropout 12 supported their daughter to drop out because they felt pity for the situation faced by their daughter. They saw that their daughter had been bullied by her teachers and they believed that dropout was the "the best way" for her so she would not get hurt anymore in school. The second type of parent is the parent who lets her/his children make their own decision. The third type of parent is the parent who persuades or encourages her/his child to stay in school.

This study concludes that parents have a good perception of education even if they only have a low level of education. The parent of Dropout 9 gives a clear perspective on how she values education. She and her husband only hold primary school diplomas but she said that she does not want her children ending up with no proper education as she has. Furthermore, it is interesting to note the following statement:

Parent of Dropout 7:

*As a parent, no matter how hard the circumstances are, I will keep on fighting (for her). If by any chance funding her study becomes an issue, I am willing to sell all that I have if needed. I believe that parents have the obligation to support their children's education no matter what. Besides, nowadays, even if you hold an upper secondary qualification getting a job is a challenge. I really cannot see any future with her only having a lower secondary qualification.*

It is clear that parents will do almost anything to support their children. Since upper secondary education in Indonesia is expensive and not free, poor parents are struggling to finance their children's education. However, their commitment is undoubted. They are ready to sacrifice their properties or borrow

money to finance their children's schooling. Based on the above findings, dropping out of school is actually a last resort for many families. This finding contradicts Liu's findings for China.

Moreover, based on the interviews, this study concludes that , except in the case of pregnancy, parents do not have the power to force their children to stay in school when their children made the decision to drop out even though they think education is important. They claim that they encouraged their child to stay in school, but since their child has made the decision, they just regret it and were sad. For example, some parents said:

Parent of Dropout 5:

*As parents, I feel sad. She cares for her little siblings a lot and she ended up sacrificing her study for their sake.*

Parent of Dropout 7:

*I told her (since it is your decision to quit school), do not blame us if something happens (to you) as we have tried to keep you in school.*

I also asked whether they wanted their children to return to school after they had dropped out. All of them say that they wanted their child back at school. However, some parents think it depends on their children whether they go back to school or not. They do not want to make any decision. For example, some parents stated:

Parent of Dropout 2:

*I really want (him back in school). However, it depends on him.*

Parent of Dropout 3:

*As parents, we want to see him back in school, but it is up to him.*

Two issues arise if parents really put a high value on education: Firstly, why can't parents force their children to stay in school? And secondly, why can't parents force their children to go back to school after they have dropped out of school? There are some cultural perspectives that cover these two issues. Firstly, there is a widely known term called tiger moms: Mothers, especially Asian moms, who are overly regulating their children in order to get the highest level of academic

achievement. Liu (2004) shows that parents in China got angry when they knew the child quit school and sometimes they use physical punishment in order to force their child to go back to school. However, Javanese parents are different. Referring to Zevalkink and Riksen-Walraven (2001), most Indonesian parents hardly ever use any physical punishment, even light punishment. They are known as generally rather permissive. If they need to show discipline towards their children, they prefer to do something else such as shaming or embarrassing the child in front of other people (Zevalkink & Riksen-Walraven, 2001, p. 167).

According to Albert, Trommsdorff, Mayer, and Schwarz (2005), an important duty of Javanese parents is to prepare their children to become "human beings" (*dadi wong*). Javanese parents are required to show *ngemong* (care) in order to educate their children. *Ngemong* refers to the ideal Javanese behaviour when they look after their children (Subandi, 2011). According to Subandi (2011), there are three characteristics of *ngemong*: (1) It is showing a tolerant and uncritical attitude; (2) it is a non-demanding attitude; and (3) it is the practice of fulfilling their children' needs. The forms of *ngemong* are *asih* (loving), *asah* (guiding) and *asuh* (caring). Based on these three conditions, Javanese parents show their unconditional love to their children and they believe that children can rely on them. Javanese children are valued in the society and they must be maintained and cared for (Hakim et al., 2012). As an example, the parent of Dropout 7 said that it was impossible to be angry with his own child, although his child dropped out of school. Therefore, based on the first and second characteristics of *ngemong*, that is likely the reason why parents do not want to force their children to stay in school and cannot force their children to go back to school after they have dropped out.

Secondly, as Javanese, parents apply the concept of *rukun* (lives in social harmony). *Rukun* is the way of always interacting peacefully with each other (Großmann, 2006). *Rukun* is the basic guidance for Javanese for social interaction

within the family and the community (Megawangi, et al., 1995). Javanese people try to avoid any open conflict and they want to apply this in all relationships. Thus, in this case, parents do not want to have open conflict with their children by forcing them to go back to school.

Thirdly, parents also apply the concept of *pasrah* and *nrimo*. They believe that it is their child's fate to be a dropout. They might think that it is unnecessary for them to force their child to go back to school. Javanese parents believe that it is also their fault that their children dropped out of school because they cannot show their ability to educate their children to become "human beings", so they only show *pasrah* and *nrimo* attitudes and they do not want to force their children to stay in school or force their children to go back to school after they have dropped out.

Fourthly, there is a tension between *asih*, *asah*, *asuh* and the concept of *pasrah* and *nrimo*. Unquestionably, Javanese parents have the responsibility to fulfill the needs of the child (*asuh*), guide and educate the child (*asah*) with full affection (*asih*) and as mentioned above, they felt guilty if they cannot show their *asah*, *asih* and *asuh* ability. That is why the Parent of Dropout 7 wished to sell his properties or borrow money to finance his child's schooling. But he also showed *nrimo* attitude when he said: "how can we to be angry with her?" and "She is not a child anymore; I cannot force her to go (to school)." The conflict arises when parents want to show *asah*, *asih* and *asuh* but they realise that external locus of control exists, in forms of *pasrah* and *nrimo*. It seems that *pasrah* and *nrimo* are more powerfully affecting Javanese people than *asah*, *asih* and *asuh*.

It is also likely that parents' low education level influences their role in the family. Previous quantitative studies have shown that there is a strong relationship between parents' education level and the decision to drop out. It can be seen from Table 4.13 that most dropouts' parents only hold a primary school diploma. Only one parent holds a university certificate and her daughter dropped out of school

due to pregnancy. Parents with a low education level seem to understand the importance of education. Since they never got any benefit from education, they try to encourage their children to stay in school. But, because there is no role model in the family, children may think it is acceptable for them not to get higher education because their parents only have a low education level and they still survive the hardships of life. In the following quantitative analysis chapter, I will test whether there is a relationship between parents' education level and the decision whether or not to drop out.

Lastly, from a regulation perspective, there are no strict regulations from government that force parents to keep their children in school. As mentioned previously in Chapter One, the Ministry of Education and Culture has launched a 12-year compulsory education program named Universal Secondary Education; however, this new policy does not mention anything about punishments or fines for parents who fail to keep their children in upper secondary school. Parents do not have any obligation to keep their children in school or send them back.

#### **5.4. Summary and Conclusion**

There are some significant findings from the qualitative analysis. Firstly, it was found that there are two types of decisions to drop out by poor students consistent with pushout and pullout theories: (1) Poor students dropped out of school voluntarily because they realized their parents were not able to pay for their education, or pulled-out; and (2) poor students were forced to drop out by their schools, or pushed-out. Secondly, the expulsion of pregnant students still occurs because schools strictly apply their policies. It was also found that most pregnant students would stay in school if schools allowed them to stay. Thirdly, it was shown that the final decision to drop out was made by the students, not their parents. Fourthly, this study also shows that parents have a good perception of education

and always support their children to get a higher education regardless of their financial conditions. This is in line with Coleman (1998a, p. s110). He argues that there are some cases where parents only have low human capital, as indicated by years of schooling, but the availability of social capital in the family is really high. Most respondents are parents with low education but they have a positive view about education. However, parents' support is not enough since the main problem is that parents cannot force their child to stay in school or go back to school.

This qualitative study finds some important variables that influence the decision to drop out, for example: Financial problems, problems with teachers and family size. These variables will be included in the quantitative analysis in order to test whether qualitative and quantitative results are consistent. In addition, the qualitative analysis also provides useful information that cannot be captured in the quantitative analysis. For example, it provides evidence that frequent absenteeism is a strong signal for dropout. As explained earlier, pregnancy also cannot be captured in the quantitative analysis because of the difficulty of establishing an independent variable for pregnancy. Qualitative analysis gives some insight from pregnant students to understand their decision to drop out.

Based on the evidence from the qualitative analysis, it seems that dropout prevention programs, not curative programs, are likely to be the best strategy to reduce dropout. There are several reasons for this. Firstly, there were a lot of obstacles that prevent dropouts from returning to school. Even though dropout students want to return to school, in reality it is almost difficult for them to re-enter regular school. Secondly, the government's EE program for dropouts has some weaknesses. Thirdly, schools' efforts to keep or bring back dropout students to schools are not sufficient. The above results suggest that curative programs to bring dropout students back to school will not significantly reduce dropout. However, curative programs for pregnant students are still likely to be needed

because there is evidence that pregnant students would like to stay in school, if schools permitted them to do so.

Based on the above, the concept of *pasrah* and *nrimo* are able to clarify why students act differently from the traditional human capital investment model, as suggested by behavioural economics. This finding suggests that the best solution to stop dropout is by prevention. The behavioural economics approach improves our understanding about the decision to drop out, especially for Javanese children. The evidence shows that *pasrah* and *nrimo* bring out an attitude that being a dropout is someone's fate and one cannot fight it. Since the *pasrah* and *nrimo* attitudes are part of Javanese culture, it is difficult to change them. Even though *pasrah* and *nrimo* give a positive energy to respondents to recover from the unpleasant dropout event in their life, they do not fight in order to go back to school. Thus, it is better to encourage the students to stay in school than bring them back to school. The policies and strategies dealing with the above problems will be discussed in Chapter Seven.

Moreover, it has been shown that parents have little power to force their children to stay in school or force them to go back to school when their children have decided to drop out. Schools also have limitations in encouraging students to return to school. Therefore, students should be the main focus when developing dropout prevention programs. The important key to preventing students from dropping out of school is how to encourage students to stay in school. It is very important to continuously encourage and motivate students to do their best and stay in school by showing students that education will produce benefits for them in the future. Last, this study is not claiming representativeness. Nevertheless, the qualitative analysis still gives remarkable insight into the complexities of dropout in Javanese society.

## 6. QUANTITATIVE ANALYSIS: THE DETERMINANTS OF STUDENT DROPOUT

### 6.1. Introduction

This chapter contains four main parts. The first part of the quantitative analysis is to examine the effects of potential determinants on the likelihood of an individual to complete or drop out of upper secondary school in Central Java Province using the main data sample (439 observations).<sup>49</sup> The regression results in Section 6.2 show the importance of gender. Therefore, in the second part, interaction effects are added. They are the interactions between *female* and *sibling rank*, *female* and *rural home location*, *female* and *non-working mother* and also between *rural home location* and *urban school location* variables.<sup>50</sup>

In the third and fourth parts, the data are divided into subsamples based on gender and the analysis is conducted separately for each gender, female and male. The separate female and male regressions are discussed after the main data sample regressions to check robustness of the models and for sensitivity analysis. Separate female and male regressions are explored only for the further interpretation of the main reasons of dropping out of school. In addition, it is important to note that there are limited numbers of observations for female and male regressions which create under-powered regressions due to their smaller sample size. The small sample size yields biased odds ratios as shown in Section 6.4.1.3 and 6.4.2.3 where some variables have large odds ratios. Section 6.4 also reports the statistical comparisons of the relative sizes of the coefficients for males and females regressions. By using Chow test, it shows that in some regression models one or more of the coefficients significantly differ across female and male groups.

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<sup>49</sup> The main data sample uses answers from 439 ex-students out of 514 ex-students and 878 parents/guardians out of 953 parents/guardians. As mentioned earlier in Chapter Four, this study only uses respondents' answers where both parents filled in the questionnaires.

<sup>50</sup> Section 2.2.5 explains the theoretical backgrounds for the choice of variables included in the interaction terms and for empirical basis see footnote 23, page 117.

The goal is to examine the impacts of individual, family and school characteristics, as well as Indonesian government policy and macroeconomic conditions variables, on the probability of an individual to complete or drop out of upper secondary school education. Some findings from the qualitative analysis are also tested in the quantitative analysis to check whether the results are consistent. Financial problems, problems with teachers, family size and sibling rank are cited in the qualitative analysis as the reasons for dropping out of school.

Robustness analysis is also reported in this chapter. The results show that OLS is not suitable for binary choice regressions because some predicted probabilities produced by OLS are outside the 0 – 1 interval. The results indicate that logit and probit regressions produce nearly the same results for average marginal effects. However, logit regression is preferable because of its ability to produce odds ratios. There are tests for the overall significance of the models with the LR test, Wald test and Score test. This study also assesses the fit of the estimated logit regressions with McFadden's  $R^2$ , McFadden's Adjusted  $R^2$ , Deviance GOF test, classification table for the percentage of correctly classified predicted values of logit regressions and area under ROC Curve. Finally, the study tests whether there is a specification error in the logit regressions by using the Link test. With the assumption that the logit function is a linear combination of the predictors, there is a specification error if the relationship between the logit of the outcome variable and the independent variables is not linear (Institute for Digital Research and Education, n.d.). As mentioned in section 4.2.4.6, because of the limitations of the Pearson GOF and the HL GOF, they will not be referred to in the discussion in this chapter.

As mentioned earlier in Chapter Four, I estimate six models. The preferred model is Model Six that includes all types of variables. Previous studies on student dropout have examined the different types of variables that contribute to dropout and this study has tried to incorporate all available explanatory variables that have been used in previous studies to get more information about dropout events in Central Java.

Model Six covers a bigger set of explanatory variables than previous studies. In total, there are 39 explanatory variables and four interaction terms. This study also checks all different models but focuses more on Model Six as this is likely to have the smallest omitted variable bias. In addition, Model Six is preferred because it has the smallest AIC values. Moreover, it can be seen that when the AIC is multiplied by the number of observations (mentioned in tables as AIC\*n values), Model Six still has the smallest values amongst the other models. This strengthens the conclusion that Model Six is the preferred model.

## **6.2. Logit Regressions Using the Main Data Sample**

In this first part, this study looks at the impacts of potential factors on the probability of an individual to complete or drop out of upper secondary school in Central Java Province using the full data sample. In general, overall significance tests of the models and goodness-of-fit tests indicate that regression models using the main data sample fit the observed data well.

### **6.2.1. Results and Discussion for Logit Regressions Using the Main Data Sample**

Before discussing the main results, it is required to check the overall significance of the models. As shown in Table 6.1, LR tests indicate that all models are statistically significant at the 1% level, which means that at least one or more coefficients of independent variables are different from zero. Wald tests and Score tests also show that the models are statistically significant at the 1% level, supporting the LR tests.

GOF tests are assessed to check whether the models fit the data or not. For every model, Table 6.1 provides McFadden's  $R^2$ s. McFadden's  $R^2$ s vary between 0.18 in

Model One and 0.40 in Model Six. McFadden's Adjusted  $R^2$  is 0.12 in Model One and 0.21 in Model Six. The increase in McFadden's Adjusted  $R^2$  from Model One to Model Six indicates that the additional independent variables in Model Six are effective in improving prediction.

Deviance GOF tests provide large  $p$ -values and are not statistically significant (see Table 6.1). Deviance GOF tests indicate that the models fit the data well. The overall rates of correct classification range from 81.1% in Model One to 85.5% in Model Six. The area under the ROC Curve has a minimum value of 0.78 in Model One and a maximum value of 0.90 in Model Six. Hosmer et al. (2013, p. 177) suggest that the model is considered to have an outstanding discrimination if  $ROC \geq 0.90$ . All measures of GOF indicate that the models fit the data well.

Lastly, the Link test was conducted and the results showed that the linear predicted values ( $\hat{\mu}$ ) in all models are statistically significant and the linear predicted values squared ( $\hat{\mu}^2$ ) are not statistically significant in five models, including the preferred Model Six. Only Model Two has significant  $\hat{\mu}^2$ . Therefore, it is concluded that five out of six models have no specification error problem.

Table 6.1 presents the estimated coefficients from the six logit models. This study does not attempt to interpret logit coefficients because their interpretation is not as straightforward as in the case of OLS regressions coefficients. The interpretation of the coefficients is discussed in the next section by computing the average marginal effects and the odds ratios. It is important to understand that average marginal effects and odds ratios are summarising the results in different ways. This part only discusses the positive or negative signs of the coefficients of logit regressions. It is essential to note that this section does not discuss odds ratios, but log odds of dropping out.

The discussion starts with individual characteristics. Not surprisingly, with the variable being statistically significant in model Six, it can be inferred that being a female student results in higher log odds of dropping out than being a male student. It

can be seen that the variable is not statistically significant in model One. This finding supports previous studies by Ajaja (2012) and Shahidul (2012) at high school level; and by Lloyd et al. (2000) and Regina and Stella (2010) at primary school level. Pregnant students contribute to the high number of dropouts. In the questionnaire results, pregnancy is the main reason for female students to drop out. As mentioned in Chapter Four, if students are pregnant, they only have one choice: To withdraw voluntarily from school. If they do not want to withdraw, schools are going to expel them.

Higher age at first entry to upper secondary school also significantly contributes to greater log odds of dropping out in most of the models. The variable is statistically significant in model One but not in Model Six. This result is consistent with previous studies (for example Roebuck et al., 2004; South et al., 2007; Terry, 2008; Mo et al., 2013 and Bergeron et al., 2011). In Indonesia, the proportion of students who are older than their classmates in upper secondary school is high. There is a situation where older students are taught in the same class with younger students. Older students sometimes have difficulties engaging with younger students in the classroom.

**Table 6.1. Coefficients of the Main Data Sample Logit Regressions**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	0.16 (0.28)	0.90** (0.36)	0.26 (0.30)	0.40 (0.30)	0.21 (0.28)	1.00** (0.40)
<u>Age at first entry</u>	0.41*** (0.15)	0.22 (0.21)	0.44*** (0.17)	0.47*** (0.17)	0.36** (0.16)	0.34 (0.26)
<u>Working experiences (Yes = 1, No = 0)</u>	0.19 (0.29)	0.17 (0.32)	0.12 (0.33)	0.05 (0.32)	0.21 (0.30)	0.08 (0.38)
<u>Perception of education (Good = 1, Bad = 0)</u>	-2.36*** (0.72)	-2.10*** (0.78)	-2.32*** (0.82)	-2.33*** (0.68)	-2.56*** (0.75)	-2.17** (0.89)
Home location (Rural = 1, Urban = 0)		0.46 (0.32)				0.68* (0.40)
Repeat a grade (Ever repeated a grade = 1, No = 0)		1.77*** (0.68)				0.72 (0.72)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.72** (0.30)				1.17*** (0.39)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.12 (0.62)				0.33 (0.74)
Number of changing school since primary school		0.41** (0.20)				0.55** (0.26)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.61** (0.24)				0.60** (0.24)
Health (poor health = 0, up to excellent health = 4)		-0.03 (0.21)				-0.18 (0.25)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.64* (0.39)	0.48 (0.39)	0.76* (0.40)	0.74* (0.40)	0.56 (0.39)	0.95** (0.41)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-2.01*** (0.77)	-2.10*** (0.79)	-1.92** (0.76)	-2.08*** (0.76)	-1.99** (0.78)	-2.34** (0.98)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.02 (0.06)	0.002 (0.06)	0.06 (0.07)	0.03 (0.06)	-0.01 (0.06)	0.06 (0.07)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.12** (0.06)	-0.15** (0.06)	-0.10 (0.06)	-0.14** (0.06)	-0.12** (0.06)	-0.16** (0.08)
<u>Family size</u>	0.22*** (0.08)	0.22*** (0.08)	0.25** (0.11)	0.23** (0.09)	0.19** (0.09)	0.23* (0.13)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			-0.26* (0.14)			-0.21 (0.16)
Nonworking mother (Not working = 1, Working = 0)			-0.27 (0.31)			-0.48 (0.38)
Parents are divorced (Yes = 1, No = 0)			0.29 (1.41)			0.10 (0.98)
Number of siblings dropping out			0.89*** (0.19)			1.05*** (0.24)
Helping family with household chores (Yes = 1, No = 0)			-0.23 (0.83)			0.28 (0.96)
Helping family with daily business/work (Yes = 1, No = 0)			-0.48 (0.42)			-0.71 (0.49)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.03 (0.04)			-0.02 (0.05)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.02 (0.05)			-0.01 (0.06)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.45 (0.28)	0.59* (0.34)	0.47 (0.32)	0.63* (0.32)	0.47 (0.30)	1.29*** (0.46)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	1.53** (0.66)	1.05 (0.78)	1.25 (0.78)	1.06 (0.66)	1.57** (0.64)	0.09 (0.85)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.88*** (0.28)	-0.72** (0.32)	-1.12*** (0.32)	-0.76** (0.34)	-0.86** (0.29)	-1.00** (0.43)
Bullied by peers and/or teachers (Yes = 1, No = 0)				1.74** (0.80)		1.88*** (0.70)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.38 (0.36)		0.40 (0.50)
Madrasah (Islamic Religious School)				0.82* (0.43)		0.52 (0.53)
School's type (Private school = 1, Public school = 0)				0.41 (0.39)		0.18 (0.46)
School distance more than 10 km (Yes = 1, No = 0)				-0.15 (0.39)		-0.27 (0.46)
Log school's expenditures				0.002 (0.28)		0.003 (0.29)
Teachers' quality (Good = 1, Not good = 0)				-0.45 (0.34)		-0.33 (0.42)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-1.10*** (0.37)	-0.88** (0.37)	-1.32*** (0.39)	-1.10*** (0.39)	-0.98** (0.39)	-1.47*** (0.41)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.29 (0.34)	-0.14 (0.45)
South					-0.21 (0.52)	-1.85** (0.85)
Log real minimum wages					-0.07*** (2.46)	-0.11*** (3.30)
Unemployment rate					0.07 (0.10)	0.03 (0.18)
Number of observation	439	439	438	422	439	421
Likelihood Ratio (LR)	82.82***	120.22***	116.06***	99.84***	95.24***	168.52***
Wald $\chi^2$	83.56***	97.64***	94.30***	111.64***	98.38***	105.96***
Score test	83.87***	120.60***	116.79***	99.17***	92.74***	151.24***
McFadden's R <sup>2</sup>	0.18	0.27	0.26	0.23	0.21	0.40
McFadden's Adjusted R <sup>2</sup>	0.12	0.17	0.16	0.14	0.13	0.21
Deviance goodness-of-fit p-value	0.98	0.99	0.99	0.99	0.99	0.99
Pearson goodness-of-fit p-value	0.78	0.86	0.80	0.97	0.85	0.91
Hosmer-Lemeshow goodness-of-fit p-value, group (10)	0.48	0.63	0.04**	0.06*	0.20	0.96
Percentage of Correctly Classified	81.09%	82.69%	83.56%	82.23%	83.37%	85.51%
Area under ROC Curve	0.78	0.84	0.84	0.82	0.80	0.90
<u>Link test:</u>						
<u>_hat</u>	0.98***	0.87***	0.88***	0.86***	0.95***	0.94***
<u>_hatsq</u>	-0.05	-0.11**	-0.08	-0.098	-0.03	-0.03
Log Pseudolikelihood	-183.97	-165.27	-165.78	-163.45	-177.75	-127.51
AIC	0.90	0.85	0.86	0.87	0.89	0.80
AIC*n	395.93	372.53	375.56	368.90	391.51	335.03

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined. Logit coefficients presented in above table are obtained from the following equation:

$$L_i = \ln \left( \frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

Students' perceptions about education are also statistically significant and negatively impact the decision to drop out in all models. This result supports previous studies by Bergeron et al. (2011) and Kaplan et al. (1997). Moreover, students who repeat a grade while in upper secondary school have a higher likelihood of dropping out. However, this explanatory variable is only statistically significant in Model Two, not in the preferred Model Six. Similarly, getting low grades at the previous level of schooling also contributes to higher log odds of dropping out, compared to students who get average grades. Students with more deviant behaviour significantly increased the log odds of dropping out. Only one explanatory variable in individual characteristics has significant impact to reduce dropout. As expected, valuing school more is associated with lower log odds of students dropping out.

In addition, students who more often changed schools in the past significantly increased the log odds of dropping out. A possible explanation for the result comes from social capital theory. The number of times a child has changed school implies social interaction with previous community, peers and teachers are broken at each move and the child must establish new relationships with a new community. There is not enough evidence to support that students' working experience has an effect on the decision to drop out.

One of the family characteristics variables is *lowest socioeconomic status*. It is a proxy for poverty. The survey shows that about 25% of dropout respondents state that they left school because they had financial problems. In addition, half of respondents in the qualitative analysis also state that financial problems are still the main reason for them to leave school. In the quantitative analysis, there is evidence that students from families with lowest socioeconomic status are more likely to drop out (see Table 6.1). The variable is statistically significant in benchmark model One and in preferred Model Six. This finding supports previous studies by Rumberger and Thomas (2000), Mo et al. (2013), Amadi et al. (2013), Makwinja-Morara (2009) and Traag and van der Velden (2011). The findings from the quantitative analysis strengthen those from the

qualitative analysis. There is strong quantitative evidence that poverty has an effect on student dropout. It has been discussed in Chapter Five that there are two reasons behind the dropout decision made by poor students: Students leave voluntarily in response to financial problems and in response to schools' intentional and unintentional actions. The combined results from the qualitative analysis and the quantitative analysis enable us to create comprehensive policies and strategies, which will be discussed in Chapter Seven.

In the qualitative analysis, it was found that most of the respondents' parents only hold a primary school diploma. Therefore, there may be a relationship between parents' low education level and their children's decision to drop out. In the quantitative analysis, a variable named *Household head with at least university education* was created. It is found in all models, that household heads with at least university education are correlated with lower log odds of students dropping out. Therefore, the quantitative findings strengthen the qualitative findings. Educated parents or caregivers who gained the benefit of education themselves will protect their children from dropout as they believe that investment in their children's schooling will produce benefits in the future.

The results also indicate that mothers' higher support of students' academic activities, unlike fathers' support, significantly reduces the log odds of students dropping out in most of the models, especially benchmark Model One and in preferred Model Six. In relation to the concept of social capital, it has been discussed previously that parents' academic support is one form of social capital. As proposed by social capital theory, the positive attention given by parents to their children is important for transmitting available human and financial capital to children (Teachman et al., 1996, p. 774). This result indicates that mothers, not fathers, play an important role to keep their children in school. Therefore, it is suggested that the mother should be the main person in charge in the family to show strong and positive relations with her children.

Based on the interviews in Chapter Five, this study finds that students dropped out of school due to their families having a lot of children. A variable indicating the number of members in a family was constructed to test whether the student's claim is supported by quantitative analysis. The estimates indicate that having a higher number of family members significantly increases the log odds of a student dropping out in all six models. Therefore, there is evidence that the quantitative analysis supports the dropouts' claims discussed in the previous chapter. The quantitative finding supports previous studies such as Suh and Suh (2011), Yi et al. (2012) and Traag and van der Velden (2011). This result is not consistent with a study for Indonesia by Kevane and Levine (2003). They find that having more siblings increases older siblings' education level. Kevane and Levine argue that this is possible because there is a positive correlation between numbers of children and parents' wealth. While the finding shows that larger family size matters and contributes to dropout, it has been discussed earlier in Chapter Four that large families are still preferred by some Javanese. For example, the survey shows that only 6.6% of the respondents had no sibling, 35% of the respondents have only one sibling and 58.4% of the respondents have two siblings or more. As the estimates indicate, having a large number of family members can contribute to dropout; therefore, the long-run strategy is to start the family planning campaign again, especially targeting poor families. A sudden result from the campaign cannot be expected since it is a long term strategy and the policy will be discussed in Chapter Seven.

Also, having more siblings who dropped out of school is likely to increase the log odds of dropping out. The presence of siblings who dropped out is likely to provide a role model which encourages other siblings to leave school as well. This study does not find any evidence that *helping the family with household chores* variable and *helping family with daily business/work* variable is associated with the log odds of dropping out. Further, there is also no evidence to support the correlation between *fathers' and mothers' participation in household decision making* variable with dropout.

The estimates for school characteristics indicate that in some of the models, mainly in preferred Model Six but not in benchmark model One, students from urban schools have significantly higher log odds of dropping out than those who studied in rural schools. This result supports previous studies by Peraita and Pastor (2000) and Mike et al. (2008). Furthermore, in two models, not including the preferred Model Six, students who have a bad relationship with a teacher are more likely to drop out of school while in all models it is shown that students who have good relationships with teachers are more likely to stay in school (in comparison with those who only have a neutral relationship with teachers). This result supports social capital theory that the density of positive interaction between teachers and students improves the accumulation of students' human capital.

Although in some models there is no evidence that there is a strong quantitative relationship between students who have a bad relationship with a teacher and drop out, the qualitative analysis shows that some students claim they left school due to having problems with teachers. The quantitative findings show that there is solid evidence that good relationships with teachers reduce the log odds of dropping out. These findings support those found in the qualitative analysis.

Being bullied by peers and/or teachers significantly increases the log odds of dropping out. This result is in line with Townsend et al. (2008). Surprisingly, in one out of two models, not including the preferred Model Six, students from Islamic schools are more likely to drop out than students from general schools, but it is only slightly significant. There is not enough evidence that *private schools*, *distance to school*, *school expenditure* and *teachers' quality* variables significantly affect the log odds of dropping out. This study does not find evidence that school expenditures have an impact on dropout. It is likely because the respondents did not give the detailed expenditure when they filled in the questionnaire as they already forgot the exact expenditure.

Government assistance for poor students significantly reduces the log odds of dropping out in all models. This result contradicts a previous study for Indonesia by Sparrow (2007). Sparrow's study concludes that there is no significant effect of scholarships on student dropout at the upper secondary school level. It is important to note that Sparrow's study examined the effect of scholarships preventing students from dropping out during the 1998 economic crisis. At that time, the number of poor people increased significantly by more than 100 per cent from 1996 to 1998. Prices of goods increased tremendously, causing poor people to be unable to purchase even basic goods. The economic crisis caused a lot of people to lose their jobs and life became very tough for most people in Indonesia. It is likely that students, especially poor students, preferred to join labour intensive employment provided by the government to support their family, rather than stay in school even though they were given financial assistance to support their school expenses. It is understandable that students preferred to choose working rather than studying because financial assistance only helped students themselves but not their families. The situation at that time explains why in Sparrow's study, the financial assistance did not significantly reduce dropout. However, the situation is different now. Indonesia's economy has recovered and improved in comparison to 1998. Life is less hard than during the 1998 crisis, hence poor students who receive financial support now can focus more on their studies.

Also, in the preferred Model Six, students in the southern part of Central Java Province are less likely to drop out compared to their northern counterparts. That is mainly because the job opportunities in the northern part of Java are higher than in the southern part. One explanatory variable with an unexpected sign is the real minimum wage. A study by Montmarquette et al. (2007) in Canada shows that minimum wages significantly increase the log odds of dropping out, while this study shows the opposite. Montmarquette et al. suggest that in Canada a high minimum wage leads some students to join the labour market because they think it is not necessary to continue their study if they can earn a high income. In contrast, minimum wages in many

provinces in Indonesia, including in Central Java Province, are low in comparison to white-collar jobs and do not attract students to withdraw from their education. The reason may be because every year local governments in Indonesia set minimum wage levels and the amounts are increased proportionally to the inflation rate. An increase of real minimum wages means additional income for families so there will be an additional share of income for children's education. This might lead poor students to stay in school.

### **6.2.2. Average Marginal Effects for Logit Regressions Using the Main Data**

#### **Sample**

Table 6.2 indicates average marginal effects from the logit regressions for the main data samples. Most of the average marginal effect values are similar to the coefficients from OLS regressions (see Appendix Table 6.7), except for the *perception of education* variable for which the average marginal effect values are slightly lower than the OLS coefficients. In Model Six, estimates can be interpreted to imply that female students have a nine percentage point higher probability of dropping out than male students at average. The small difference between female and male students indicates that student dropout are less likely because of gender bias in Javanese culture, but instead could be due to the discrimination against female students in school. As discussed in Chapter Five, there is some discrimination against female students in school and it is not related to Javanese preferences for their children's gender. The interviews with female students' parents indicated that they were fully supporting their daughters continuing their study. Kevane and Levine (2003) show that by the 1990s almost all children in Indonesia attended primary school and the gender gap in higher levels of education shrunk. The latest data from the Indonesian Central Statistics Agency (2016c) show that in 2015, 72% of female students aged 16 to 18 and 69.4% of male students aged 16 to 18 attended school, so there is no significant difference in

school enrolment between boys and girls in upper secondary schools. A study by Diyu (2001) in China shows that some parents do not want their daughters to attend school because they believe it is a waste of both time and money, and they even deliberately push them to drop out. On the contrary, children of both genders are treated equally in Javanese society. Javanese parents give their daughters equal opportunity to get better education. The equal opportunity between boys and girls has been shown in a study by Kevane and Levine (2003) in Indonesia. They suggest that parents' gender preferences for children have no significant effect on their children's education. This is also strengthened by the prior discussion in Chapter Five that Javanese parents put a high value on education, regardless of the gender of their children. The average marginal effect of being girl on the probability of dropping out is higher not because parents place less economic value on girls than on boys, but because of discrimination against girls in schools (e.g., being expelled due to pregnancy). However, this result does not imply that the priorities of dropout prevention programs are mainly for female students only. The strategies of reducing students' dropout are for both male students and female students.

Students who believe that education is important for them have a higher probability of finishing their study. It can be concluded that a good perception of education is one of the important explanatory variables as there is a 20 percentage point difference between students who have a good perception of education and those that have a bad perception of education at average. Therefore, it is important to add strategies of raising the awareness of students about the benefits of education for their future. The challenge now is how to increase students' appreciation of education. The strategies to raise good perceptions of education will be discussed in Chapter Seven.

**Table 6.2. Average Marginal Effects from Logit Regressions Using the Main Data Sample**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	0.02 (0.04)	0.10** (0.04)	0.03 (0.04)	0.05 (0.04)	0.03 (0.04)	0.09** (0.04)
<u>Age at first entry</u>	0.05*** (0.02)	0.03 (0.02)	0.05*** (0.02)	0.06*** (0.02)	0.05** (0.02)	0.03 (0.02)
<u>Working experiences (Yes = 1, No = 0)</u>	0.03 (0.04)	0.02 (0.04)	0.01 (0.04)	0.01 (0.04)	0.03 (0.04)	0.01 (0.04)
<u>Perception of education (Good = 1, Bad = 0)</u>	-0.31*** (0.09)	-0.25*** (0.09)	-0.27*** (0.10)	-0.28*** (0.08)	-0.32*** (0.09)	-0.20** (0.08)
Home location (Rural = 1, Urban = 0)		0.05 (0.04)				0.06* (0.04)
Repeat a grade (Ever repeated a grade = 1, No = 0)		0.21*** (0.08)				0.07 (0.07)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.08** (0.04)				0.11** (0.04)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.01 (0.07)				0.03 (0.07)
Changing school experience		0.05** (0.02)				0.05** (0.02)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.07*** (0.03)				0.05** (0.02)
Health (poor health = 0, up to excellent health = 4)		-0.004 (0.02)				-0.01 (0.02)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.09* (0.05)	0.06 (0.05)	0.09* (0.05)	0.09* (0.10)	0.08* (0.05)	0.09** (0.04)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-0.27** (0.11)	-0.25*** (0.09)	-0.23** (0.09)	-0.25*** (0.01)	-0.25** (0.10)	-0.21** (0.09)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.002 (0.01)	0.0002 (0.01)	0.01 (0.01)	0.004 (0.01)	-0.0003 (0.01)	0.002 (0.01)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.01* (0.01)	-0.01* (0.01)
<u>Family size</u>	0.03*** (0.01)	0.03*** (0.01)	0.03** (0.01)	0.03** (0.04)	0.03** (0.01)	0.02* (0.01)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			-0.03* (0.02)			-0.02 (0.01)
Nonworking mother (Not working = 1, Working = 0)			-0.03 (0.17)			0.04 (0.09)
Parents are divorced (Yes = 1, No = 0)			0.03 (0.04)			0.01 (0.03)
Number of siblings dropping out			0.10*** (0.02)			0.09*** (0.02)
Helping family with household chores (Yes = 1, No = 0)			-0.03 (0.10)			-0.04 (0.09)
Helping family with daily business/work (Yes = 1, No = 0)			-0.06 (0.05)			-0.07 (0.05)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.004 (0.005)			-0.0004 (0.005)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.002 (0.01)			-0.001 (0.01)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.06 (0.04)	0.07* (0.04)	0.06 (0.04)	0.08* (0.08)	0.09** (0.04)	0.14*** (0.04)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.20** (0.08)	0.12 (0.09)	0.15* (0.09)	0.13* (0.04)	0.20** (0.08)	0.01 (0.08)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.12*** (0.04)	-0.08** (0.04)	-0.13*** (0.04)	-0.09** (0.04)	-0.11*** (0.04)	-0.09** (0.04)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.21** (0.09)		0.16** (0.06)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.05 (0.04)		0.05 (0.05)
Madrasah (Islamic Religious School)				0.10* (0.05)		0.06 (0.05)
School's type (Private school = 1, Public school = 0)				0.05 (0.05)		0.02 (0.04)
School distance more than 10 km (Yes = 1, No = 0)				-0.02 (0.05)		-0.04 (0.04)
Log school's expenditures				0.0002 (0.03)		0.0002 (0.03)
Teachers' quality (Good = 1, Not good = 0)				-0.05 (0.04)		-0.03 (0.04)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.15*** (0.05)	-0.10** (0.04)	-0.16*** (0.04)	-0.13*** (0.05)	-0.13*** (0.05)	-0.14*** (0.04)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.05 (0.04)	-0.02 (0.04)
South					-0.07 (0.07)	-0.19*** (0.08)
Log real minimum wages					-0.01*** (0.31)	-0.01*** (0.30)
Unemployment rate					-0.01 (0.01)	-0.02 (0.02)

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

It is also shown in Table 6.2 that students from very poor families have a nine percentage point higher probability of dropping out than students from wealthier families at average. The nine percentage point difference between poor families and wealthier families indicates that dropout is not solely a poor students' problem. For instance, out of wedlock pregnancy is a potential problem for all families, regardless of their socioeconomic status. In addition, there is evidence that financial assistance from government has successfully narrowed the difference between the poor and the rich, yet there are still some problems in the allocation of financial assistance and the limited number of financial assistance recipients. This is also consistent with the survey that

only 25% of dropout respondents withdraw from upper secondary school because of financial problems, while the other 75% of dropout respondents withdraw because of other reasons. It indicates there are serious problems other than financial problems affecting the high number of dropouts in Central Java Province. It has been shown that students who reside in rural areas have a six percentage point higher probability of dropping out than students who reside in urban areas at average. In many rural areas, especially in remote areas, upper secondary school is not available. In such situations, the transportation costs that parents must bear are greater because their children need to reach the schools which are usually located in urban areas.

Having household heads that hold a university degree reduces the probability of dropping out by about 21 percentage points compared to those who do not hold such a qualification at average. It is important to note that students who are raised in educated families have a better perception of education. It shows that there is a significant effect of having educated parents compared to having non-educated parents. As suggested by Coleman (1988a), parents' human capital is transferred to the child through interaction between parents and child. It strongly influences their children's understanding about good education for their future lives. The human capital transfer seems difficult because the data show that more than half of Indonesia's population aged 15 years and over in 2015 only held lower secondary school certificate or lower (Indonesian Central Statistics Agency, 2016a). However, as discussed in Chapter Five, all of the parents in the interviews understood the importance of education even though they had a low education level and they were still unable to keep their children in school. Therefore, it is essential to support low-educated parents to increase their positive interactions with their children and encourage their children to stay in school. The strategies are discussed in Chapter Seven.

The risks of students dropping out increases by approximately two percentage points for every additional member in a family at average. The financial share of every member reduces when there is an additional child in the family and slightly increases

the probability of dropping out. Because of the small effect on dropout of having an additional member in a family, it is suggested not to put highest priority to solve the dropout problem based on family size. It is almost impossible to encourage parents to have fewer children as high numbers of children are still desirable by many Javanese.

The average marginal effect also shows that students who have a good relationship with teachers have a nine percentage point lower probability of dropping out of school in comparison to those who only have a neutral relationship with teachers. It is suggested that teachers have a responsibility to create good relationships with their students.

### **6.2.3. Odds Ratios Using the Main Data Sample**

Table 6.3 shows the odds ratios for the main data sample logit regressions. The following discussion is referring to the results of odds ratios from Model Six. The discussion begins from the individual characteristics. It can be seen from the table that the odds of dropping out for female students are 2.72 times greater than the odds for male students, or the odds of dropping out for females are about 172% higher than the odds of dropping out for males. The odds of dropping out reduce by 0.11 times when students have a good perception of education compared to students who do not have a good perception of education. In other words, the odds of dropping out for students who have a good perception of education are about 89% lower than the odds of dropping out for students who have not a good perception of education.

**Table 6.3. Odds Ratios of Logit Regressions Using the Main Data Sample**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	1.18 (0.33)	2.47** (0.88)	1.30 (0.39)	1.50 (0.45)	1.23 (0.35)	2.72** (1.10)
<u>Age at first entry</u>	1.51*** (0.23)	1.25 (0.26)	1.56*** (0.26)	1.61*** (0.28)	1.44** (0.23)	1.40 (0.36)
<u>Working experiences (Yes = 1, No = 0)</u>	1.21 (0.35)	1.19 (0.38)	1.13 (0.38)	1.05 (0.34)	1.24 (0.37)	1.08 (0.42)
<u>Perception of education (Good = 1, Bad = 0)</u>	0.09*** (0.07)	0.12*** (0.10)	0.10*** (0.08)	0.10*** (0.07)	0.08*** (0.06)	0.11** (0.10)
Home location (Rural = 1, Urban = 0)		1.57 (0.51)				1.98* (0.79)
Repeat a grade (Ever repeated a grade = 1, No = 0)		5.87*** (3.99)				2.05 (1.47)
Lower Secondary School's national final examination grade:		Reference				Reference
Low (Between 5.01 – 7.00)		2.04** (0.61)				3.22*** (1.25)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		0.89 (0.55)				1.39 (1.03)
Number of changing school since primary school		1.50** (0.31)				1.74** (0.45)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		1.84** (0.44)				1.82** (0.43)
Health (poor health = 0, up to excellent health = 4)		0.97 (0.21)				0.83 (0.21)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	1.91* (0.73)	1.61 (0.63)	2.14* (0.86)	2.09* (0.83)	1.75 (0.68)	2.59** (1.07)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	0.13*** (0.10)	0.12*** (0.10)	0.15** (0.11)	0.13*** (0.10)	0.14** (0.11)	0.10** (0.09)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	1.02 (0.06)	1.001 (0.06)	1.06 (0.07)	1.03 (0.07)	1.01 (0.06)	1.06 (0.08)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	0.88** (0.05)	0.86** (0.05)	0.91 (0.06)	0.87** (0.05)	0.89** (0.05)	0.85** (0.07)
<u>Family size</u>	1.24** (0.11)	1.24*** (0.10)	1.28** (0.14)	1.26** (0.12)	1.20** (0.11)	1.26* (0.17)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			0.77* (0.11)			0.81 (0.13)
Nonworking mother (Not working = 1, Working = 0)			1.34 (0.24)			0.62 (0.24)
Parents are divorced (Yes = 1, No = 0)			0.77 (1.89)			1.11 (1.08)
Number of siblings dropping out			2.44*** (0.47)			2.85*** (0.69)
Helping family with household chores (Yes = 1, No = 0)			0.79 (0.66)			1.33 (1.28)
Helping family with daily business/work (Yes = 1, No = 0)			0.62 (0.26)			0.49 (0.24)
Father's participation in household decision making (No participation = 0, Max participation = 20)			0.97 (0.04)			0.98 (0.05)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			0.98 (0.05)			0.99 (0.06)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	1.57 (0.44)	1.79* (0.61)	1.59 (0.50)	1.88* (0.61)	1.60 (0.48)	3.63*** (1.68)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	4.61** (3.02)	2.85 (2.23)	3.48 (2.71)	2.89 (1.90)	4.82** (3.06)	1.10 (0.93)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	0.42*** (0.12)	0.49** (0.16)	0.33*** (0.10)	0.47** (0.16)	0.42*** (0.12)	0.37** (0.16)
Bullied by peers and/or teachers (Yes = 1, No = 0)				5.71** (4.58)		6.58*** (4.62)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				1.47 (0.54)		1.50 (0.75)
Madrasah (Islamic Religious School)				2.27* (0.97)		1.68 (0.89)
School's type (Private school = 1, Public school = 0)				1.50 (0.58)		1.20 (0.56)
School distance more than 10 km (Yes = 1, No = 0)				0.86 (0.34)		0.76 (0.35)
Log school's expenditures				1.21 (0.34)		1.29 (0.38)
Teachers' quality (Good = 1, Not good = 0)				0.64 (0.22)		0.72 (0.31)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	0.33*** (0.12)	0.41** (0.15)	0.27*** (0.10)	0.33*** (0.13)	0.37** (0.15)	0.23*** (0.10)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					0.75 (0.25)	0.87 (0.39)
South					0.81 (0.42)	0.16** (0.13)
Log real minimum wages					0.001*** (0.003)	0.00002*** (0.0001)
Unemployment rate					1.07 (0.11)	1.04 (0.18)
Number of observation	439	439	438	422	439	421

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

The odds of dropping out for students who stay in rural areas are nearly two times higher than the odds of dropping out for students who stay in urban areas. The odds of dropping out increase 3.22 times for students who have low grade of Lower Secondary School's national final examination in comparison to students who have average grade of Lower Secondary School's national final examination. When holding other independent variables at a fixed value, the odds of dropping out of a school, for a one unit increase in number of changing school since primary school increase by a factor of 1.74, or there is a 74% increase in the odds of dropping out for a one-unit increase in number of changing school since primary school. Also, the odds ratio for

*Deviant behaviour* variable indicates that, keeping other independent variables at a fixed value, there is an 1.82 times, or 82%, increase in the odds of dropping out for a one-unit increase in deviant behaviour.

For Family characteristics, the odds of dropping out for students who are from the lowest socioeconomic status are 2.59 times higher than the odds of dropping out for students who are not from the lowest socioeconomic status, which implies that the odds of dropping out for poor students are about 159% higher than the odds of dropping out for students from wealthier families. Students who have household head with at least university education have lower odds of dropping out by 0.10 times than their counterparts who have household heads with no university education, or the estimate indicates that the odds of dropping out for students from more educated families are about 90% lower than the odds of dropping out for students from less educated families.

When other independent variables are constant, for a one-unit increase in mother's academic support, there is a 0.85 times, or a 15%, decrease in the odds of dropping out. Furthermore, the odds ratio indicates that having more siblings who dropped out of school increase the students' odds of dropping out by 2.85 times, *ceteris paribus*, which implies that the odds of dropping out for students are 185% higher for additional siblings dropped out of school.

For School characteristics, the odds of dropping out for students who study in urban areas are 3.63 times as large as for students who study in rural areas which implies that the odds of dropping out for students who study in urban areas are 263% greater than the odds of dropping out for students who study in rural areas. Moreover, having a good relationship with teachers decreases the odds of dropping out by 0.37 times, or students who have a good relationship with teachers are 63% less likely to drop out compared to students who have a neutral relationship with teachers. Students who are bullied by their peers and/or teachers have 6.58 times, or 558%, higher odds of

dropping out than when compared to students who are not bullied by their peers and/or teachers.

Government assistance for poor students successfully reduces the odds of dropping out by 0.23 times or it also indicates that the odds of dropping out for students who receive financial assistance from government are 77% lower than the odds of dropping out for students who do not receive the assistance. Last, the odds of dropping out are 0.87 times as low as for students who live in south part of Central Java Province than student from north part of Central Java Province, or students who live in south part of Central Java Province are 13% less likely to drop out than student from north part of Central Java Province

### **6.3. Logit Regressions Using the Main Data Sample with Interaction Effects**

As mentioned in Chapter Two, four interaction terms are explored: The interactions between *female* and *sibling rank*, *female* and *rural home location*, *female* and *non-working mother* and also between *urban school location* and *rural home location* variables. Logit regressions with interaction effects are displayed in Table 6.4 and their average marginal effects are presented in Tables 6.5 and 6.6 while the odds ratios are presented in Table 6.7. It is more complicated to interpret the interaction effects in logit models compared to OLS due to the nonlinear nature of logit models. As stated by Ai and Norton (2003), there is an issue with the interpretation of the coefficient of the interaction term in nonlinear models. They screened 13 economics journals listed on JSTOR and reviewed 72 articles using nonlinear models with interaction terms and concluded that all studies misinterpret the interaction term with one exception by DeLeire (2000). Therefore, Stata's *margins* command is used to calculate the average marginal effect of interaction effects as suggested by Karaca-Mandic, Norton, and Dowd (2012, p. 16).

### 6.3.1. Results and Discussion for Logit Regressions Using the Main Data Sample with Interaction Effects

Checking the overall significance of independent variables with LR tests shows that all models are statistically significant at the 1% level, as seen in Table 6.4. LR tests results are supported by Wald tests and Score tests. Both tests also show that all models are statistically significant at the 1% level. The tests indicate that at least one or more coefficients of independent variables are different from zero.

Table 6.4 provides McFadden's  $R^2$ s for every model. Firstly, the main data sample logit regressions are compared with and without interaction effects. Model One of the main data sample logit regressions in Table 6.1 shows McFadden's  $R^2$  is about 0.18 and about 0.40 in Model Six. With additional interaction terms in Table 6.4, the McFadden's  $R^2$  in Model One is 0.22 and in Model Six is 0.46. In addition, Table 6.4 shows that McFadden's Adjusted  $R^2$  is still 0.12 in Model One and McFadden's Adjusted  $R^2$  is about 0.25 in Model Six. With additional independent variables in Model Six, McFadden's Adjusted  $R^2$  is increasing, indicating that the additional independent variables in Model Six are effective.

Deviance GOF tests indicate that the models fit the data well as the  $p$ -values are greater than 0.10. The overall rates of correct classification vary from 82.7% in Model One to 87.9% in Model Six. The additional interaction terms in the models slightly increase the number of correctly classified predicted values in the models. Furthermore, the area under the ROC Curve is 0.81 in Model One and 0.92 in Model Six. Following the information by Hosmer et al. (2013), Model Six is considered to have outstanding discrimination because ROC is greater than 0.90. The model successfully discriminates the fitted values into two outcomes (graduated or dropout).

All tests of GOF suggest that the logit models explain the data sufficiently well. Link tests show that the linear predicted values ( $\_hat$ ) in all models are statistically significant and the linear predicted values squared ( $\_hatsq$ ) are not statistically

significant, except for Model Three. The results of the Link tests indicate that five out of six models have no specification error problems. In comparison with other models, Model Six is selected as a preferred model because it has the smallest AIC value. Lastly, the jointly significant tests for interaction effects indicate that all interaction effects variables are jointly not equal to zero at the 1% level.

In general, the main findings from interaction effects between variables are similar to those derived from Table 6.1 estimates. There are no changes in the signs of the explanatory variables compared to the previous models. In comparison, Table 6.1 shows that being a female student has higher log odds of dropping out in only two out of six models. However, with interaction effects inserted in the model, the gender variables are now statistically significant in all models showing that the interaction effects capture the omitted variable bias, and as a result, the regression models produce better results (see Table 6.4). In addition, the *non-working mother* variable that is not statistically significant in Table 6.1 is now statistically significant, as expected when interaction effects are included. The interpretation of the interacted variables coefficients is different from that in the case of OLS regressions. The discussion about the interpretation of interacted variables' coefficients is presented in the next section.

**Table 6.4. The Main Data Sample Logit Regressions with Interaction Effects**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	1.80*** (2.94)	2.90*** (0.82)	2.48*** (0.69)	2.24*** (0.70)	2.13*** (0.63)	4.54*** (1.02)
<u>Age at first entry</u>	0.37** (0.16)	0.16 (0.17)	0.39** (0.17)	0.46*** (0.18)	0.31* (0.17)	0.34* (0.19)
<u>Working experiences (Yes = 1, No = 0)</u>	0.32 (0.30)	0.33 (0.32)	0.30 (0.34)	0.20 (0.33)	0.34 (0.31)	0.23 (0.39)
<u>Perception of education (Good = 1, Bad = 0)</u>	-2.56*** (0.82)	-2.64*** (0.94)	-2.53*** (0.81)	-2.71*** (0.84)	-2.82*** (0.80)	-3.43*** (0.93)
<u>Home location (Rural = 1, Urban = 0)</u>	1.46 (0.93)	2.31** (1.09)	2.30** (1.07)	1.95* (1.03)	1.58 (1.00)	3.38** (1.34)
Repeat a grade (Ever repeated a grade = 1, No = 0)		2.04*** (0.74)				0.96 (0.84)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.86*** (0.31)				1.30*** (0.41)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.42 (0.71)				0.02 (0.74)
Changing school experience		0.44** (0.20)				0.55** (0.25)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.73*** (0.22)				0.79*** (0.25)
Health (poor health = 0, up to excellent health = 4)		-0.08 (0.22)				-0.26 (0.28)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.71* (0.40)	0.55 (0.41)	0.92** (0.42)	0.81* (0.43)	0.64 (0.41)	1.19* (0.47)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-1.87** (0.81)	-1.83** (0.89)	-1.74** (0.79)	-1.91** (0.79)	-1.84** (0.81)	-1.76* (0.95)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.003 (0.06)	-0.01 (0.06)	0.03 (0.07)	0.02 (0.07)	-0.003 (0.06)	0.06 (0.08)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.12** (0.06)	-0.16** (0.06)	-0.08 (0.07)	-0.14** (0.07)	-0.12** (0.06)	-0.18** (0.08)
<u>Family size</u>	0.31*** (0.12)	0.32*** (0.12)	0.30** (0.13)	0.30** (0.13)	0.29** (0.13)	0.32** (0.15)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>	0.23 (0.16)	0.30 (0.23)	0.12 (0.18)	0.32 (0.22)	0.24 (0.18)	0.41 (0.29)
<u>Nonworking mother (Not working = 1, Working = 0)</u>	-0.93** (0.44)	-1.92*** (0.63)	-0.79* (0.47)	-1.28** (0.54)	-0.82* (0.47)	-1.95*** (0.73)
<u>Parents are divorced (Yes = 1, No = 0)</u>			0.70 (1.13)			0.59 (1.01)
Number of siblings dropping out			1.09*** (0.27)			1.38*** (0.33)
Helping family with household chores (Yes = 1, No = 0)			-0.57 (0.82)			-0.32 (0.91)
Helping family with daily business/work (Yes = 1, No = 0)			-0.40 (0.41)			-0.37 (0.57)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.02 (0.04)			-0.05 (0.05)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.04 (0.05)			-0.04 (0.07)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	1.26 (0.85)	1.56* (0.93)	1.85* (0.98)	1.76* (0.92)	1.13 (0.89)	2.58** (1.15)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	1.31* (0.75)	0.74 (0.91)	1.00 (0.85)	0.79 (0.79)	1.36** (0.68)	-0.80 (1.31)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.92*** (0.30)	-0.77** (0.34)	-1.14*** (0.34)	-0.87** (0.37)	-0.89*** (0.31)	-1.16*** (0.46)
Bullied by peers and/or teachers (Yes = 1, No = 0)				1.98** (0.89)		2.25** (0.88)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.31 (0.37)		0.17 (0.53)
Madrasah (Islamic Religious School)				1.02** (0.46)		0.58 (0.60)
School's type (Private school = 1, Public school = 0)				0.44 (0.40)		0.06 (0.49)
School distance more than 10 km (Yes = 1, No = 0)				-0.09 (0.40)		0.11 (0.47)
Log school's expenditures				0.02 (0.28)		0.001 (0.29)
Teachers' quality (Good = 1, Not good = 0)				-0.40 (0.35)		-0.02 (0.44)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-1.22*** (0.39)	-1.02*** (0.40)	-1.54*** (0.42)	-1.26*** (0.41)	-1.13*** (0.42)	-2.04*** (0.49)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.35 (0.34)	-0.30 (0.44)
South					-0.10 (0.52)	-1.86*** (0.82)
Log real minimum wages					-0.07*** (2.43)	-0.10*** (3.44)
Unemployment rate					0.13 (0.10)	0.10 (0.16)
<b>Interaction Effects</b>						
<u>Gender (Female = 1) * Sibling rank</u>	-0.63*** (0.20)	-0.67** (0.26)	-0.80*** (0.25)	-0.66*** (0.25)	-0.64*** (0.21)	-1.10*** (0.36)
<u>Gender (Female = 1) * Home location (Rural = 1)</u>	-0.88 (0.60)	-1.40* (0.73)	-1.30** (0.65)	-1.21* (0.67)	-1.18* (0.65)	-2.34*** (0.90)
<u>Gender (Female = 1) * Non-working mother</u>	0.94 (0.58)	1.91*** (0.73)	0.96 (0.61)	1.36** (0.68)	0.80 (0.60)	2.20** (0.87)
<u>School location (Urban = 1) * Home location (Rural = 1)</u>	-0.66 (0.93)	-0.97 (1.01)	-1.38 (1.06)	-0.96 (0.99)	-0.49 (0.99)	-1.28 (1.25)
Number of observation	439	439	438	422	439	421
Likelihood Ratio (LR)	100.21***	144.43***	137.35***	119.68***	114.05***	195.68***
Wald $\chi^2$	82.11***	95.99***	94.74***	94.83***	102.46***	127.25***
Score Test	97.27***	123.28***	130.27***	112.73***	107.49***	164.18***
McFadden's R <sup>2</sup>	0.22	0.32	0.31	0.28	0.25	0.46
McFadden's Adjusted R <sup>2</sup>	0.13	0.20	0.19	0.15	0.14	0.25
Deviance goodness-of-fit p-value	0.99	0.99	0.99	0.99	0.99	0.99
Pearson goodness-of-fit p-value	0.60	0.71	0.76	0.85	0.62	0.99
Hosmer-Lemeshow goodness-of-fit p-value, group (10)	0.65	0.35	0.51	0.07*	0.90	0.76
Percentage of Correctly Classified	82.69%	84.97%	84.93%	84.83%	83.83%	87.89%
Area under ROC Curve	0.81	0.86	0.86	0.85	0.82	0.92
<u>Link test:</u>						
<u>_hat</u>	0.93***	0.94***	0.90***	0.88***	1.02***	0.96***
<u>_hatsq</u>	-0.04	-0.04	-0.08*	-0.08	0.01	-0.02

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Interaction effects Jointly Significant Test: $\chi^2(4)$	13.71***	15.55***	16.01***	14.77***	14.93***	23.79***
AIC	0.89	0.82	0.83	0.86	0.88	0.75
AIC*n	392.54	360.32	364.27	363.01	386.70	315.86

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined. Logit coefficients presented in above table are obtained from the following equation:

$$L_i = \ln \left( \frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

### 6.3.2. Average Marginal Effects for Logit Regressions Using the Main Data Sample with Interaction Effects

Table 6.5 presents average marginal effects from logit regressions with interaction effects. The coefficient estimates are almost identical to those shown in Table 6.2, except for those variables that interact with other variables. The results show that the total average marginal effect for gender in Model Six is 0.09 (see Table 6.5). It also can be seen in Table 6.2 that the average marginal effects for *gender* are only statistically significant in two out of six models, while all coefficients of *gender* in Table 6.5 are statistically significant. It shows that the average marginal effects for *gender* may have different significance levels from coefficients' significance level because the calculation of the average marginal effect of *gender* also incorporates the interaction between *gender* and other three independent variables.<sup>51</sup> Similar results also occur in other interacted variables.

<sup>51</sup> For example, *gender* in Model Five of Table 6.4 is statistically significant, but the average marginal effect of *gender* in Model Five of Table 6.5 is not statistically significant. This may occur because the average marginal effect of *gender* in Table 6.5 is calculated by incorporating the interaction effects of *female and sibling rank*, *female and rural home location*, *female and non-working mother*.

**Table 6.5. Average Marginal Effects of the Main Data Sample Logit Regressions with Interaction Effects**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	0.02 (0.04)	0.10*** (0.03)	0.03 (0.03)	0.05 (0.03)	0.03 (0.04)	0.09*** (0.03)
<u>Age at first entry</u>	0.05** (0.02)	0.02 (0.02)	0.04** (0.02)	0.05*** (0.02)	0.04* (0.02)	0.03* (0.02)
<u>Working experiences (Yes = 1, No = 0)</u>	0.04 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.04 (0.04)	0.02 (0.03)
<u>Perception of education (Good = 1, Bad = 0)</u>	-0.44*** (0.15)	-0.39*** (0.15)	-0.39*** (0.14)	-0.43*** (0.14)	-0.46*** (0.13)	-0.35*** (0.12)
<u>Home location (Rural = 1, Urban = 0)</u>	0.06 (0.04)	0.07** (0.03)	0.05 (0.03)	0.05 (0.04)	0.06 (0.04)	0.07** (0.03)
<u>Repeat a grade (Ever repeated a grade = 1, No = 0)</u>		0.30** (0.12)				0.09 (0.09)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.10*** (0.04)				0.11*** (0.04)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.04 (0.07)				0.002 (0.06)
<u>Changing school experience</u>		0.05** (0.02)				0.05** (0.02)
<u>Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)</u>		0.08*** (0.02)				0.07*** (0.02)
<u>Health (poor health = 0, up to excellent health = 4)</u>		-0.01 (0.02)				-0.02 (0.02)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.10* (0.06)	0.06 (0.05)	0.11** (0.05)	0.10* (0.06)	0.08 (0.05)	0.11** (0.04)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-0.16** (0.04)	-0.14** (0.04)	-0.14** (0.04)	-0.15** (0.04)	-0.15*** (0.04)	-0.11** (0.04)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.0003 (0.01)	-0.002 (0.01)	0.003 (0.01)	0.002 (0.01)	-0.0003 (0.01)	0.005 (0.01)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.01** (0.01)	-0.02** (0.01)
<u>Family size</u>	0.04*** (0.01)	0.03*** (0.01)	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>	-0.02 (0.02)	-0.01 (0.02)	-0.04** (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.03* (0.02)
<u>Parents are divorced (Yes = 1, No = 0)</u>			0.09 (0.16)			-0.05 (0.10)
<u>Nonworking mother (Not working = 1, Working = 0)</u>	-0.04 (0.04)	-0.07** (0.03)	-0.02 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.04 (0.03)
<u>Number of siblings dropping out</u>			0.12*** (0.03)			0.12*** (0.03)
<u>Helping family with household chores (Yes = 1, No = 0)</u>			-0.07 (0.11)			-0.03 (0.08)
<u>Helping family with daily business/work (Yes = 1, No = 0)</u>			-0.05 (0.05)			-0.03 (0.05)
<u>Father's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.002 (0.005)			-0.004 (0.005)
<u>Mother's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.01 (0.01)			-0.003 (0.01)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.10* (0.04)	0.09*** (0.04)	0.10*** (0.03)	0.12*** (0.04)	0.09** (0.04)	0.13*** (0.03)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.21 (0.14)	0.09 (0.12)	0.13 (0.13)	0.10 (0.12)	0.20* (0.12)	-0.06 (0.08)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.13*** (0.04)	-0.09** (0.04)	-0.14*** (0.04)	-0.11** (0.05)	-0.12*** (0.04)	-0.11*** (0.04)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.30* (0.15)		0.24** (0.10)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.04 (0.04)		0.02 (0.04)
Madrasah (Islamic Religious School)				0.13** (0.06)		0.05 (0.06)
School's type (Private school = 1, Public school = 0)				0.05 (0.04)		0.004 (0.04)
School distance more than 10 km (Yes = 1, No = 0)				-0.01 (0.04)		0.01 (0.04)
Log school's expenditures				0.0002 (0.03)		0.0001 (0.02)
Teachers' quality (Good = 1, Not good = 0)				-0.05 (0.04)		0.001 (0.04)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
Receive government's cash transfer to poor students (Yes = 1, No = 0)	-0.14*** (0.04)	-0.11*** (0.04)	-0.16*** (0.04)	-0.14*** (0.04)	-0.13*** (0.04)	-0.15*** (0.03)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.04 (0.04)	-0.03 (0.04)
South					-0.01 (0.06)	-0.12** (0.04)
Log real minimum wages					-0.01*** (0.29)	-0.01*** (0.28)
Unemployment rate					-0.02 (0.01)	-0.01 (0.01)

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

We now turn to discuss the average marginal effects for interaction terms. As mentioned earlier, Ai and Norton (2003) claim that the magnitude of the marginal effect of the interaction term in nonlinear models cannot be directly interpreted as in linear models.<sup>52</sup> Karaca-Mandic et al. (2012) suggest a method to calculate the average marginal effect of the interacted variables to get a precise interpretation of interaction terms. The formula by Karaca-Mandic et al. is useful to calculate average marginal effects for more than one interaction term. They suggest that average marginal effect of

<sup>52</sup> To overcome the problem, Norton, Wang, and Ai (2004) use command *inteff* in Stata to provide the correct marginal effects. Nonetheless, command *inteff* cannot be used for regressions including more than one interaction term and since there are four interaction terms in the models, this study cannot use command *inteff*.

interaction terms can be obtained by computing the average marginal effect with respect to one variable at different values of other variables and taking the difference. Therefore, if the interaction effect is the difference in the average marginal effect of a specific independent variable on the decision to drop out between female and male, then one could compute the average marginal effect of this specific independent variable for these two groups using the *margins* command and get the difference.<sup>53</sup>

Following Karaca-Mandic et al., this study calculates average marginal effects for every interaction term and every model. Table 6.6 below shows all average marginal effects based on the *margins* command for Models One to Six. For example, for Model Six the average marginal effect on the decision to drop out is calculated with respect to the *sibling rank in family* variable when a student is female or male. It is found that the average marginal effect of *sibling rank* when a student is male on the conditional probability that a student will drop out for an increase in sibling rank is 0.02. It can be interpreted that male students' chance of drop out increases about two percentage points for every additional increase in sibling rank in the family. However, the average marginal effect is not statistically significant. The average marginal effect of the *sibling rank* variable when a student is female on the conditional probability that a student will drop out for an increase in sibling rank is – 0.07, and it is statistically significant at the 1% level. It can be inferred that the risks of female students' dropping out decreases by approximately seven percentage points for every additional increase in sibling rank in a family. Therefore, the difference in the marginal effect of sibling rank on the conditional probability that dropout is equal to 1 (denoting the student drops out) when changing sibling rank when gender changes from female to male (or when gender

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<sup>53</sup> Karaca-Mandic et al. (2012) do not discuss whether the difference in the average marginal effect of a specific independent variable for two groups is statistically significant or not. In their example of Stata output (page 17), both average marginal effects for *female = 0* and *female = 1* are statistically significant and likely resulted in the output of the difference of average marginal effects between *female = 0* and *female = 1* being also statistically significant. In my case, mostly one of the average marginal effects is statistically significant but the other is not.

changes from 1 to 0) is the difference between -0.07 and 0.02 (or -0.07 – 0.02) which is equal to -0.09 (see Table 6.6).

**Table 6.6. Average Marginal Effect for Interaction Terms**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<b>Gender (Female = 1) * Sibling rank</b>						
Average Marginal effect of <i>Female</i> = 0	0.03 (0.02)	0.02 (0.02)	0.01 (0.02)	0.03 (0.02)	0.03 (0.02)	0.02 (0.02)
Average Marginal effect of <i>Female</i> = 1	-0.05** (0.02)	-0.05** (0.02)	-0.08*** (0.02)	-0.04** (0.02)	-0.05*** (0.02)	-0.07*** (0.02)
the average change in the predicted conditional probability (incremental effect)	-0.08	-0.07	-0.09	-0.07	-0.08	-0.09
<b>Gender (Female = 1) * Home location (Rural = 1)</b>						
Average Marginal effect of <i>Female</i> = 0	0.11** (0.05)	0.11** (0.04)	0.12** (0.04)	0.11** (0.05)	0.13** (0.05)	0.13*** (0.04)
Average Marginal effect of <i>Female</i> = 1	0.01 (0.05)	0.03 (0.05)	-0.002 (0.05)	0.01 (0.05)	0.01 (0.05)	0.02 (0.04)
the average change in the predicted conditional probability (incremental effect)	-0.10	-0.08	-0.12	-0.12	-0.12	-0.11
<b>Gender (Female = 1) * Non-working mother (Not working = 1)</b>						
Average Marginal effect of <i>Female</i> = 0	-0.10** (0.05)	-0.13*** (0.04)	-0.07* (0.04)	-0.11*** (0.04)	-0.09* (0.05)	-0.10*** (0.03)
Average Marginal effect of <i>Female</i> = 1	0.002 (0.05)	0.001 (0.05)	0.02 (0.05)	0.01 (0.05)	0.003 (0.05)	0.02 (0.04)
the average change in the predicted conditional probability (incremental effect)	0.11	0.13	0.09	0.12	0.09	0.12
<b>Home location (Rural = 1) * School location (Urban = 1)</b>						
Average Marginal effect of <i>Home location</i> = 0	0.12** (0.06)	0.13** (0.05)	0.15** (0.05)	0.15** (0.05)	0.11 (0.07)	0.16*** (0.05)
Average Marginal effect of <i>Home location</i> = 1	0.08 (0.05)	0.06 (0.05)	0.05 (0.04)	0.09* (0.05)	0.08 (0.05)	0.11** (0.04)
the average change in the predicted conditional probability (incremental effect)	-0.06	-0.07	-0.10	-0.06	-0.03	-0.05

Notes: \*\*\*  $p \leq 0.01$ ; \*\*  $p \leq 0.05$ ; \*  $p \leq 0.10$ . Standard errors reported in parentheses.

Overall, the average change in the predicted conditional probability that a student will drop out for every additional increase in sibling rank in a family, differs between female and male by nine percentage points, with female students having lower marginal effects of sibling rank, on average. It can be concluded female students with higher sibling rank have a nine percentage point lower probability of dropping out in comparison to male students with higher sibling rank. It has been shown in the qualitative analysis that some older female siblings drop out of school and take responsibility to earn money for their family and the share of money can be allocated

more to younger siblings so they can enjoy education. This evidence suggests that female students with higher sibling rank (the younger female) stay in school more than male students with higher sibling rank (the younger male). This finding is in line with the results of a study by Kevane and Levine (2003) in Indonesia, which finds that the youngest daughters had better education achievement than first daughters.

The average marginal effect of the *rural home location* variable if a student is male on the conditional probability that a student will drop out when changing his home location (from urban to rural area) is 0.13 and it is statistically significant at the 1% level. The result indicates that male student's probability of dropping out rises about 13 percentage points if he stays in the rural area. The average marginal effect of the *rural home location* variable if a student is female on the conditional probability that a student will drop out when changing her home location (from urban to rural area) is 0.02, and it is not statistically significant. This finding shows that a female student's probability of dropping out climb about two percentage points if she resides in a rural area. Therefore, the difference in the marginal effect of rural home location on the conditional probability that dropout is equal to 1 when changing home location and when changing gender from female to male (or when gender changes from 1 to 0) is the difference between 0.02 and 0.13 (or  $0.02 - (0.13)$ ) which is equal to  $-0.11$ .

Overall, the average change in the predicted conditional probability that students will drop out when changing home location differs between females and males by  $-11\%$ . It can be concluded that female students who stay in rural areas have an 11 percentage point lower probability of dropping out than male students who stay in rural areas. This result gives additional insight into UNESCO Institute for Statistics' (2012) claim. As mentioned earlier, UNESCO suggests that primary school-age rural female students are more likely to drop out than rural male students. However, the findings suggest that at upper secondary school level, rural male students tend to drop out more than rural female students.

The average marginal effect of the *non-working mother* variable if a student is male on the conditional probability that a student will drop out when changing his mother's occupation status (from working to not working) is -0.10 and it is statistically significant at the 1% level. The result indicates that a male student's probability of dropping out diminishes about 10 percentage points if his mother is not working; whereas the average marginal effect of the *non-working mother* variable if a student is female on the conditional probability that a student will drop out when changing her mother's occupation status (from working to not working) is 0.02, but it is not statistically significant. Hence, the difference in the marginal effect of *non-working mother* on the conditional probability that dropout is equal to 1 when changing mother's occupation status when gender changes from female to male (or when gender changes from 1 to 0) is the difference between 0.02 and -0.10 (or  $0.02 - (-0.10)$ ) equal to 0.12.

Overall, the average change in the predicted conditional probability that student will drop out when changing mother's occupation status differs by 12 percentage points between females and male. It can be inferred that female students who have a non-working mother have a 12 percentage point greater probability of dropping out than male students who have non-working mother. When females get older, they have a sense of responsibility to help the family; therefore, if a mother does not work, her daughter will help the family's financial condition by going to work.

Lastly, the average marginal effect of the *urban school location* variable if a student is staying in an urban area on the conditional probability that a student will drop out when changing school location (from rural to urban area) is 0.16 and it is statistically significant at the 1% level. The findings show that the probability of students who study in urban areas to drop out rises about 16 percentage points if they reside in urban areas. The average marginal effect of the *urban school location* variable if a student is staying in a rural area on the conditional probability that a student will drop out when changing school location (from rural to urban area) is 0.11 and it is

statistically significant at the 5% level. The result gives an insight that students who stay in a rural area but study in urban areas have an 11 percentage point lower probability of dropping out. Therefore, the difference in the marginal effect of the *urban school location* on the conditional probability that dropout is equal to 1 when changing school location when home location changes from rural area to urban area (or when *home location* changes from 1 to 0) is the difference between 0.11 and 0.16 (or  $0.11 - (0.16)$ ), which is equal to -0.05. Overall, the average change in the predicted conditional probability that student will drop out when changing school location differs between rural home and urban home location by -5 percentage points. It can be concluded that students who stay in rural areas and study in urban schools have a five percentage point lower probability of dropping out than students who stay in urban areas and study in urban schools.

Surprisingly, the result seems to be contradicting. Despite some features of rural areas, such as limited access to education, transportation and health access, and also the fact that most of the poor people reside in rural areas, the results show that urban students who study in urban schools have more problems than students from rural areas who study in urban schools. In addition, the results differ from Mason and Rozzele's (1998) study. The different results occur because Mason and Rozzele's study uses respondents with ages between 12 and 17. The distance becomes an issue for parents of children because of the children's safety. However, distance from home to school does not seem a significant determinant of school dropout at upper secondary school level because the ages of upper secondary school students ranged from 16 to 18 so they are more independent and can take care themselves so it does not become an issue anymore. The results also suggest that students from rural areas might have a higher motivation to achieve a better living standard by getting more education.

### 6.3.3. Odds Ratios Using the Main Data Sample with Interaction Effects

In the presence of interaction terms, it becomes more complicated to interpret the effect of being female, holding all the independent variables at specific values. As seen in Table 6.7, for other independent variables that do not interact with *gender* variables, the odds ratios are similar to odds ratios presented in Table 6.3. The odds ratios for interacted variables in Table 6.7, i.e., *gender, home location, sibling rank in family, nonworking mother, and School location*, are higher than those in Table 6.3.

When we examine the interaction of *female* variable and other variables, we have two equations: one for female and one for males. For example, we want to examine the effect of *sibling rank in family*, for males (when female = 0), the equation is:

$$\text{logit}(p) = \log(p/(1-p)) = \beta_{\text{constant}} + \beta_{\text{siblrank}} * \text{Sibling rank}$$

And for female, the equation is:

$$\text{logit}(p) = \log(p/(1-p)) = (\beta_{\text{constant}} + \beta_{\text{gender}}) + (\beta_{\text{siblrank}} + \beta_{\text{Female} * \text{Sibling rank}}) * \text{Sibling rank}$$

Therefore, for male students, a one-unit increase in *sibling rank in family* generates a change in log odds of 0.41. On the other hand, for the female students, a one-unit increase in *sibling rank in family* generates a change in log odds of  $(0.41 + (-1.10)) = -0.69$ .<sup>54</sup> In terms of odds ratios, for male students, the odds ratio is  $\exp(0.41) = 1.50$  for a one-unit increase in sibling rank (see Table 6.7 below) and the odds ratio for female students is  $\exp(-0.69) = 0.50$  for a one-unit increase in sibling rank.

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<sup>54</sup> Values of 0.41 and -1.10 are coefficients for *Sibling rank in family* variable and interacted variables of *female and sibling rank* from Model Six in Table 6.4.

**Table 6.7. Odds Ratios of the Main Data Sample Logit Regression with Interaction Effects**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	6.07*** (3.72)	18.27*** (14.92)	11.96*** (8.26)	9.44*** (6.59)	8.45*** (5.30)	93.79*** (95.32)
<u>Age at first entry</u>	1.44** (0.23)	1.17 (0.21)	1.47** (0.25)	1.58*** (0.28)	1.37* (0.23)	1.41* (0.27)
<u>Working experiences (Yes = 1, No = 0)</u>	1.37 (0.41)	1.39 (0.44)	1.35 (0.47)	1.22 (0.40)	1.41 (0.44)	1.25 (0.49)
<u>Perception of education (Good = 1, Bad = 0)</u>	0.08*** (0.06)	0.07*** (0.07)	0.08*** (0.06)	0.07*** (0.06)	0.06*** (0.05)	0.04*** (0.04)
<u>Home location (Rural = 1, Urban = 0)</u>	4.32 (4.02)	10.11** (11.01)	9.92** (10.58)	7.00* (7.19)	4.87 (4.86)	30.86** (41.46)
Repeat a grade (Ever repeated a grade = 1, No = 0)		7.66*** (5.69)				2.60 (2.18)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		2.36*** (0.74)				3.70*** (1.52)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		0.66 (0.47)				1.02 (0.75)
Changing school experience		1.55** (0.31)				1.73** (0.43)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		2.07*** (0.46)				2.21*** (0.56)
Health (poor health = 0, up to excellent health = 4)		0.92 (0.20)				0.77 (0.22)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status</u>	2.04* (0.81)	1.74 (0.71)	2.51** (1.04)	2.24* (0.95)	1.89 (0.77)	3.31** (1.57)
<u>Household head with at least university education</u>	0.15** (0.12)	0.16** (0.14)	0.18** (0.14)	0.15** (0.12)	0.16** (0.13)	0.17* (0.16)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	1.001 (0.06)	0.99 (0.06)	1.03 (0.07)	1.02 (0.07)	0.997 (0.06)	1.06 (0.09)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	0.89** (0.05)	0.86** (0.05)	0.92 (0.06)	0.87** (0.06)	0.89** (0.05)	0.84** (0.07)
<u>Family size</u>	1.36** (0.16)	1.37*** (0.16)	1.35** (0.17)	1.35** (0.17)	1.33** (0.23)	1.38** (0.20)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>	1.26 (0.21)	1.35 (0.31)	1.13 (0.21)	1.38 (0.30)	1.27 (0.17)	1.50 (0.44)
<u>Parents are divorced (Yes = 1, No = 0)</u>			2.01 (2.28)			1.80 (1.83)
<u>Nonworking mother (Not working = 1, Working = 0)</u>	0.40** (0.17)	0.15*** (0.09)	0.45* (0.21)	0.28** (0.15)	0.44* (0.20)	0.14*** (0.10)
Number of siblings dropping out			2.98*** (0.80)			3.99*** (1.33)
Helping family with household chores (Yes = 1, No = 0)			0.57 (0.46)			0.72 (0.66)
Helping family with daily business/work (Yes = 1, No = 0)			0.67 (0.28)			0.69 (0.39)
Father's participation in household decision making (No participation = 0, Max participation = 20)			0.98 (0.04)			0.95 (0.05)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			0.96 (0.04)			0.96 (0.07)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	3.54 (3.02)	4.75* (4.43)	6.39* (6.25)	5.83* (5.33)	3.11 (2.76)	13.16** (15.15)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	3.71* (2.78)	2.09 (1.89)	2.72 (2.31)	2.19 (1.73)	3.90** (2.65)	0.45 (0.59)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	0.40*** (0.12)	0.46** (0.16)	0.32*** (0.11)	0.42** (0.15)	0.41*** (0.13)	0.31*** (0.14)
Bullied by peers and/or teachers (Yes = 1, No = 0)				7.25** (6.47)		9.52** (8.41)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				1.36 (0.51)		1.19 (0.63)
Madrasah (Islamic Religious School)				2.78** (1.27)		1.79 (1.07)
School's type (Private school = 1, Public school = 0)				1.55 (0.63)		1.06 (0.52)
School distance more than 10 km (Yes = 1, No = 0)				0.92 (0.37)		1.11 (0.53)
Log school's expenditures				1.18 (0.33)		1.06 (0.30)
Teachers' quality (Good = 1, Not good = 0)				0.67 (0.24)		1.02 (0.45)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students</u>	0.30*** (0.12)	0.36*** (0.14)	0.21*** (0.09)	0.28*** (0.12)	0.32*** (0.14)	0.13*** (0.06)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					0.70 (0.24)	0.74 (0.33)
South					0.90 (0.47)	0.16*** (0.13)
Log real minimum wages					0.002*** (0.004)	0.0001*** (0.0003)
Unemployment rate					1.14 (0.11)	1.11 (0.17)
<b>Interaction Effects</b>						
<u>Female * Sibling rank</u>	0.54*** (0.11)	0.51** (0.13)	0.45*** (0.11)	0.532*** (0.13)	0.53*** (0.11)	0.33*** (0.12)
<u>Female * Home location (Rural = 1)</u>	0.42 (0.25)	0.25* (0.18)	0.27** (0.18)	0.30* (0.20)	0.31* (0.20)	0.10*** (0.09)
<u>Female * Non-working mother</u>	2.56 (1.49)	6.76*** (4.97)	2.61 (1.61)	3.91** (2.65)	2.23 (1.33)	9.10** (7.90)
<u>School location (Urban =1) * Home location (Rural = 1)</u>	0.52 (0.48)	0.38 (0.38)	0.25 (0.27)	0.38 (0.38)	0.61 (0.61)	0.27 (0.34)

Notes: Dependent Variable: School dropout (Dropout = 1, Graduated = 0); \*\*\*  $p \leq 0.01$ ; \*\*  $p \leq 0.05$ ; \*  $p \leq 0.10$ . Constant is also included but its coefficients are not reported here. Robust standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

Furthermore, for male students who have non-working mothers, the odds ratio is 0.14 and odds ratio for females is  $(\exp(-1.95+2.20)) = 1.28$ . It indicates that the odds of dropping out for female students who live with non-working mothers are 1.28 times higher than the odds of dropping out for female students who live with working mothers.

The odds ratio for *home location* in the main data sample logit regressions (see Table 6.3) is 1.98 and with interaction effects, the odds ratio for *home location* is now 30.86 (see Table 6.7), or about 15 times higher than in Table 6.3. It can be inferred that for male students who stay in rural areas, the odds ratio is 30.86 and odds ratio for females is  $[\exp(3.48+(-2.34))] = 3.12$ . It shows that the odds of dropping out for female students who stay in rural areas are 3.12 times higher than the odds of dropping out for female students who stay in urban areas. This result contradicts the result from the average marginal effects presented in section 6.3.2. It indicates that the calculation of *home location* variable is not as simple as other interacted variables because it contains not only the *gender* variable but also the *school location* variable.

#### **6.3.4. Linear Combinations of Coefficients of Variables**

Odds ratios can be used to get information about the total effect of some variables included in the models. The odds ratios from linear combinations of coefficients of variables are obtained from Stata *lincom* command. The *lincom* command computes odds ratios and its properties (such as standard errors, *z* statistics, *p*-values, and confidence intervals) (StataCorp, 2015, p. 1225) by using the coefficient values in Table 6.4.

It requires some model scenarios to produce total effects. For example, by using Model Six the odds of dropping out for female students whose mother is working if they stay in rural areas and they are ranked as the first sibling in their family in comparison to male students whose mother is working who stay in rural areas and ranked as the first sibling in their family can be calculated. It is assumed that other variables and interaction terms are constant, or *ceteris paribus*. The odds ratio of female students whose mother is working, if they stay in rural areas and they are ranked as the first sibling in their family is 2.95. However, the *p*-value, obtained from Stata, is not statistically significant. In addition, I also checked the odds of dropping out for female

students whose mother is working if they stay in rural areas and they are ranked as the second sibling in their family in comparison to male students, whose mother is working, who stay in rural areas and they are ranked as the second sibling in their family. With *ceteris paribus*, the odds ratio is 0.98. However, the odds ratio is again not statistically significant. Lastly, I changed the sibling rank into the third sibling rank in family and the odds ratio is 0.32 and it is statistically significant at the 10% level. Overall, with *ceteris paribus* assumption, it can be inferred that female students, whose mother is working, who stay in rural areas and are ranked as the third sibling in their family are less likely to drop out than male students, whose mother is working, who stay in rural areas and are ranked as the third sibling in their family. The results show that the odds of rural females dropping out decreases with increasing sibling rank in their family.

In another possible scenario we want to know the odds of dropping out for female students if they stay in rural areas, have mothers who are not working and are ranked as the first sibling in their family in comparison to male students if they stay in rural areas, have mothers who are not working and are ranked as the first sibling in their family, *ceteris paribus*. The odd ratio result is 26.88 and it is statistically significant at the 1% level. It indicates that female students who stay in rural areas, have non-working mothers and are ranked as the first sibling in their family are about 17 times more likely to drop out than male students who stay in rural areas, have non-working mother and are ranked as the first sibling in their family.

The odds ratio is useful to calculate individual's odds of dropping out given some circumstances and it is useful to predict the odds of dropping out for students when they started first grade of upper secondary schools, based on their fixed characteristics (e.g., gender, age at first entry, home location, previous academic achievement, SES, household head education, family size, etc.). This is the first step of developing early warning signs of dropout. The detailed strategies will be discussed in Chapter Seven.

#### 6.4. Dropout and Gender Differences

Numerous previous studies have demonstrated a strong relationship between gender and dropout, but little research has been carried out that investigates whether the factors affecting students to drop out vary by gender and how they compare. There are only a few previous studies that examine the causes of dropout at upper secondary school level in Indonesia and, to the best of my knowledge, there is no extensive study on dropout according to gender. Therefore, further research that investigates the decision for school dropout based on gender is needed.

The aim of this part is to provide a better understanding of the causes that determine gender differences in dropout at upper secondary schools in Central Java Province. Answers from the 439 ex-students whose parents (i.e., both mothers and fathers) answered the questionnaires (878 parents/guardians) are used. The samples are divided into subsamples based on gender (260 females and 179 males). The estimates indicate that many of the explanatory variables have the expected effect on the odds of students dropping out. Some explanatory variables have a significant impact on either females or males only. Few factors contribute to the decision to drop out for both females and males.

A simple Chow tests was conducted to check whether there is a statistically significant difference between female and male groups. The tests show that for two out of six models, i.e., for Model Two and Model Six, there is a statistical difference between the two groups. For the consistency with previous sections, the regressions in this section are also divided into six models. In addition, it is important to note that statistically insignificant coefficients in these models may be due to the models being under-powered. This limitation is also mentioned in Chapter Eight.

In addition, results in Table 6.10 and Table 6.13 show that logit regressions yield some extremely large odds ratios. For example, in Table 6.10, the odds ratio for *bullied by peers and/or teachers* variable in Model Six is 480.71 and in Table 6.11, odds

ratios for *number of siblings dropping out* and *school location* variables are 743.95 and 177.54 respectively. Nemes, Jonasson, Genell, and Steineck (2009) suggests that extremely large odds ratios occur because of small sample problems. They conducted a simulation using small up to moderate sample size and conclude that small sample size creates regression coefficient estimates that shift away from null (observed value is farther from the null hypothesis than the true value) and odds ratios from one. Since separate female and male regressions in this study use small sample sizes, it is likely that the regressions may create overestimated odds ratios, that is the odds ratios may lead to wrong interpretation of the results. Therefore, it is better to refer to the average marginal effects. However, for the consistency with previous sections, odds ratios are still discussed, but with due caution.

#### **6.4.1. Female Only Logit Regressions**

Before discussing the results, it is important to note that there is a problem with the *household head with at least university degree* variable in female only logit regressions. The variable was dropped automatically by Stata because in the data set there are 51 female dropouts but no one has household head with at least university degree.<sup>55</sup> Therefore, the *household head with at least university degree* variable was dropped and replaced by a *household head with at least upper secondary school degree* variable. There is no problem for male only regressions, but for consistency, I also replaced *household head with at least university degree* variable with *household head with at least upper secondary school degree* variable in the models.

Similarly, in male only regression, the *parents are divorced* variable cannot be used because no male dropout student in the sample has divorced parents. For consistency, the *parents are divorced* variable was also removed from the female only regression models.

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<sup>55</sup> See footnote 25 for the explanation about perfect failure prediction (Page 128).

#### 6.4.1.1. Results and Discussion for Female Only Logit Regressions

Table 6.8 reports the regression estimates for the female only models. As reported in the table, LR tests show that all models are statistically significant at the 1% level and the 5% level. Wald tests and Score tests also indicate that all models are statistically significant at the 1% level and the 5% level, supporting LR tests. The tests indicate that at least one or more coefficients of the independent variables are different from zero.

McFadden's  $R^2$ s for the female only regressions are about 0.09 in Model One and 0.43 in Model Six and McFadden's Adjusted  $R^2$  shows that Model One, Four and Five have negative McFadden's Adjusted  $R^2$ s. Negative McFadden's Adjusted  $R^2$ s are possible because it is penalizing the model for every additional independent variable. However, McFadden's Adjusted  $R^2$  increases to 0.12 with additional independent variables in Model Six, indicating that the additional independent variables in Model Six are effective and improve the model.

Deviance GOF tests indicate that models fit the data well because the tests yield statistically insignificant results as the  $p$ -values are larger than 0.10. The overall rates of correct classification range from 81.9% in Model One to 88.9% in Model Six and the area under the ROC Curve has a minimum value of 0.72 in Model One and a maximum value of 0.91 in Model Six ( $\text{ROC} \geq 0.90$  is considered outstanding discrimination). Link tests also suggest that four out of six models have no specification error problem. The linear predicted values ( $\_hat$ ) in four models are statistically significant, including Model Six and the linear predicted values squared ( $\_hatsq$ ) are not statistically significant in all models. The preferred model is Model Six since it has the smallest AIC value.

Looking at individual characteristics, only three out of 10 explanatory variables are statistically significant. There is not enough evidence to support the impact of females' *perception of education* variable on dropout, while in the main data sample

regressions, the variable is statistically significant in all models. For females, all statistically significant individual characteristics variables have negative impacts on dropout. It means that all significant explanatory variables increase the log odds of female students dropping out. For example, females who had low academic achievement at a previous level of schooling also had greater log odds of dropping out. In short, it can be concluded that academic performance, both in terms of repeating a grade and having low academic achievement, is likely an important factor for females. Complementary to these factors, deviant behaviour will greatly influence a female's decision to drop out. This study does not find any evidence that individual characteristics variables such as student's *age at first entry*, *working experience*, *home location*, *changing school experience* and *health status* affect the dropout decisions of females. In Model Six of the main data sample regressions, *home location* and *changing school experience* variables are statistically significant.

**Table 6.8. Female Only Logit Regressions of School Dropout**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Age at first entry</u>	0.26 (0.25)	0.20 (0.28)	0.26 (0.25)	0.32 (0.27)	0.21 (0.26)	0.33 (0.35)
<u>Working experiences (Yes = 1, No = 0)</u>	0.45 (0.39)	0.56 (0.40)	0.13 (0.48)	0.47 (0.43)	0.57 (0.40)	0.47 (0.53)
<u>Perception of education (Good = 1, Bad = 0)</u>	-1.55 (1.55)	1.06 (1.16)	-1.10 (1.12)	-1.33 (1.41)	-1.76 (1.71)	2.06 (1.54)
Home location (Rural = 1, Urban = 0)		0.41 (0.42)				0.38 (0.50)
Repeat a grade (Ever repeated a grade = 1, No = 0)		3.04** (1.21)				3.14** (1.34)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		1.45*** (0.43)				2.58*** (0.77)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.06 (0.87)				0.81 (0.87)
Changing school experience		0.27 (0.26)				0.25 (0.29)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		1.75*** (0.40)				2.08*** (0.53)
Health (poor health = 0, up to excellent health = 4)		0.21 (0.28)				0.24 (0.40)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.45 (0.44)	0.31 (0.48)	0.78 (0.51)	0.77* (0.46)	0.41 (0.44)	1.56** (0.64)
<u>Household head with at least upper secondary school education (Yes = 1, No = 0)</u>	-0.70 (0.44)	-0.63 (0.49)	-0.51 (0.48)	-0.49 (0.49)	-0.72* (0.44)	-0.06 (0.63)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.02 (0.09)	-0.02 (0.09)	0.05 (0.10)	0.03 (0.10)	0.02 (0.09)	0.06 (0.12)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.11 (0.09)	-0.18* (0.09)	-0.09 (0.09)	-0.09 (0.08)	-0.11 (0.08)	-0.24** (0.11)
<u>Family size</u>	0.11 (0.11)	0.17 (0.12)	0.28* (0.16)	0.17 (0.12)	0.11 (0.11)	0.45** (0.20)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			-0.63*** (0.21)			-0.70** (0.29)
Parents are divorced (Yes = 1, No = 0)			(omitted)			(omitted)
Nonworking mother (Not working = 1, Working = 0)			0.12 (0.40)			0.15 (0.53)
Number of siblings dropping out			0.93*** (0.26)			1.20*** (0.38)
Helping family with household chores (Yes = 1, No = 0)			-1.79 (1.19)			-2.84* (1.59)
Helping family with daily business/work (Yes = 1, No = 0)			-0.06 (0.55)			1.24* (0.70)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.01 (0.06)			-0.002 (0.08)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.03 (0.07)			0.06 (0.09)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.76* (0.39)	1.06** (0.54)	0.85** (0.44)	1.11** (0.46)	0.86** (0.40)	2.06*** (0.77)
<u>Relation with teacher:</u>						
<u>Not good</u>	0.95 (1.05)	-0.52 (0.97)	-0.18 (1.78)	0.36 (0.98)	0.64 (1.06)	-4.57*** (1.42)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.81** (0.38)	-0.74* (0.43)	-0.91** (0.42)	-0.71 (0.48)	-0.79** (0.39)	-1.21** (0.56)
Bullied by peers and/or teachers (Yes = 1, No = 0)				3.87*** (1.24)		6.18*** (1.63)
School's curriculum:						
General				Reference		Reference
Vocational				0.51 (0.49)		0.09 (0.66)
Madrasah (Islamic Religious School)				0.60 (0.60)		-0.26 (0.68)
School's type (Private school = 1, Public school = 0)				0.52 (0.46)		0.20 (0.58)
School distance more than 10 km (Yes = 1, No = 0)				0.01 (0.50)		1.00 (0.70)
Log school's expenditures				-0.001 (0.31)		-0.004 (0.39)
Teachers' quality (Good = 1, Not good = 0)				-0.56 (0.43)		0.49 (0.63)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.72* (0.43)	-0.46 (0.44)	-1.01** (0.45)	-0.77* (0.45)	-0.65 (0.44)	-1.44** (0.57)
Part of Central Java Province:						
North					Reference	Reference
Central					0.18 (0.42)	-0.23 (0.52)
South					-0.25 (0.74)	-2.07 (1.36)
Log real minimum wages					-0.06* (3.41)	-0.09* (4.93)
Unemployment rate					0.11 (0.13)	0.14 (0.20)
Number of observation	260	260	260	253	260	253
Likelihood ratio (LR)	23.46**	61.68***	47.20***	39.85***	29.92**	103.83***
Wald $\chi^2$	28.45***	55.67***	55.30***	49.83***	31.68**	81.62***
Score Test	23.18**	61.74***	46.49***	39.96***	27.82**	90.56***
McFadden's R <sup>2</sup>	0.09	0.25	0.19	0.17	0.12	0.43
McFadden's Adjusted R <sup>2</sup>	-0.01	0.09	0.03	-0.001	-0.02	0.12
Deviance goodness-of-fit <i>p</i> -value	0.83	0.99	0.96	0.94	0.86	0.99
Pearson goodness-of-fit <i>p</i> -value	0.50	0.16	0.80	0.76	0.45	0.000***
Hosmer-Lemeshow goodness-of-fit <i>p</i> -value, group (10)	0.23	0.72	0.03**	0.01***	0.91	0.051*
Percentage of Correctly Classified	81.92%	85.00%	83.85%	83.79%	82.69%	88.93%
Area under ROC Curve	0.72	0.83	0.80	0.77	0.73	0.91
Link test:						
<u>_hat</u>	0.26	1.08***	0.71***	0.79***	0.75	1.22***
<u>_hatsq</u>	-0.28	0.03	-0.16	-0.1	-0.09	0.07
Log Pseudolikelihood	-112.63	-93.52	-100.76	-100.03	-109.40	-67.77
AIC	0.97	0.87	0.93	0.95	0.97	0.84
AIC*n	251.26	227.05	241.53	240.07	252.81	212.09

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined. Logit coefficients presented in above table are obtained from the following equation:

$$L_i = \ln \left( \frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

It is found that being a student from a poor family, proxied by the *lowest SES* variable, significantly increases the log odds of dropping out for females. As found in Model Six, it is important for females to get academic support from their mothers. A higher level of academic support from their mothers decreases females' log odds of dropping out. Having a higher number of family members significantly increases the log odds of females dropping out. Helping family with household chores makes dropping out less likely. In Model Six of the main data sample regressions, this variable is not statistically significant. The most reasonable explanation is that it requires females to spend more time in their home than outside and therefore, reduces the probability to misbehave outside parental control. Helping family with household chores is also good for females to foster their sense of responsibility. This also seems to make sense, as females are expected to do more domestic work than males. In contrast, helping family with daily business and work pushes females out of school. In Model Six of the main data sample regressions, *this* variable is statistically insignificant. A possible explanation is that females' time allocation to help in family businesses physically exhausts them and affects their devotion to study. Also, having siblings who dropped out of school is likely to increase the log odds of females dropping out. The presence of siblings who dropped out is likely to provide a role model which encourages their sisters to leave school as well. This study does not find any significant evidence for some family characteristics variables that influence the decision of females to drop out, such as *household head education*, *father's academic support*, *non-working mother*, *father's participation in household decision-making* and *mother's participation in household decision-making*. In Model Six of the main data sample regressions, *non-working mother* variable is statistically significant.

Several school characteristics variables are statistically significant. For example, female students that study in urban school locations strongly increase the log odds of dropping out. Also, females who are bullied by their peers and/or teachers tend to drop out. Having a good relationship with teachers will encourage female students to stay in

school. Surprisingly, and seemingly contradictorily, female students who have a bad relationship with teachers also have lower log odds of dropping out (in comparison to those who have a neutral relationship with teachers). This variable is not statistically significant in the other five models. In Model Six of the main data sample regressions, this variable is not statistically significant. It is possible that female students who had problems with teachers were not disturbed by the bad relationship and wanted to show that they were able to finish their schooling. Further, this study does not find evidence that *being a student at a private school*, *different school curriculum*, *school distance*, *school expenditure* and *teacher quality* have significant impacts on the log odds of female students dropping out.

Government financial assistance for poor students significantly reduces the log odds of dropping out for females in five out of six models, including the preferred Model Six. Higher real minimum wages significantly reduce the log odds of female students dropping out. This finding is similar to that in Table 6.1. This might indicate that when real minimum wages are higher, parents have more money to spend on education, especially for their daughters. This study does not find any evidence, in any model, that being a student in a particular part of Central Java Province and the *unemployment rate* variable have significant impacts on the log odds of female students dropping out.

#### **6.4.1.2. Average Marginal Effects for Female Only Logit Regressions**

It can be seen from Table 6.9 that only a few individual characteristics variables are statistically significant. In Model Six, on average, females who repeated a grade are about 26 percentage points more likely to drop out than females who did not repeat a grade. It is believed that they feel discomfort with their failure and decide to drop out. Female students who have a low academic record at previous levels of education are 22 percentage points more likely to drop out than female students who have an average

academic record. Finally, the risk of female students rises 17 percentage points for every time they commit new deviant behaviour.

Turning to family characteristics, on average, females from very poor families are 13 percentage points more likely to drop out than females from wealthier families. Female students' chances to drop out reduce about six percentage points for every additional siblings rank in the family. It can be seen from the average marginal effect that the risk for females of dropping out increases by approximately four percentage points if there is an additional child in the family. The probability of dropping out for female students increases about 10 percentage points for every additional sibling who dropped out of school. From school characteristics, it can be seen that female students from urban schools are about 17 percentage points more likely to drop out in comparison to female students from rural schools. Females who are bullied are about 52 percentage points more likely to drop out in comparison to females who are not bullied. Lastly, female students who received government's cash transfer for poor students are about a 12 percentage point lower probability of dropping out in comparison to female students who did not receive government cash transfers.

**Table 6.9. Female Only Average Marginal Effects from Logit Regressions**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
Age at first entry	0.03 (0.03)	0.02 (0.03)	0.03 (0.03)	0.04 (0.03)	0.03 (0.04)	0.03 (0.03)
Working experiences (Yes = 1, No = 0)	0.06 (0.05)	0.06 (0.04)	0.02 (0.06)	0.06 (0.05)	0.08 (0.05)	0.04 (0.05)
Perception of education (Good = 1, Bad = 0)	-0.21 (0.21)	0.12 (0.13)	-0.13 (0.13)	-0.16 (0.17)	-0.23 (0.23)	0.17 (0.13)
Home location (Rural = 1, Urban = 0)		0.05 (0.05)				0.03 (0.04)
Repeat a grade (Ever repeated a grade = 1, No = 0)		0.34*** (0.13)				0.26** (0.10)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.16*** (0.05)				0.22*** (0.05)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.01 (0.10)				0.07 (0.07)
Changing school experience		0.03 (0.03)				0.02 (0.02)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.20*** (0.04)				0.17*** (0.04)
Health (poor health = 0, up to excellent health = 4)		0.02 (0.03)				0.02 (0.03)
<b>Family Characteristics</b>						
Lowest socioeconomic status (Yes = 1, No = 0)	0.06 (0.06)	0.03 (0.05)	0.09 (0.06)	0.09 (0.06)	0.05 (0.06)	0.13*** (0.05)
Household head with at least upper secondary school education (Yes = 1, No = 0)	-0.10* (0.06)	-0.07 (0.06)	-0.06 (0.06)	-0.06 (0.06)	-0.10* (0.06)	-0.01 (0.05)
Father's/male guardian's academic supports (No support = 0, Max support = 15)	0.002 (0.01)	-0.002 (0.01)	0.01 (0.01)	0.003 (0.01)	0.003 (0.01)	0.005 (0.01)
Mother's/female guardian's academic supports (No support = 0, Max support = 15)	-0.01 (0.01)	-0.02* (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)
Family size	0.01 (0.01)	0.02 (0.01)	0.03* (0.02)	0.02 (0.01)	0.01 (0.01)	0.04** (0.02)
Parents are divorced (Yes = 1, No = 0)			(omitted)			(omitted)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			-0.08*** (0.02)			-0.06*** (0.02)
Nonworking mother (Not working = 1, Working = 0)			0.01*** (0.05)			0.01 (0.05)
Number of siblings dropping out			0.11*** (0.03)			0.10*** (0.03)
Helping family with household chores (Yes = 1, No = 0)			-0.21 (0.14)			-0.24* (0.13)
Helping family with daily business/work (Yes = 1, No = 0)			-0.01 (0.07)			0.10* (0.06)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.001 (0.01)			-0.0002 (0.01)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.003 (0.01)			0.01 (0.01)
<b>School Characteristics</b>						
School location (Urban = 1, Rural = 0)	0.10** (0.05)	0.12** (0.06)	0.10* (0.05)	0.14*** (0.06)	0.11** (0.05)	0.17*** (0.05)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.13 (0.14)	-0.06 (0.11)	-0.02 (0.21)	0.04 (0.12)	0.08 (0.14)	-0.38*** (0.11)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.11** (0.05)	-0.08* (0.05)	-0.11** (0.05)	-0.09*** (0.06)	-0.10** (0.05)	-0.10** (0.05)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.48*** (0.15)		0.52*** (0.11)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.06 (0.06)		0.01 (0.06)
Madrasah (Islamic Religious School)				0.07 (0.07)		-0.02 (0.06)
School's type (Private school = 1, Public school = 0)				0.06 (0.06)		0.02 (0.05)
School distance more than 10 km (Yes = 1, No = 0)				0.001 (0.06)		0.08 (0.06)
Log school's expenditures				-0.01 (0.04)		-0.0003 (0.03)
Teachers' quality (Good = 1, Not good = 0)				-0.07 (0.05)		0.04 (0.05)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.10* (0.06)	-0.05 (0.05)	-0.12** (0.05)	-0.09* (0.05)	-0.09 (0.06)	-0.12** (0.05)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					0.02 (0.06)	-0.02 (0.04)
South					-0.04 (0.10)	-0.17 (0.11)
Log real minimum wages					-0.01* (0.45)	-0.01* (0.42)
Unemployment rate					0.01 (0.02)	0.01 (0.02)

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

#### 6.4.1.3. Odds Ratios for Female Only Logit Regression

Table 6.10 shows the odds ratios for female only logit regression. The following discussion is referring to the results of odds ratios from Model Six. When holding other independents variables fixed, the odds of dropping out for a female student who repeats a grade is 22 times higher than for one who never repeats a grade. The odds of dropping out increase 13.2 times for female students who have a low grade in the Lower Secondary School's national final examination in comparison to female students who have an average grade in the Lower Secondary School's national final examination. For

a unit increase in *deviant behaviour*, the odds of dropping out (versus not dropping out) increases nearly eight times.

For Family characteristics, the odds of dropping out for poor female students are 4.77 times higher than the odds of dropping out for female students from wealthier families, which implies that the odds of dropping out for female students who are from the lowest socioeconomic status are about 377% higher than the odds of dropping out for female students who are not from the lowest socioeconomic status. For a one-unit increase in *mother's academic support*, there is a 21% decrease in the odds of dropping out, *ceteris paribus*. The odds ratio for *number of family members* indicates that for having one more additional family member, there is a 57% increase in the odds of dropping out. In contrast, there is a 50% reduction in the odds of dropping out for a one-unit higher sibling rank. Last, one-unit additional siblings who dropped out of school increase the female students' odds of dropping out by 3.3 times, *ceteris paribus*.

For School characteristics, the odds of dropping out for female students who study in urban areas are 7.9 times greater than for students who study in rural areas, which implies that the odds of dropping out for female students who study in urban areas are about 690% higher than the odds of dropping out for female students who study in rural areas. Moreover, having a bad relationship with teachers decreases the odds of dropping out by 0.01 times, which implies that the odds of dropping out of having a bad relationship with teachers are about 99% lower than the odds of dropping out for female students who have a neutral relationship with teachers. As mentioned previously in section 6.4.1.1, the result seems contradictory.

Government assistance for poor students successfully reduces the odds of dropping out by 0.24 times, which implies that the odds of dropping out for students who receive financial assistance from government are 76% lower than the odds of dropping out for students who do not receive the assistance.

**Table 6.10. Odds Ratio for Female Only Logit Regression**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Age at first entry</u>	1.29 (0.32)	1.22 (0.34)	1.29 (0.32)	1.37 (0.37)	1.23 (0.32)	1.39 (0.48)
<u>Working experiences (Yes = 1, No = 0)</u>	1.56 (0.60)	1.76 (0.71)	1.14 (0.55)	1.60 (0.69)	1.77 (0.70)	1.60 (0.85)
<u>Perception of education (Good = 1, Bad = 0)</u>	0.21 (0.33)	2.89 (3.35)	0.33 (0.37)	0.27 (0.37)	0.17 (0.30)	7.88 (12.10)
Home location (Rural = 1, Urban = 0)		1.50 (0.63)				1.47 (0.73)
Repeat a grade (Ever repeated a grade = 1, No = 0)		20.91** (25.29)				23.00** (30.90)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		4.28*** (1.86)				13.21*** (10.23)
Average (Between 7.01 – 8.50)						
High (Above 8.50)		0.94 (0.82)				2.25 (1.95)
Changing school experience		1.31 (0.34)				1.29 (0.37)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		5.73*** (2.32)				7.97*** (4.25)
Health (poor health = 0, up to excellent health = 4)		1.24 (0.34)				1.27 (0.51)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	1.56 (0.69)	1.37 (0.65)	2.17 (1.10)	2.15* (0.99)	1.51 (0.67)	4.77** (3.07)
<u>Household head with at least upper secondary school education (Yes = 1, No = 0)</u>	0.50 (0.22)	0.53 (0.26)	0.60 (0.29)	0.61 (0.30)	0.49* (0.21)	0.94 (0.59)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	1.02 (0.10)	0.98 (0.09)	1.06 (0.11)	1.03 (0.10)	1.02 (0.10)	1.06 (0.13)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	0.90 (0.08)	0.84* (0.08)	0.91 (0.08)	0.92 (0.08)	0.90 (0.08)	0.79** (0.09)
<u>Family size</u>	1.12 (0.12)	1.19 (0.14)	1.33* (0.21)	1.19 (0.14)	1.11 (0.13)	1.57** (0.31)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			0.53*** (0.11)			0.50** (0.14)
Parents are divorced (Yes = 1, No = 0)			(omitted)			(omitted)
Nonworking mother (Not working = 1, Working = 0)			1.13 (0.45)			1.17 (0.62)
Number of siblings dropping out			2.54*** (0.67)			3.31*** (1.26)
Helping family with household chores (Yes = 1, No = 0)			0.17 (0.20)			0.06* (0.09)
Helping family with daily business/work (Yes = 1, No = 0)			0.94 (0.52)			3.45* (2.42)
Father's participation in household decision making (No participation = 0, Max participation = 20)			0.99 (0.06)			1.00 (0.08)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			0.97 (0.06)			1.06 (0.09)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	2.14* (0.83)	2.90** (1.55)	2.35 (1.02)	3.03** (1.40)	2.36** (0.94)	7.87*** (6.03)
<u>Relation with teacher:</u>						
<u>Not good</u>	2.59 (2.73)	0.59 (0.57)	0.84 (1.49)	1.44 (1.40)	1.89 (2.01)	0.01*** (0.01)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Neutral</u>						
<u>Good</u>	0.45** (0.17)	0.48* (0.20)	0.40** (0.17)	0.49 (0.24)	0.46** (0.18)	0.30** (0.17)
Bullied by peers and/or teachers (Yes = 1, No = 0)				48.17*** (59.71)		480.71*** (784.60)
School's curriculum:						
General						
Vocational				1.67 (0.81)		1.10 (0.73)
Madrasah (Islamic Religious School)				1.83 (1.09)		0.77 (0.53)
School's type (Private school = 1, Public school = 0)				1.68 (0.78)		1.23 (0.72)
School distance more than 10 km (Yes = 1, No = 0)				1.01 (0.50)		2.71 (1.90)
Log school's expenditures				0.94 (0.30)		0.68 (0.26)
Teachers' quality (Good = 1, Not good = 0)				0.57 (0.25)		1.63 (1.03)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	0.49* (0.21)	0.63 (0.28)	0.37** (0.16)	0.46* (0.21)	0.52 (0.23)	0.24** (0.13)
Part of Central Java Province:						
North						
Central					1.19 (0.50)	0.79 (0.41)
South					0.78 (0.58)	0.13 (0.17)
Log real minimum wages					0.002* (0.01)	0.0001* (0.0004)
Unemployment rate					1.12 (0.14)	1.15 (0.23)
Number of observation	260	260	260	253	260	253

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

## 6.4.2. Male Only Logit Regressions

It has been noted before that the *parents are divorced* variable cannot be used because no male dropout student in the sample has divorced parents. Therefore, the *parents are divorced* variable was removed from the male only regression models.

### 6.4.2.1. Results and Discussion for Male Only Logit Regressions

Table 6.11 shows the regression estimates. Firstly, LR tests show that all models are statistically significant at the 1% level, also supported by Wald tests and Score tests. The tests show that at least one or more coefficients of independent variables are

different from zero. Moreover, McFadden's  $R^2$  is about 0.33 in Model One and 0.76 in Model Six. McFadden's Adjusted  $R^2$  is about 0.20 in Model One to 0.35 in Model Six. An increasing McFadden's Adjusted  $R^2$  indicates that the models are getting better when additional explanatory variables are added.

Deviance GOF measures yield large  $p$ -values for all models and they are not statistically significant. These indicate that there is no evidence to reject the null hypothesis and it is concluded that the models fit the data well. The overall rates of correctly classified fitted values from the classification table with a 0.5 cut point vary from 83.2% in Model One to 94.1% in Model Six. The area under the ROC Curve has a minimum value of 0.87 in Model One and a maximum value of 0.98 in Model Six. All goodness-of-fit tests show that the models fit the data well. Link tests also indicate that the six models have no specification error problems. The linear predicted values ( $\hat{y}$ ) in all models are statistically significant and the linear predicted values squared ( $\hat{y}^2$ ) are not statistically significant. Model Six is the chosen model as it has the lowest AIC value.

Firstly, this study finds that higher *age at first entry* increases the log odds of male students dropping out in most of the models. As seen in all models, there is strong evidence that it is important for males to have a good *perception of education*. A possible explanation is that there might be a lot of unskilled jobs available only to males (such as especially physically demanding jobs) that do not require a high education level. Therefore, it is easy for males to take the opportunity and leave school permanently. This study also finds that *home location* matters for males. Male students who reside in rural areas are more likely to drop out compared to male students who reside in urban areas. Those who repeat a class will have a psychological burden they cannot easily overcome. This study does not find evidence that males' individual characteristics variables such as student's *working experience*, *previous academic performance*, *changing school experience*, *deviant behaviours* and *health status* influence the dropout decisions. In Model Six of the main data sample regressions,

*previous academic performance, changing school experience, and deviant behaviours* variables are statistically significant.

It has been shown that poverty, proxied by the *lowest SES*, significantly increases the log odds of dropping out for females, but there is no evidence that it affects males significantly. In Model Six of the main data sample regressions, this variable is statistically significant. Having a *household head with at least an upper secondary school education* reduces the log odds of dropping out for male students. The evidence shows that parental human capital mainly affects boys, not girls. Moreover, mothers who are not working reduce the log odds of dropping out. A possible explanation for this is based on the social capital theory that non-working mothers are being physically present in the house and they will have more time to look after the family, thereby influencing their sons to reduce their antisocial behaviour.

**Table 6.11. Male Only Logit Regressions of School Dropout**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Age at first entry</u>	0.43* (0.23)	0.15 (0.27)	0.50* (0.25)	0.64** (0.27)	0.41** (0.20)	0.67 (0.47)
<u>Working experiences (Yes = 1, No = 0)</u>	0.27 (0.49)	0.44 (0.57)	0.69 (0.61)	0.09 (0.60)	-0.01 (0.52)	2.99 (3.09)
<u>Perception of education (Good = 1, Bad = 0)</u>	-2.27*** (0.78)	-2.22*** (0.88)	-2.83*** (1.00)	-2.65*** (0.87)	-2.83*** (0.90)	-8.81** (3.87)
Home location (Rural = 1, Urban = 0)		1.14* (0.67)				3.17** (1.35)
Repeat a grade (Ever repeated a grade = 1, No = 0)		2.38*** (0.85)				4.34 (4.22)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		-0.13 (0.53)				-0.30 (1.00)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		0.72 (1.00)				-3.18 (3.42)
Changing school experience		0.40 (0.34)				1.11 (0.77)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.33 (0.32)				1.51 (1.00)
Health (poor health = 0, up to excellent health = 4)		0.08 (0.32)				-1.43 (1.76)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.86 (0.92)	0.98 (0.84)	0.86 (1.17)	1.35 (0.98)	0.64 (0.85)	1.43 (2.33)
<u>Household head with at least upper secondary school education (Yes = 1, No = 0)</u>	-1.19* (0.61)	-1.57** (0.77)	-1.10 (0.80)	-1.36* (0.73)	-1.06* (0.62)	-3.29* (1.83)
<u>Father's academic supports (No support = 0, Max support = 15)</u>	0.01 (0.09)	-0.05 (0.10)	-0.02 (0.11)	-0.04 (0.10)	-0.01 (0.09)	-0.27 (0.39)
<u>Mother's academic supports (No support = 0, Max support = 15)</u>	-0.13* (0.08)	-0.14* (0.08)	-0.05 (0.11)	-0.22** (0.09)	-0.12 (0.08)	-0.18 (0.51)
<u>Family size</u>	0.39*** (0.15)	0.53*** (0.19)	0.35* (0.21)	0.52*** (0.17)	0.32** (0.17)	1.53** (0.77)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			0.12 (0.25)			0.81 (0.66)
Parents are divorced (Yes = 1, No = 0)			(omitted)			(omitted)
Nonworking mother (Not working = 1, Working = 0)			-1.01* (0.52)			-5.99** (2.37)
Number of siblings dropping out			1.39** (0.63)			6.61 (4.24)
Helping family with household chores (Yes = 1, No = 0)			0.72 (1.11)			3.72 (3.18)
Helping family with daily business/work (Yes = 1, No = 0)			-0.97 (0.74)			-0.34 (3.31)
Father's participation in household decision making (No participation = 0, Max participation = 20)			0.001 (0.08)			-0.34** (0.15)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.002 (0.08)			-0.35 (0.28)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.16 (0.47)	0.40 (0.54)	0.29 (0.52)	0.16 (0.58)	0.02 (0.53)	5.18** (2.33)
<u>Relation with teacher:</u>						
<u>Not good</u>	2.38** (1.16)	2.06 (1.90)	2.11* (1.13)	1.70 (1.16)	2.54** (1.27)	-1.61 (1.69)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Good</u>	-0.92** (0.46)	-0.69 (0.53)	-1.51*** (0.54)	-1.22** (0.57)	-0.86* (0.51)	-3.22 (3.53)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.66 (0.93)		2.23 (2.53)
School's curriculum:						
General				Reference		Reference
Vocational				0.27 (0.61)		0.38 (1.41)
<u>Madrasah (Islamic Religious School)</u>				1.26* (0.70)		4.13** (2.02)
School's type (Private school = 1, Public school = 0)				0.39 (0.63)		-1.77 (3.43)
School distance more than 10 km (Yes = 1, No = 0)				-0.05 (0.78)		0.81 (1.36)
Log school's expenditures				0.01** (0.54)		0.01 (1.41)
Teachers' quality (Good = 1, Not good = 0)				-0.06 (0.60)		-0.39 (1.80)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-1.88** (0.74)	-1.93** (0.85)	-2.55*** (0.97)	-2.46*** (0.94)	-1.35* (0.81)	-7.91** (3.97)
Part of Central Java Province:						
North					Reference	Reference
Central					-0.96 (0.73)	-0.36 (1.28)
South					0.24 (0.80)	-3.64 (0)
Log real minimum wages					-0.08* (4.25)	-0.003 (2.61)
Unemployment rate					0.001 (0.19)	-0.03 (19.51)
Number of observation	179	179	178	169	179	168
Likelihood Ratio (LR)	66.28***	85.48***	93.81***	80.18***	75.79***	139.03***
Wald $\chi^2$	39.78***	46.74***	44.31***	63.44***	60.42***	96.09***
Score Test	61.63***	76.11***	83.08***	69.41***	68.29***	102.14***
McFadden's R <sup>2</sup>	0.33	0.43	0.48	0.43	0.38	0.76
McFadden's Adjusted R <sup>2</sup>	0.20	0.23	0.27	0.22	0.21	0.35
Deviance goodness-of-fit p-value	0.97	0.99	0.99	0.99	0.98	0.99
Pearson goodness-of-fit p-value	0.09*	0.00***	0.014**	0.86	0.82	0.99
Hosmer-Lemeshow goodness-of-fit p-value, group (10)	0.30	0.47	0.49	0.89	0.58	0.86
Percentage of Correctly Classified	83.24%	85.47%	88.76%	84.62%	84.92%	94.05%
Area under ROC Curve	0.87	0.91	0.92	0.91	0.88	0.98
Link test:						
<u>_hat</u>	0.96***	0.96***	0.96***	1.00***	1.01***	1.05***
<u>_hatsq</u>	-0.03	-0.03	-0.03	-0.001	0.01	0.02
Log Pseudolikelihood	-66.68	-57.09	-49.61	-52.40	-61.93	-21.51
AIC	0.89	0.86	0.80	0.86	0.88	0.71
AIC*n	159.37	154.18	143.01	144.79	157.86	119.03

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined. Logit coefficients presented in above table are obtained from the following equation:

$$L_i = \ln \left( \frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_i X_i + u_i$$

Also, a higher level of participation of fathers in household decision-making reduces the log odds of male students dropping out. In Model Six of the main data sample regressions, this variable is not statistically significant. This study does not find statistically significant estimates for some family characteristics variables that influence the decision to drop out of males, such as *father's academic support*, *helping family with household chores* and *mother's participation in household decision-making*.

In terms of school characteristics variables, the evidence indicates that being a madrasah student increases the log odds of males dropping out, compared to male students from general schools. This result is similar to Model Four of the main data sample regressions, but not in Model Six. A possible explanation is that madrasahs have stricter regulations than general and vocational schools. For example, I conducted a discussion with a principal of a madrasah school in Pati Regency and he said that the school has very strict rules and even a small breach will lead to expulsion. He also said that it was mostly male students who were breaking the rules and the school expels them without hesitation. I successfully tracked down a former student from this madrasah who was expelled for breaching the rules and he confirmed the strict regulations. According to Moulton et al. (2008), madrasahs usually impose stricter discipline. Madrasahs have the very heavy responsibility to maintain the reputation of religious schools that teach their students the basic beliefs of Islam and an education in general within an Islamic educational environment. However, the level of discipline varies from school to school. Madrasah regulations depend on the institutions that run the schools and their viewpoint on care and discipline (Platt & Shah, 2013).

It has been shown in the preferred Model Six that male students that study in urban school locations strongly increase the log odds of dropping out. Several of the school characteristics variables are only statistically significant in models other than the preferred Model Six. For example, male students who have a bad relationship with teachers also have higher log odds of dropping out (in comparison to those who have a

neutral relationship with teachers). Surprisingly, there is no evidence that being bullied by other peers and/or teachers has a significant effect on male students to drop out, while In Model Six of the main data sample regressions, the variables is statistically significant. There is evidence that having a good relationship with teachers will make male students stay in school in four models (in comparison to those who have a neutral relationship with teachers). Further, this study does not find any evidence that *being a student at a vocational school, school distance, and teachers' quality* variables has significant impacts on the log odds of students dropping out.

Similar to females, government financial assistance for poor students significantly reduces the log odds of dropping out for males. These findings indicate that the assistance effectively reduces dropout for both females and males. This study does not find any evidence that supports significant impacts of specific regional characteristics (part of Central Java Province) and the *unemployment rate* variable on the log odds of males dropping out of school.

#### **6.4.2.2. Average Marginal Effects for Male Only Logit Regressions**

In Table 6.12, the average marginal effects for Model Six indicate that male students who have a good perception of education are 37 percentage points less likely to drop out in comparison to other male students that have a bad perception of education. Since the likelihood is quite significant for male students, it is important to encourage students to stay in school by providing information about the benefits of education. Male students who reside in rural areas are 13 percentage points more likely to drop out than their male peers who reside in urban areas. The difference in the probability of dropping out between male students who reside in rural areas and urban areas is relatively small. It is typical that poor families mainly reside in rural areas but there are also a lot of poor families residing in urban areas and it is likely that sons

from poor families, both from rural and urban areas, try to find a job to help the family financially.

**Table 6.12. Male Only Average Marginal Effects of School Dropout**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Age at first entry</u>	0.05* (0.03)	0.02 (0.03)	0.04** (0.02)	0.06** (0.03)	0.04** (0.02)	0.03 (0.02)
<u>Working experiences (Yes = 1, No = 0)</u>	0.03 (0.06)	0.04 (0.06)	0.06 (0.05)	0.01 (0.06)	-0.001 (0.06)	0.12 (0.13)
<u>Perception of education (Good = 1, Bad = 0)</u>	-0.26*** (0.09)	-0.22*** (0.09)	-0.24*** (0.08)	-0.26*** (0.09)	-0.30*** (0.09)	-0.37** (0.16)
Home location (Rural = 1, Urban = 0)		0.11* (0.06)				0.13*** (0.05)
Repeat a grade (Ever repeated a grade = 1, No = 0)		0.24** (0.07)				0.18 (0.18)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		-0.01 (0.05)				-0.01 (0.04)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		0.07 (0.10)				-0.13 (0.14)
Changing school experience		0.04 (0.03)				0.05 (0.03)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.03 (0.03)				0.06* (0.04)
Health (poor health = 0, up to excellent health = 4)		0.01 (0.03)				-0.06 (0.08)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.10 (0.11)	0.10 (0.08)	0.08 (0.10)	0.13 (0.10)	0.07 (0.09)	0.06 (0.10)
<u>Household head with at least upper secondary school education (Yes = 1, No = 0)</u>	-0.14** (0.07)	-0.16** (0.07)	-0.10 (0.07)	-0.13* (0.07)	-0.11* (0.07)	-0.14* (0.08)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.001 (0.01)	-0.005 (0.01)	-0.002 (0.01)	-0.003 (0.01)	-0.002 (0.01)	-0.01 (0.02)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.02* (0.01)	-0.01* (0.01)	-0.005 (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.01 (0.02)
<u>Family size</u>	0.05*** (0.02)	0.05*** (0.02)	0.03* (0.02)	0.05*** (0.02)	0.03** (0.02)	0.06* (0.03)
Parents are divorced (Yes = 1, No = 0)			(omitted)			(omitted)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			0.01 (0.02)			0.03 (0.03)
Nonworking mother (Not working = 1, Working = 0)			-0.09** (0.04)			-0.25*** (0.10)
Number of siblings dropping out			0.12** (0.05)			0.28 (0.18)
Helping family with household chores (Yes = 1, No = 0)			0.06 (0.10)			0.16 (0.14)
Helping family with daily business/work (Yes = 1, No = 0)			-0.09 (0.06)			-0.01 (0.14)
Father's participation in household decision making (No participation = 0, Max participation = 20)			0.0001 (0.01)			-0.01** (0.01)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.0001 (0.01)			-0.01 (0.01)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.02 (0.05)	0.04 (0.05)	0.02 (0.05)	0.02 (0.06)	0.003 (0.06)	0.22** (0.10)
<u>Relation with teacher:</u>						
<u>Not good</u>	0.28** (0.13)	0.20 (0.18)	0.17 (0.10)	0.17 (0.11)	0.27* (0.13)	-0.07 (0.07)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.11** (0.05)	-0.07 (0.05)	-0.13*** (0.04)	-0.12** (0.05)	-0.09 (0.05)	-0.13 (0.15)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.06 (0.09)		0.09 (0.11)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.03 (0.06)		0.02 (0.06)
Madrasah (Islamic Religious School)				0.12* (0.07)		0.17** (0.09)
School's type (Private school = 1, Public school = 0)				0.04 (0.06)		-0.07 (0.14)
School distance more than 10 km (Yes = 1, No = 0)				-0.01 (0.08)		0.03 (0.06)
Log school's expenditures				0.001** (0.05)		0.0006 (0.06)
Teachers' quality (Good = 1, Not good = 0)				-0.01 (0.06)		-0.02 (0.07)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.22*** (0.08)	-0.19*** (0.08)	-0.22*** (0.08)	-0.24*** (0.08)	-0.14* (0.09)	-0.33* (0.17)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.10 (0.08)	-0.02 (0.05)
South					0.03 (0.09)	-0.15 (0.11)
Log real minimum wages					-0.01* (0.45)	-0.01 (0.83)
Unemployment rate					0.0001 (0.02)	-0.001 (0.03)

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

Having a household head that holds at least an upper secondary school education reduces the probability of students dropping out by about 14 percentage points compared to students who have household heads who do not hold such a qualification. The difference of only 14 percentage points in the probability of dropping out suggests that some uneducated parents understand the importance of education for their sons. It is known that the male students' enrolment rate in upper secondary level has improved. Male students with non-working mothers are 25 percentage points less

likely to drop out than male students with working mothers. The result seems to contradict the current situation in Indonesia where many mothers are working, especially in urban areas, to earn more income for the family. Therefore, it is suggested that working mothers should supervise their sons in order to reduce the probability of dropping out because the absence of mothers in the home full time has a significant effect on their sons' dropout decision.

Male students who study in urban schools are 22 percentage points more likely to drop out in comparison to male students who study in rural areas, indicating that the dropout problem mainly occurs in schools in urban areas. Students who study in madrasah schools are 17 percentage points more likely to drop out than students who study in general schools. The associated average marginal effects indicate that males who receive financial assistance are about 33 percentage points on average less likely to leave school than those who do not get any financial assistance from the government.

#### **6.4.2.3. Odds Ratios for Male Only Regressions**

As seen in Table 6.13, the odds of dropping out for students who have a good perception of education are almost 100% lower than the odds of dropping out for students who not have a good perception of education. The odds of dropping out for male students who stay in rural areas are 23 times higher than the odds of dropping out for male counterparts who stay in urban areas.

For Family characteristics, Male students who have household head with at least upper secondary school education have lower odds of dropping out. They are 96% less likely to drop out than male students who have household heads with no upper secondary school education. The odds ratio for *number of family members* indicates that for having one more additional family member, the odds of dropping out increase by 4.6 times, they are 360% higher, when other independent variables are at fixed values.

**Table 6.13. Odds Ratios for Male Only Regressions**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Age at first entry</u>	1.54* (0.36)	1.17 (0.31)	1.64** (0.41)	1.90** (0.51)	1.51** (0.31)	1.96 (0.93)
<u>Working experiences (Yes = 1, No = 0)</u>	1.31 (0.64)	1.56 (0.89)	2.00 (1.21)	1.10 (0.65)	0.99 (0.51)	19.84 (61.21)
<u>Perception of education (Good = 1, Bad = 0)</u>	0.10*** (0.08)	0.11** (0.10)	0.06*** (0.06)	0.07** (0.06)	0.06*** (0.05)	0.0001** (0.001)
Home location (Rural = 1, Urban = 0)		3.11* (2.07)				23.78** (32.10)
Repeat a grade (Ever repeated a grade = 1, No = 0)		10.84*** (9.23)				76.64 (323.65)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.88 (0.47)				0.74 (0.74)
Average (Between 7.01 – 8.50)						
High (Above 8.50)		2.05 (2.05)				0.04 (0.14)
Changing school experience		1.50 (0.52)				3.03 (2.33)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		1.39 (0.44)				4.51 (4.50)
Health (poor health = 0, up to excellent health = 4)		1.08 (0.35)				0.24 (0.42)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	2.36 (2.17)	2.65 (2.23)	2.36 (2.77)	3.88 (3.78)	1.90 (1.62)	4.18 (9.75)
<u>Household head with at least upper secondary school education (Yes = 1, No = 0)</u>	0.31* (0.19)	0.21** (0.16)	0.33 (0.27)	0.26* (0.19)	0.35* (0.22)	0.04* (0.07)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	1.01 (0.09)	0.95 (0.09)	0.98 (0.11)	0.97 (0.10)	0.99 (0.09)	0.76 (0.30)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	0.88* (0.07)	0.87* (0.07)	0.95 (0.10)	0.81** (0.07)	0.88 (0.07)	0.83 (0.42)
<u>Family size</u>	1.47*** (0.22)	1.69*** (0.33)	1.42 (0.30)	1.67** (0.28)	1.38** (0.23)	4.62 (3.58)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			1.13 (0.28)			2.24 (1.48)
Parents are divorced (Yes = 1, No = 0)						
Nonworking mother (Not working = 1, Working = 0)			0.37* (0.19)			0.003** (0.01)
Number of siblings dropping out			4.02** (2.55)			743.95 (3151.97)
Helping family with household chores (Yes = 1, No = 0)			2.06 (2.29)			41.25 (131.10)
Helping family with daily business/work (Yes = 1, No = 0)			0.38 (0.28)			0.71 (2.36)
Father's participation in household decision making (No participation = 0, Max participation = 20)			1.00 (0.08)			0.71** (0.11)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			1.00 (0.08)			0.70 (0.20)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	1.18 (0.55)	1.49 (0.81)	1.33 (0.69)	1.17 (0.68)	1.02 (0.54)	177.54** (414.41)
<u>Relation with teacher:</u>						
<u>Not good</u>	10.82** (12.59)	7.88 (15.02)	8.22* (9.31)	5.45 (6.33)	12.68** (16.08)	0.20 (0.34)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Neutral</u>						
<u>Good</u>	0.40** (0.18)	0.50 (0.27)	0.22*** (0.12)	0.30** (0.17)	0.42* (0.22)	0.04 (0.14)
Bullied by peers and/or teachers (Yes = 1, No = 0)				1.93 (1.80)		9.31 (23.60)
School's curriculum:						
General						
Vocational				1.31 (0.80)		1.46 (2.05)
Madrasah (Islamic Religious School)				3.51* (2.46)		62.22** (126.00)
School's type (Private school = 1, Public school = 0)				1.48 (0.93)		0.17 (0.59)
School distance more than 10 km (Yes = 1, No = 0)				0.95 (0.74)		2.25 (3.06)
Log school's expenditures				2.95** (1.60)		4.02 (5.67)
Teachers' quality (Good = 1, Not good = 0)				0.94 (0.56)		0.67 (1.22)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	0.15** (0.11)	0.15** (0.12)	0.08*** (0.08)	0.09*** (0.08)	0.26* (0.21)	0.0004** (0.001)
Part of Central Java Province:						
North						
Central					0.38 (0.28)	0.69 (0.89)
South					1.27 (1.02)	0.03 (0.07)
Log real minimum wages					0.0003* (0.001)	0.00001 (0.00001)
Unemployment rate					1.00 (0.19)	0.97 (0.65)
Number of observation	179	179	178	169	179	168

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

It shows that the odds of dropping out for male students who live with non-working mother are nearly six times lower than the odds of dropping out for male students who live with working mother. A one-unit increase rise in father's participation in household decision making reduces a male's odds of dropping out by 0.71 times, *ceteris paribus* (that is they are 29% lower).

The odds of dropping out for male students who study in urban areas are 178 times as large as for students who study in rural areas. Male students studying in religious schools have 62 times higher odds of dropping out in comparison to male student studying in general schools. Last, the odds of dropping out for students who

receive government financial assistance are 100% lower than the odds of dropping out for students who do not receive government financial assistance.

### **6.4.3. Comparison between Female Only and Male Only Regressions**

Some explanatory variables only have strong impacts on females' decisions to drop out. It is found that all statistically significant individual characteristics variables for females increase their log odds of dropping out (*repeating a grade, low academic achievement at previous level of schooling and deviant behaviours*). It is also found that most of the significant variables that influence the odds of females' to drop out are associated with family characteristics. There is strong evidence that lowest SES is associated with higher log odds of dropping out for females only. There is also evidence that a higher level of mothers' academic support reduces females' log odds of dropping out, as does helping the family with household chores. In contrast, the estimates show that spending more time helping the family with daily business and work increases females' log odds of dropping out. Some school characteristics variables also have strong impacts on the decision to drop out. One important result is that having been bullied by peers and/or teachers contributes to higher log odds of dropping out for females to drop out. It suggests that bullying behaviour in school has adverse psychosocial consequences for females, more than for males. Moreover, female students who have a good relationship with teachers have higher log odds of staying in school. Unexpectedly, and seemingly contradictory, this is also the case when they had a bad relationship with teachers. This might be a case of omitted variable bias, due to the exclusion of a student attendance variable. Therefore, this study suggests that such a variable should be included in future research. Another variable significantly affecting females only is minimum wages. They diminish the log odds of dropping out. This suggests that parents' additional wages lead to a larger allocation of funds to their daughters' education.

There are also some strong explanatory variables that influence only males' decisions to drop out. Male students' good perception of education reduces their log odds of dropping out. The availability of unskilled jobs sometimes attracts young men to leave school as suggested by pullout theory. It is important to show that education will produce benefits for them in the future. This study also finds that parental human capital – proxied by the household head with at least an upper secondary school education – affects males', not females', decisions to drop out. Further, I conclude that mothers who are not working and are physically present in the house reduce the log odds of their sons dropping out. There is only one school characteristics variable that affects only males: Being students at Islamic schools increases their log odds of dropping out. As explained before in Section 6.4.2.1, strict regulation at Madrasah may affect male students more than female students.

Only three explanatory variables significantly affect the decisions of both females and males. Firstly, having a higher number of family members significantly increases the log odds of dropping out. This might be due to financial issues. Having a larger number of children requires more financial support from parents and unfortunately some parents cannot afford to pay school expenses for all of their children. Secondly, being a student at an urban school increases the log odds of males and females dropping out. This raises the question: What is the problem with urban schools? One possible reason might be that school fees in urban areas are higher than in rural areas. Even though this study also uses a *school expenditure* variable, it is statistically insignificant. The interviews suggest this might be because respondents have forgotten about their expenditures so they cannot give exact numbers. Lastly, it is found that government financial assistance policy for poor students significantly reduces the log odds of dropping out for both males and females. It suggests that this government policy aimed at reducing dropout is on the right track.

## 6.5. Robustness of Results: OLS and Probit Regressions

This study employs OLS and probit regressions as part of the robustness analysis. Pohlman and Leitner (2003) suggest that OLS regression can also be used if the dependent variable is binary. However, in general, logit and probit regressions have advantages for binary response variables compared to OLS. The main problems with OLS are: (1) Predicted probabilities from OLS can lie outside the 0 – 1 interval; and (2) the normal distribution will likely be violated with a binary dependent variable. A study by Pohlman and Leitner (2003) compares OLS and Logit regression in explaining high school dropout. They conclude that Logit regression provides more precise estimates of probabilities of the dependent outcome, and strongly advise researchers to use Logit regression when modelling the probability of binary outcomes.

Comparing OLS regression results with logit and probit regressions, it can be seen that some of the explanatory variables have contradictory impacts on the probability of students dropping out; however they are all statistically insignificant (See Appendices 11 and 12). In logit regressions, more variables are significant compared to OLS regressions. Overall, logit regressions produce more consistent results compared to OLS regressions. Moreover, it is suggested that OLS is a non-preferred method because some of the predicted probabilities from OLS are outside the 0 – 1 interval (Table 6.14).

**Table 6.14. Percentage of Fitted Value Outside 0-1 of OLS**

<b>Type of Regression</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
Full Samples	8.7%	11.4%	13.7%	10.7%	9.3%	19.7%
Full Samples with Interaction Effects	10.5%	14.8%	14.8%	13.7%	128%	20.0%
Female Only	4.2%	14.6%	14.6%	7.9%	6.2%	24.5%
Male Only	10.6%	17.3%	17.6%	20.7%	15.6%	17.9%

Greene (2012, p. 729) claims that generally the choice between logit and probit does not create any significant difference in the results. The results from probit regressions indicate that the estimates are highly similar to those obtained from logit regressions, although probit regressions on occasion produce more significant estimates (See Appendix Tables 6.9 and 6.10). In order to check which method is preferable, I compared McFadden's  $R^2$  between logit and probit. It can be seen in Table 6.15 that McFadden's  $R^2$ s are nearly identical in all type of regressions.

I also produced a classification table to find out the correctly classified fitted values of logit and probit models. Table 6.15 shows that logit predicts only slightly better compared to probit, so the difference is not significant. It is also found that the average marginal effects of logit and probit in the models are nearly identical. Therefore, the findings strengthen Greene's claim. AIC values between logit and probit are also compared. As shown in Table 6.15, there is no significant difference between them.

Long (1997, p. 83) suggests that since logit and probit models have identical results, the choice between them is mainly based on convenience and convention. Kinney and Dunson (2006) argue that logit regression is preferred to probit regression because it has a more 'intuitive' interpretation of regression coefficients in terms of odds ratios. This is also pointed out by Hailpern and Visintainer (2003). They argue that the probit model "lacks natural interpretation of regression parameters" (Hailpern & Visintainer, 2003, p. 213). Odds ratios are useful for interpreting regression outputs, and therefore logit regression models are preferable.

**Table 6.15. Comparison between Logit and Probit**

<b>Type of Regression</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<b>Full Samples</b>						
McFadden's R <sup>2</sup> Logit	0.18	0.27	0.26	0.23	0.21	0.40
McFadden's R <sup>2</sup> Probit	0.19	0.27	0.26	0.24	0.21	0.40
Correctly classified Logit	81.09%	82.69%	83.56%	82.23%	83.37%	85.51%
Correctly classified Probit	80.87%	82.69%	83.79%	82.23%	83.14%	86.22%
AIC Logit	0.90	0.85	0.86	0.87	0.89	0.80
AIC Probit	0.90	0.84	0.85	0.87	0.90	0.79
AIC*n Logit	395.93	372.53	375.56	368.90	391.51	335.03
AIC*n Probit	394.59	370.72	373.83	366.16	389.87	334.07
<b>Full Samples With Interaction Effects</b>						
McFadden's R <sup>2</sup> Logit	0.22	0.32	0.31	0.28	0.25	0.46
McFadden's R <sup>2</sup> Probit	0.22	0.32	0.31	0.28	0.26	0.47
Correctly classified Logit	82.69%	84.97%	84.93%	84.83%	83.83%	87.89%
Correctly classified Probit	81.78%	84.51%	84.47%	84.60%	82.46%	87.65%
AIC Logit	0.89	0.82	0.83	0.86	0.88	0.75
AIC Probit	0.89	0.82	0.83	0.86	0.88	0.75
AIC*n Logit	392.54	360.32	364.27	363.01	386.70	315.86
AIC*n Probit	391.74	359.73	363.05	361.46	385.95	314.58
<b>Female Only</b>						
McFadden's R <sup>2</sup> Logit	0.09	0.25	0.19	0.17	0.12	0.43
McFadden's R <sup>2</sup> Probit	0.10	0.25	0.20	0.17	0.12	0.43
Correctly classified Logit	81.92%	85.00%	83.85%	83.79%	82.69%	88.93%
Correctly classified Probit	81.54%	84.23%	83.85%	83.79%	81.92%	88.93%
AIC Logit	0.97	0.87	0.93	0.95	0.97	0.84
AIC Probit	0.96	0.87	0.92	0.94	0.97	0.84
AIC*n Logit	251.26	227.05	241.53	240.07	252.81	212.09
AIC*n Probit	250.56	227.01	239.97	238.65	252.30	213.12
<b>Male Only</b>						
McFadden's R <sup>2</sup> Logit	0.33	0.43	0.48	0.43	0.38	0.76
McFadden's R <sup>2</sup> Probit	0.33	0.42	0.48	0.44	0.38	0.77
Correctly classified Logit	83.24%	85.47%	88.76%	84.62%	84.92%	94.05%
Correctly classified Probit	82.68%	85.47%	89.33%	85.21%	85.47%	94.05%
AIC Logit	0.89	0.86	0.80	0.86	0.88	0.71
AIC Probit	0.89	0.86	0.80	0.85	0.88	0.71
AIC*n Logit	159.37	154.18	143.01	144.79	157.86	119.03
AIC*n Probit	159.47	154.98	143.33	144.04	157.01	118.70

## 6.6. Summary and Conclusions

This study aims to explain why students at upper secondary school level in Central Java Province decide to drop out of school. I examined the impacts of individual characteristics, family characteristics, school characteristics, Indonesian

government policy and macroeconomic condition variables on the likelihood of an individual to complete or drop out of upper secondary school. I employed logit regressions that are suitable for analysing binary response variables such as dropout or graduation. In general, the findings in this study add new insights to the existing literature.

Some important results indicate that being a female, older age at first entry, having a home location in a rural area, having low secondary school national examination grades, changing schools, larger family size, having siblings who dropped out and studying in urban schools is associated with higher log odds of dropping out. This study indicates that the *lowest socioeconomic status* variable, as a proxy of poverty, also contributes to dropout. Most of the statistically significant determinants explaining school dropout in Central Java Province are highly consistent with previous studies for other developing countries.

Interaction effects were incorporated in regression models and the study has identified the characteristics that are associated with dropout. In general, the main findings from the interaction effects between variables are similar to those from the the main data sample regression models without interaction effects. There is no difference in the signs of explanatory variables compared to the previous models. However, with interaction effects, the interacted variables are now statistically significant in all models showing that the interaction effects capture the omitted variable bias and as a result produce better estimates. Karaca-Mandic, Norton and Dowd's (2012) method was employed to calculate the average marginal effects of the interacted variables to get better interpretation of the interaction terms. It is found that female students with higher sibling rank are less likely to drop out in comparison to male students with higher sibling rank. This study also suggests that female students who stay in rural areas are less likely to drop out than male students who stay in rural areas. It is suggested that urban students who study in urban schools have more problems than students from rural areas who study in urban schools. In addition, this study uses odds

ratios to calculate an individual's odds of dropping out. They are useful for predicting the odds of dropping out for students based on their characteristics.

This study also investigates female and male only regressions. The regression results reveal significant gender differences in the odds of dropping out. Some explanatory variables only have strong impacts on females' decisions to drop out. I found some individual characteristics variables, such as *repeating a grade*, *low academic achievement at previous level of schooling* and *deviant behaviours*, increase female log odds of dropping out. I also found that lowest SES and spending more time helping family with daily business and work are associated with higher log odds of dropping out for females only. One important result is that having been bullied by peers and/or teachers contributes to higher log odds for females dropping out.

There are also some strong and statistically significant explanatory variables that influence males' decisions to drop out. Male students' good perception of education reduces their log odds of dropping out. This study also finds that male students who have a household head with at least an upper secondary school education reduce the log odds of males dropping out. Further, I conclude that mothers who are not working and are physically present in the house reduce the log odds of their sons dropping out. Being students at madrasah schools increases their log odds of dropping out.

Three explanatory variables significantly affect the decisions of both females and males. Firstly, having a higher number of family members significantly increases the log odds of dropping out. Secondly, being a student at an urban school increases the log odds of males and females dropping out. This result indicates that there is a problem with urban schools. Lastly, I find that government financial assistance policy for poor students significantly reduces the log odds of dropping out for both males and females.

In conclusion, overall significance tests and goodness-of-fit tests show that Model Six fits the data well. Therefore, the information from Model Six regressions can be used as a starting point to establish a preliminary early warning system based on the powerful indicators from significant explanatory variables that predict dropout. Identifying students at risk must begin when students start their first day of upper secondary school so that schools can address the dropout problem at an early stage.

## **7. IMPLICATIONS FOR POLICY AND PRACTICE**

### **7.1. Introduction**

The discussion in the previous two chapters indicates that it is important to improve the existing policies, and individual assessment and targeted intervention practices are also needed for reducing the number of dropouts. In general, there are two main strategies: (1) Dropout Prevention Programs – dropout prevention initiatives are important because, as mentioned in the discussion in Chapter Five, the best way is to prevent it from happening; and (2) Return to School Programs – it cannot be neglected that some students still leave school and in some circumstances they want to go back to school. The Back to School Program is created to support students who want to return to school. This study mainly proposes the use of demand-side interventions that directly support students to stay in school. Only one policy in Section 7.2.2.2 below can be characterized as a supply-side approach.

The first part of this chapter discusses the evaluation of current policies, in order to answer research question number four. The limitations of some policies have been highlighted in Chapter Five and this part gives more details about the problems. Improvements to the policies are also offered. This chapter also discusses the return to school policies and evaluates the Multi-Entry/Exit System and Equivalency Education system. The second part presents the potential practices to prevent students from dropping out, answering research question number five. Specific interventions are designed and developed not only for students at risk, but also for their parents and teachers. The main purpose of interventions is to protect students from dropping out, i.e., before this occurs.

The first potential practice is an EWS and it is the main new policy proposed in this study. The system is a tool that identifies students at risk of dropping out based on the significant explanatory variables from the quantitative analysis in Chapter Six. The application of the EWS is explained in detail in this section. Next, the other possible

practices are explored. They include Stay in School Programs, Pregnant Students' Prevention Programs, Foster Parents Programs, Interventions from Schools and the interventions aimed at parents.

There is a potential for cultural aspects to lead to policy failure. Therefore, this study takes into consideration the effects of *nrimo* and *pasrah* in the policies discussed below. Although *nrimo* and *pasrah* are likely to impede the effectiveness of the policies, the positive aspect of other Javanese principle discussed in Section 2.8, namely *usaha* or *ikhtiar*, should be incorporated and the challenge of the policies advocated in this study is to make sure that *nrimo* and *pasrah* are fully considered in ways that could mitigate the risk of policy failure.

## **7.2. Dropout Prevention Programs**

This section starts with the evaluation of existing dropout prevention policies. Based on the evidence from the qualitative analysis presented in Chapter Five, it is concluded that preventive programs, not curative programs, are likely to be the more effective strategy in reducing dropout.

It has been discussed in Chapter Five that there are four national policies aimed at preventing dropout in Indonesia. One of the limitations of the national Dropout Prevention Program is that it is heavily focused on poor students. It is clear that the only targets of the government's policies are poor students and that provision of financial assistance is seen as the best solution to the dropout problem. This is an incomplete solution because not all students leave school due to financial problems. This study finds that only 25% of dropouts in Central Java Province left school due to financial problems. Undoubtedly, poverty has a strong effect on the demand for education, but the government failed to deal with other factors that also strongly impact students to leave school permanently. More importantly, this study found that dropout students come not only from poor families, but also from wealthier families.

Therefore, current policies that focus only on financial assistance for the poor are not sufficient on their own to solve the dropout problem and other policies are needed to prevent students from dropping out.

### **7.2.1. The Evaluation of Existing Dropout Prevention Policies**

Existing Dropout Prevention Policies focus on poor students and it is vital for the government to expand their investment in scholarships, by increasing the number of scholarship recipients and by distributing scholarships equally to both public and private schools. It is also important to increase the scholarship amounts to cover all the costs of schooling, as poor students are still struggling to cover the remaining cost. The proposed improvements to current cash transfers are based on the research finding, as discussed in the section below.

#### **Indonesia Smart Card (*Kartu Indonesia Pintar* – KIP)**

One of the logit regression results indicates that the government's cash transfer to poor students (KIP) is highly correlated with lower log odds of dropping out. As mentioned earlier in Chapter Five, KIP – previously known as Cash Transfer for Poor Students (*Bantuan Siswa Miskin* – BSM) – cannot cover all the education expenses faced by poor students. Therefore, the World Bank (2013, pp. 103-104) suggests that the best setting of KIP is if it can cover 100% of the costs for all poor students from primary school to upper secondary school. This would guarantee that there is no reason for dropping out for poor students because of financial problems. The World Bank also suggests the KIP scheme provides an incentive bonus for poor students who decide to continue their education from primary school to lower secondary school and from lower secondary school to upper secondary school. The World Bank also suggests providing incentives for students who are deciding whether to continue their education. In addition, the World Bank also recommends improving the provision of KIP by

aligning the cash transfer to poor students to the timing of their expenditures as current money transfer schemes create financial stress on students and their families.

World Bank (2013, p. 78) estimates that covering 100% of education costs of all poor and 50% of near poor students, and of giving a 50% transition bonus between primary school and lower secondary school, and between lower secondary school and upper secondary school, would add an extra Rp. 5 billion to the national budget by 2015<sup>56</sup>. The additional potential cost is small relatively to the national budget for the education sector in 2015 (Rp. 152 trillion).

The World Bank's recommendations are useful, but there are potential policies that have not been discussed before. In addition to the World Bank's recommendations, this study recommends: Firstly, to simplify the selection procedures. The World Bank (2013, pp. 77-78) notices that beneficiaries receive the cash transfer for their first year of school only after their second year of study has started due to the complex verification procedure. The cash transfer was not available for poor students when they started lower secondary school or upper secondary school. This study found that 44.4% of respondents who dropped out due to financial problems withdrew their education when they were in their first year and 41.7% of dropped out respondents left school in the second year. It indicates that many poor students had been struggling to finance their education since they started upper secondary school and many did not survive until the end of the first year. Some of them who survived the first year gave up in their second year. Only 13.4% of dropped out respondents left school at third grade.

In addition, one requirement of KIP that potential recipients of the cash transfer is that they must have shown good attendance in class and have shown 'good behaviour' in school, as observed by the principal, and newly enrolled students have difficulty meeting this criterion. Therefore, it is suggested that it is important to give

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<sup>56</sup> The amount of KIP in 2015 was Rp. 12.8 trillion, an increase from Rp. 11.1 trillion in 2014. The KIP amount rose because the number of KIP beneficiaries increased from 11.1 million poor students in 2014 to 21.7 million poor students in 2015 (Ministry of Finance Republic of Indonesia, 2015, p. 23). This increase is not related to the World Bank's recommendation.

financial assistance straightaway to poor students when they start their education at the next level to avoid dropout because of the complexity of the selection processes.

The second recommendation is to give a guarantee that a poor student will receive KIP, starting from primary school continuously up to upper secondary school without stopping. The World Bank (2013, p. 77) argues that the transition between primary school and lower secondary school, and between lower secondary school and upper secondary school, is a critical period due to the majority of poor students deciding not to continue their education to the next level because of the uncertainty whether they can finance their education. Therefore, it is important for the government to provide the cash transfer to poor students from when they are starting primary school until they finish upper secondary school, without stopping.

The potential cost of KIP received by a student for 12 years of education is calculated as follows. Every KIP beneficiary at primary school level receives Rp. 450 thousand (NZ\$48) per year, Rp. 750 thousand (NZ\$79) per year for lower secondary school and Rp. 1 million (NZ\$105) per year for upper secondary school. Assuming that there is no change in the KIP amounts over 12 years, a student will receive Rp. 7,950,000.00 (NZ\$839) in total for 12 years. There are 10.9 million primary school students who receive KIP in 2016, but we do not know exactly how many Grade 1 Students receive the KIP. If it is assumed that one sixth of KIP beneficiaries are Grade 1 students, then the total cost would be Rp. 14.5 trillion (NZ\$1.53 million) in 12 years.

It is also recommended that there is an incentive bonus if poor students stay in school. The incentive will be given to poor students once they are enrolled in the next grade. This reward will encourage the poor students to remain in school. The potential cost of giving an incentive bonus is as follows. Assuming that a 25% bonus from KIP amount per year is given to a poor student if he/she enrolls in the next grade then it

would add an extra 25% to the national budget.<sup>57</sup> For example, the total national budget for KIP is Rp. 11.6 trillion to cover 19.5 million students (TNP2K, 2016), or 7.7% of the total education budget in 2016. With the addition of the incentive bonuses for poor students, the KIP budget increases to Rp. 14.5 trillion. With incentive bonus, the proportion KIP's to total education budget in 2016 increases to 9.6%, or an additional increase of 1.9%. The small increment in KIP will not significantly affect the education budget overall. In addition, ACDP (2013a, p. 9) records that Indonesia spends only 0.5% of its national budget on social assistance programs in comparison to an average of 1.5% for developing countries. In 2016, KIP made up 0.54% of the Indonesian government's national budget.

Additional government spending on KIP can be financed from the reduction in spending on activities that might not be a priority, e.g. overseas trips, business meetings and the construction of government buildings.<sup>58</sup> Overseas working visits are often found to result in few benefits for the country and are also seen as the chance for government officials to get free tickets and accommodation for overseas pleasure.<sup>59</sup>

How to ensure that money given to poor students will be spent on school-related costs and not other expenses? Some local governments are aware of this issue. For example, Government of Jakarta Province does not give money in the form of cash. To use the money, students must go to selected stores approved by the Government and spend the money there. The government can easily track students who did not use the

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<sup>57</sup> World Bank (2013, p. 78) assumed a 50% transition bonus when a student enrolls in lower secondary school after finishing primary school, and from lower secondary to upper secondary. Fifty per cent transition bonus is given every three years. This study uses World Bank's assumption as the benchmark and uses a 25% transition bonus per year when a student enrolls in the next grade.

<sup>58</sup> The reduction in spending on activities that might not be a priority were also applied in early 1983 when Indonesian government initiated to adjust some programs to restore macroeconomic stability (Thee, 2012, p. 110). These include: stopping the construction of new government building, reduce overseas visits and ceremonial visits to the regions and reduce the number of seminars and meetings.

<sup>59</sup> For example, in 2015 there was a controversy when the Ministry of Primary and Secondary Education and Culture spent 10 million Euros to participate in Frankfurt Book Fair, which ran from 14 to 18 October 2015. The House of Representatives of Indonesia planned to complain to the Ministry about the unnecessary spending for the book fair (Perdani, 2015).

ATM in the approved stores and stop transferring money for some time. It is also important to control KIP strictly as conditional cash transfers (CCTs). A study by Baird, McIntosh, and Ozler (2016) in Malawi shows that CCT programs successfully increase educational attainment and reduce teen births, but they do not improve health and labour market outcomes. In addition, the study also show that unconditional cash transfers (UCTs) significantly reduce HIV prevalence, teen pregnancy and early marriage, but the positive impacts vanish quickly two years after the end of transfers. The failure of UCTs indicates that short duration of programs should be avoided and it also shows that UCTs are not good programs to boost school enrolment.

### **Family Hope Program (*Program Keluarga Sejahtera - PKH*)**

The government policy to offer financial incentives to poor families to keep their children in upper secondary school is considered as one of the solutions to reduce poverty. One of the research findings in Chapter Five indicates that parents did not have the power to force their children to stay in school when their children have decided to drop out. Therefore, the government plan to expand PKH to upper secondary school children is important for the dropout prevention campaign. As the tool to prevent students from dropping out, government must make sure that when parents receive the financial incentive, they understand that they have a bigger responsibility to keep their children in school. Older children of poor families are also incentivised to stay in school as this is a way that they can contribute financially without having to seek employment. There are some conditions for PKH. For example, the PKH recipients should attend at least 85% of school days per month during one academic year. The government can cut or stop giving PKH to beneficiaries if they do not comply with the necessary requirements and obligations. Since there are some problems with *nrimo* and *pasrah* attitudes, giving conditional cash transfer to parents

is expected to increase their responsibility to keep their children in school as there is a consequence if parents failed to comply with the requirements.

Recent studies by the World Bank (2012) and Nazara and Rahayu (2013) have examined the impact of PKH. It is important to note that PKH is a cash transfer program to reduce poverty, conditional on access to health care and education services. Similar to BOS, it has the long run goal to reduce dropout (TNP2K, n.d.). The World Bank (2012) indicates that PKH was successful in getting poor families to go to the health care centre more often. The World Bank finding was supported by Nazara and Rahayu (2013). The World Bank did not find any impact of PKH on enrolment rates because the initial enrolment rates were already high. It also did not reduce dropout rates because they were already low.

Ministry of Social Affairs plans to expand the benefits to poor parents who still have children attending upper secondary school, persons with disabilities and the elderly by 2016.<sup>60</sup> Table 7.1 shows that there was an increase in the benefit in 2013 and another significant benefit change in 2016, when the amounts of benefit for primary school and for lower secondary school children were reduced. Poor families with upper secondary school children received Rp. 1 million per year for the first time.

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<sup>60</sup> This was reported in some Indonesian online newspapers (e.g., Endi, 2016; Wibisono, 2015). However, there was no information from *Tim Nasional Percepatan Pengentasan Kemiskinan* (TNP2K) about the expansion of PKH when checking their website (<http://www.tnp2k.go.id/>) during April 2017. Another PKH website (<http://pkh.kemsos.go.id/>), could not be accessed during April 2017. Therefore, no official information could be gathered about the expansion.

**Table 7.1. PKH Benefit Amount per Person**

Details of Transfer	Annual Amount of Benefit (Rp.)		
	2007 - 2012	2013 - 2015	2016*)
Fixed cash transfer	200,000	300,000	500,000
Extremely poor households with:			
1. Pregnant/lactating mother/child up to 5 years old	800,000	1,000,000	1,200,000
2. Children in primary school	400,000	500,000	450,000
3. Children in lower secondary school	800,000	1,000,000	750,000
4. Children in upper secondary school	-	-	1,000,000
5. person with disabilities	-	-	3,100,000
6. Elderly	-	-	1,900,000

Source: Nazara and Rahayu (2013), except \*)

\*) Source: Ministry of Finance Republic of Indonesia (2016)

### **7.2.2. Return to School Policies**

In some cases, dropout students want to go back to school. It has been shown in Chapter Five that some students intended to return to school, but there were some barriers that prevented them from doing so. This section discusses the existing return to school policies and the best possible program to send students back to school.

#### **7.2.2.1. Evaluation of Existing Return to School Policies**

Two current return to school policies are examined. First, the multi-entry/exit system policy is discussed. This system is useful, but its application needs to be improved. Secondly, the EE system policy is discussed, which is popular because it is always cited by officials, principals and teachers as the easiest dropout solution. However, as argued in Chapter Five, it was not easy for dropouts to enrol in this system. It is suggested that the return to school policies need improvement and the determination of the government to make them better.

### ***The Multi-Entry/Exit System***

The basic idea of the multi-entry/exit system is to help dropout students to return to school. This system could help students who want to exit and then re-enter school (OECD & Asian Development Bank, 2015, p. 163). It is very useful for poor students who can leave school temporarily if their parents do not have money to pay the tuition fees or other school expenses and re-enter again into the same grade after their parents have the money.

There are three issues with this policy in Indonesia. Firstly, according to 2003 National Education Act, multi-entry/exit system "is conducted with the flexibility in the choice of programmes and time taken for completing them."<sup>61</sup> However, as mentioned in Chapter Five, there were problems for dropouts when returning to school. Dropouts mentioned that they were embarrassed to return to school because they were "too old." Therefore, although there is flexibility to return to school, dropout students found it difficult to return to school.

Secondly, OECD and Asian Development Bank (2015) suggest that this system allows students to enter and exit school "as they want" (p. 163). If students are allowed to enter and exit school whenever they want, it might create a problem. The problem is the exit and entry timing. Students should not leave school in the middle of the school term. They should leave school when all courses have been completed. When students leave school in the middle of the school term, the courses will be assumed not to have been completed. Students also should not return to school whenever they want. They should return at the beginning of the school term, otherwise they will miss a lot of topics and school material.

Lastly, and most importantly, according to the OECD and Asian Development Bank (2015, p. 163), the multi-entry/exit system exists in Indonesia but the OECD did

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<sup>61</sup> The explanation to the Act on 2003 National Education System, National Gazette of the Republic of Indonesia Number 78, 2003.

not find any evidence that it is functioning at all. In line with the OECD, the findings in Chapter Five show that dropouts who wanted to return to school were required to re-enrol from the first year as new entrants. This suggests that schools are unaware of the multi-entry/exit system. If such a system exists in Indonesia, it is important to continuously provide information and training about it, both to schools and students. For schools, it is important to let them know that a multi-entry/exit system is available, a possible topic for the dropout video discussed earlier. Schools should also inform dropout students that they can return to school. With the multi-entry/exit system, schools are prohibited to force students who left school at the second or third grades to re-enter from the first grade again. This might avoid unnecessary repetition and students feeling 'too old'. This system might also help students who cannot get financial assistance.

### ***Equivalency Education (EE) System***

It is important to note that returning to school does not mean only a return to regular schools. The graduation certificate can also be obtained by doing the EE system. However, it has been concluded in Section 5.2.3 that the EE system is not the best solution to reduce dropout. The ILO (2011) has also examined the limitations of the EE system and one of their recommendations was to focus on school dropout prevention programs, instead of on the EE system, to reduce dropout. The other ILO's recommendations were: Increase the demand for quality EE, connect EE providers with formal schools, the quality assurance of EE, and provide market-driven competency-based skills training leading to jobs.

The ILO's study failed to address the costs of the EE system, which is not free. Therefore, it is still not accessible to poor dropouts. The current KIP also gives assistance to poor dropouts who are enrolled in the EE system. However, similar to KIP in formal schools, the financial aid cannot cover all EE costs. This study recommends

that the government provide a free EE system for poor dropouts. Similar to KIP, the free EE system for poor dropouts could be financed from the reduction of government spending as suggested in Section 7.2.2.1.

#### **7.2.2.2. Potential Return to School Policy**

In this section, one potential policy for pregnant students who want to continue with their schooling is presented. This is a supply-side approach to support pregnant students to stay in school, or pregnant students who have already been expelled from school but want to return to school after the delivery of their baby. It is widely known that Indonesian schools mostly do not retain pregnant students and the best possible practice is to establish schools especially designed to cope with pregnant students.

#### ***School for Pregnant and Parenting Students***

It is widely known that in most developed countries pregnant students are allowed to stay in school or re-enter school, but it is less likely to happen in Indonesia. It has been shown in Chapter Five that it is almost impossible for pregnant students to stay in school because most schools expel pregnant students, and it is difficult for students to return to school after the delivery of a baby due to there being no system to support them.

It is important to consider the psychological impact on pregnant students. When students are pregnant, they face a negative stigma from society. However, it is also shown in Chapter Five that most of the pregnant students still want to stay in school. Establishing a school for pregnant students would help provide a supportive environment and help female students feel less isolated and less uncomfortable. The basic regulation to support this is the 2003 National Education System Act Article 11, Section 1: "The government and local governments have to provide services and

facilities, and ensure the implementation of quality education for every citizen without discrimination.”

There are no national-level laws, regulations or policies in Indonesia explicitly requiring the expulsion of pregnant students.<sup>62</sup> In addition, such a practice violates at least four laws in Indonesia. These are:

1. 1945 Constitution<sup>63</sup>:
  - a. Article 28C, Section One: Every person shall have the right to develop him/herself through the fulfilment of his/her basic needs, the right to get education and to benefit from science and technology, arts and culture, for the purpose of improving the quality of his/her life and for the welfare of the human race.
  - b. Article 31, Section One: Every citizen has the right to education.
2. Human Rights Act No. 39 of 1999, Article 12: Everyone has the right to protection of his/her self-development, to obtain an education, to educate him/herself, and to improve the quality of his life to become responsible, content, and prosperous people, in accordance with his/her human rights.
3. National Education System Act No. 20 of 2003
  - a. Article Four, Section One: Education is conducted democratically, equally and non-discriminatorily based on human rights, religious values, cultural values, and national pluralism.
  - b. Article Five, Section One: Every citizen has equal rights to receive a good quality education.

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<sup>62</sup> In contrast, Human Rights Watch (2014) reports that female students’ expulsion from school still exists and is supported by government in some countries. For example, The Tanzania Education Regulations, 2002, Article Four allows for exclusion or expulsion of a student if he/she is committing a criminal offence such as theft, malicious injury to property, prostitution, drug abuse or an offence against morality. The offence against morality is often used as legal reason for expelling pregnant students. If a student is pregnant before marriage, she has had sex out of wedlock and schools interpret the girl has having committed an offence against morality.

<sup>63</sup> The 1945 Constitution is the highest legal authority in the nation’s system of government. The executive, legislative and judicial branches of government must comply with it.

#### 4. Child Protection Act No. 35 of 2014

- a. Article Nine, Section One: Every child shall have the right to an education and training in the context of his personal and intellectual development based upon his interests and talents.
- b. Article 49: The state, the government, the family and the parents shall be responsible for providing the widest possible opportunities for a child to obtain an education.

Therefore, it is undoubted that pregnant students' expulsions from school contradict the law. The Indonesian Constitution clearly states that every citizen has the right to education and the other three laws below the constitution act also to strengthen the right to education for pregnant students. I argue that the National Education System Act No. 20 of 2003 should be interpreted that even pregnant students have the same right to get education and schools shall not discriminate against pregnant students. The expulsions of pregnant students from school are a form of discrimination because they impede the pregnant students' rights to education. However, the central government has done little to stop schools applying this practice. CEDAW (2011, pp. 51-52) reports that the Indonesian government has not implemented any action to guarantee there is no gender bias in dealing with students' pregnancy.

Moreover, law enforcement is also weak at local education office level. Even though some local education offices allow pregnant students to stay in school, others rarely take any action in regard to expulsion. Even worse, some local education officials support expulsion. For example, the East Java Education office issued a regulation that banned pregnant students from taking the final national examination test (Somba & Boediwardhana, 2012) and in Central Sulawesi Province, a local education office prohibited pregnant students from sitting for the final national examination test (Antara News, 2013, 10 April). Juwana (2007) concludes that the Indonesian legal system in general only has a symbolic meaning. It is weak in enforcement. Laws in Indonesia are mainly only dead letters, without any law enforcement. According to

Juwana (2006), weak law enforcement in Indonesia occurs because the lawmakers do not supervise the executives to check whether the laws have been implemented effectively or not. Juwana also believes that laws and regulations in Indonesia were made without any strong will to enforce them. Therefore, it can be concluded that pregnant students' expulsions from school still exist due to weak enforcement of laws by the government.

Developing countries such as Malaysia and South Africa have already established special schools. It was surprising that in a country like Malaysia, where most of the population are Muslim, the Malacca State Government dared to open a school for pregnant students for the first time in 2010. The school's name is *Sekolah Harapan* or "School of Hope." The local government argued that it was erected as a strategy to reduce the number of abandoned infants (Independent, 2010). As expected, there was a controversy about this school when it was opened. Some people believe that it will only encourage premarital sex (Independent, 2010). The Ministry of Women, Family and Community Development Malaysia also opposed the establishment of the school (UNICEF, 2010). Five years after its inception, the school still exists. The school has begun to be accepted by society despite earlier criticism (Mariappan, 2015).

The proposed policy is to establish a school for pregnant and parenting students in Central Java Province just like in Malaysia and South Africa. It will be challenging to establish and fund these schools in Indonesia. Overcoming prejudice will be of great importance. *Sekolah Harapan* in Malaysia is funded and backed up by local government and therefore; there are two strategies: Firstly, local governments in Central Java Province need to be convinced and encouraged to support the establishment of this special school because it will help pregnant and parenting students, to reduce social cost of being pregnant students and young mothers. Secondly, private sector sponsorship needs to be encouraged to establish and fund the school.

The detailed potential costs to establish and fund the school are beyond the scope of this study but the benefits received by pregnant and parenting students, as well as to the whole society, are likely to be higher than the potential costs of implementing this policy.

### **7.2.3. Potential Policies of Dropout Prevention**

Chapters Four and Five found that financial limitations caused dropout. It has also been shown in Chapter Five that students should be the main focus when developing the dropout prevention programs. It is also suggested that preventive programs are likely to be the best strategy to reduce dropout, not curative programs. The finding in Chapter Six suggests that a good perception of education is important to reduce dropout as is having a good teacher-student relationship. The findings in Chapter Six also suggest that a positive interaction between mothers and children in the form of mothers' academic support helps students to stay in school. The following proposed interventions are developed based on the findings in previous chapters. This section discusses the possible best practices that are aimed at students staying in school based on the findings. The early warning system is presented as the ideal practice to identify potential dropouts. Other best practices discussed below are targeted at schools as well as parents.

#### **7.2.3.1. Early Warning System**

As mentioned before in Section 2.7, EWSs are widely used in the US to prevent dropout and have been implemented in some developing countries under USAID supervision. However, to my knowledge, such a system has not been developed in Indonesia. One essential element of students' dropout prevention is the identification or screening of students displaying high-risk characteristics for dropping out. Factors,

such as gender, socioeconomic status, home location and parents' education level, are useful information for dropout prevention programs.

The privacy issues can be taken into account. The participation in an EWS program would be voluntary. Students will be given an information sheet explaining the program and a consent form signed by them as an indication of participation in the program. All information and the results of prediction will be kept confidential by the program director and will not be shared with participating schools unless permission has been granted by students (this option would appear in the information sheet and in the consent form). Students will be informed that to avoid discomfort they would not be advised of the EWS results. If students insisted on getting the EWS result, they will be excluded from the program. There is a possible issue about the rate of participation in voluntary EWS. However, if enough students can be persuaded to participate, this might not be a big issue.

This study has identified the high-risk characteristics that are associated with dropout in Central Java Province. I propose to establish a preliminary EWS as a starting point based on the strong indicators from the statistically significant explanatory variables that have been obtained from the quantitative analysis in Chapter Six that can predict dropout. Those significant explanatory variables include *gender, age at first entry, home location, previous lower secondary school's national final examination grade, changing school experience, lowest socioeconomic status, household head education, family size, sibling rank, number of siblings dropping out of school and school location.*

The initial EWS is based on the quantitative analysis presented in this thesis. However, it is important to note that the explanatory variables should be updated regularly, e.g., every two or three years. It has to be evaluated whether the regressions are successfully predicting dropouts by using current data. The EWS would need to use

prospective data if the retrospective data fail to predict dropouts. The costs of updating data for EWS could be financed from local government budgets.

It is suggested that schools pay more attention to new students who have specific characteristics that have been classified as warning signs of dropout. Identifying students at risk must begin when students start their first day of upper secondary school so that schools can address the dropout problem at an early stage.

There are three stages of the application of an EWS. The first stage begins the first day students start upper secondary school. It is suggested that new students fill out a form containing students' personal and family information (see Appendix 4). It is important to note that there is no obligation to fill out the form and that participation is voluntary. However, in the first year of the program all students should be asked to complete this form.

The form is based on the significant explanatory variables discussed in Chapter Six. The findings from the quantitative analysis denote that being a female, of older age than other peers at first entry to upper secondary school, residing in a rural area, low national examination grade, the number of times a student has changed schools, and having a sibling who dropped out, are likely to contribute to higher log odds of dropping out. In addition, I find that a higher level of parental or household education decreases students' log odds of dropping out. I call these variables 'fixed characteristics', as these characteristics are unlikely to change during the students' upper secondary schooling. There is an assumption that home location is a fixed characteristic because students rarely move from their current home to a new home.

Special attention is given to those females who have mothers working outside the home. It is also shown from the quantitative analysis that female students whose mothers are not working outside the home increase their log odds of dropping out compared to male students whose mothers are not working outside the home.

All these variables should be obtained at the first stage of the EWS and put into the early warning database. In addition, special attention should also be given to poor students who are enrolled at private schools. Although this study cannot find any statistically significant evidence to support the view that students who are enrolled in private schools have higher log odds of dropping out, it has been shown from the survey that the number of poor students who dropped out of private schools is larger than that of poor students dropping out of public schools. Therefore, information about school type has been included in the form. Based on the information collected from students when they commence secondary school, these data will be analysed to identify which new students are at high risk of dropping out during the course of their secondary education.

The information is analysed with the formula from the odds ratios discussed in Chapter Six, Section 6.3.4. If there are some students identified as at-risk students, special attention will be given to them. Their school will be informed (if students permit it as stated on the consent form) and the interventions (as discussed below) would be applied.

The second stage of collection of information from students would start in the following year (2<sup>nd</sup> year). Students should be tracked to check whether or not they are still in the school. Next, the other students who are still in school will be given a new form (see Appendix 5) and will be asked to fill it out. This form contains information about students' activities during the past year. It includes the consideration to drop out, attendance records, relations with teachers, and general schooling experience. Students are also asked similar questions as in the first year, such as are they receiving any assistance, and the family's latest situation (still staying with both parents or not). All the new information gathered from students should be transferred into the database and combined with the data on students' information from the previous year.

The third stage commences at the beginning of the third year. The third stage also follows the step presented in stage two. Similarly, the second and third year information is analysed with the formula from the odds ratios discussed in Chapter Six, Section 6.3.4. The result will show whether or not a student has higher log odds of dropping out. If so, their school will be informed (if students permit it as stated on the consent form) and specific interventions will be considered, as discussed below. This EWS will only be used to identify students at risk of dropping out. After identifying at-risk students, the next step in combating the dropout problem is the provision of effective and appropriate intervention practices.<sup>64</sup>

#### **7.2.3.2. Stay in School Program**

Once a student is detected with high odds of dropping out, the next step is to intervene. One form of intervention is to raise students' awareness of the importance of education. The estimates indicate that one important explanatory variable reducing the odds of dropping out is perception of education. Students must believe that education will produce a range of benefits for them in the future. It is very important to continuously encourage and motivate students to do their best and stay in school.

This study finds that a good perception of education is important for students. The Stay in School Program consists of some actions that are aimed at increasing students' awareness of the importance of education (the other program is the Student Pregnancy Prevention Campaign presented below). As discussed in Section 2.2.2, behavioural economics suggests that it is important for education practitioners to promote actions that give more information to students to avoid poor decisions made by them. For reference, Dinkelman and Martínez A (2014) produce a fifteen minutes DVD about the higher education experience of 13 adults who grew up in poor families

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<sup>64</sup> At this stage, participation in EWS is voluntary and it is difficult to take any action if students do not give consent to share the results with schools.

in urban Chile. The DVD talks about working hard at school and becoming eligible for financial aid to continue higher education. The documentary story was viewed by more than 6000 8<sup>th</sup> grade students in 226 poor urban schools in Chile. The results from the experiment show that relevant information delivered at the right time can encourage students to provide more effort in school. Therefore, one of the planned outcomes of this study will be a short documentary movie about school dropout. The documentary should exhibit the consequences of being dropouts and the flashback story of poor students who can successfully graduate from school. This policy is considered by me to have the lowest potential cost but it might have a high impact on students.

#### **7.2.3.3. Pregnancy Prevention Program for Students**

The EWS cannot detect students who are likely to be pregnant during their schooling because sometimes they do not come from groups typically thought of as at-risk and also because the EWS uses retrospective data. Pregnant students might come from wealthier families, or have highly-educated parents and an excellent academic record. Therefore, other interventions are needed.

Utomo and Utomo (2013, p. 8) claim that there are only a few policies in response to the teen pregnancy issue in Indonesia. This study proposes two different aims for the pregnant students' prevention program. The first objective is preventing female students from becoming pregnant. It is believed that the pregnancy prevention programs are not successful without the involvement of male students (UNESCO, 2014; Utomo & Utomo, 2013), therefore the proposed strategy is to also involve male students. The second objective is preventing pregnant students from dropping out. The proposed practices are discussed below.

### ***Pregnancy Prevention Campaign***

The campaign is to increase students' awareness about the negative impact of pregnancy while in school. Referring to behavioural economics, having little information about the negative consequences of being pregnant while in school may lead female students to have sex before marriage. The proposed student pregnancy prevention campaign is slightly different from the sex education campaign. The proposed campaign does not promote safe sex or provide comprehensive reproductive health education. This is mainly because it is not common to discuss sex openly in the Javanese family and Javanese society in general (Koentjaraningrat, 1995, p. 120). In addition, Situmorang (2003, p. 7) claims that there are some problems with sex education in Indonesia, such as: (1) Most parents still have conservative norms and they are not comfortable talking about sex issues with their young children; (2) sex education is rarely taught in school; (3) sex discussion is still taboo and should not to be talked about in public areas; and (4) there is a strong belief that sex is a personal topic and not a public concern.

Rather, the campaign encourages students to avoid sex before marriage by providing another short documentary movie about the experiences of former students who were expelled from school due to pregnancy and the experience of former male students who were expelled from school due to getting girls pregnant.<sup>65</sup> The documentary should be played to the students. For reference, a study in the US examines the impact of media exposure on social outcomes. Kearney and Levine (2015) study the impact of the MTV reality show, *16 and Pregnant*, on teen motherhood. The show exhibit the difficulty of being teen mothers, during the end of their pregnancy and early days of childbearing. The show helps teens to better understand the realities of the lives of teen mothers in ways that may have been unknown or difficult to imagine

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<sup>65</sup> To my knowledge, such documentary movies are not available yet. The movie is one of the planned outcomes of this study.

otherwise. The study indicates that the reality show led to a 4.3 per cent decline in teen pregnancy.

Similarly, the main basic idea of the campaign is to show the female students what would happen if they got pregnant while in school by giving real examples in the documentary movie. The aim of the campaign is mainly to raise female students' awareness about the bad consequences of being pregnant while they are in school and other negative consequences of being teen mothers. In addition, the campaign is also aimed at raising male students' awareness of the bad consequences of getting a girl pregnant and other negative consequences of being a teen father. By giving real examples, students are expected to be aware of the negative consequences of sex before marriage and are expected to avoid it. Finally, this campaign should be started as early as possible. As a dropout prevention program, it is recommended to start the campaign on the students' first day of upper secondary school. This policy, along with the stay in school program discussed in section 7.2.2.2, is considered by me to have the lowest costs but high impact on students.

It is important to evaluate whether the short movies have an impact on students in the future. It is possible that providing information about the bad consequences of being a dropout is not enough to change students' behaviour. If it is not effective, other programs must be considered.

### ***Encouraging Schools to Keep Pregnant Students Who Will Take National Final Exams***

This practice is aimed at schools. As discussed in Chapter Five, many schools expel pregnant students as it is a violation of school policy. However, there are few cases where students were pregnant just before they took final examinations and schools decided to keep them and allow them to take the exams. During my fieldwork, it was found that two schools employed such a policy and generally stated that they

definitely would expel pregnant students if students were pregnant in the first grade or second grade (even in the beginning of third year), but in very special cases the school made an exemption for the female student in the name of humanity if she was pregnant two or three months before the final examinations. The schools said that they just 'closed their eyes' and pretended nothing happened to the female students and allowed them to take the final exams.

It is likely that dealing with principals and school personnel to encourage them to keep the pregnant students in school is extremely difficult. The challenge is how to convince them that allowing pregnant students to take the final exam will save the pregnant students' future and reduce their dependency on their parents. One of the strategies is continuously encouraging schools to establish a policy that allows final year students who are pregnant to take final exams. The other strategy is to encourage a local education agency to establish special policies to allow pregnant students to take the exams.

#### **7.2.3.4. Foster Parents Program**

This program is aimed at poor students. The fieldwork indicates that some schools rely only on government assistance and other financial aid to support poor students. They claim that the assistance does not cover all poor students who need aid, so sometimes they cannot keep poor students in the schools. However, there was a private school in Magelang Regency which claimed that there were no students who left the school because of financial problems. A teacher in the school said that the school encouraged teachers to allocate some amount of money from their salary every month to support poor students. This was not compulsory for the teachers, but the participation rate was high. The amount of money given for supporting poor students is flexible, and it is up to the teachers as to how much they want to contribute. It is important to note that the participation is a collective action, which means that a

teacher is not solely responsible for a student who needs financial support. Instead, all money collected from teachers is managed by school administrators and allocated to fostered students. A school in Magelang Regency combined financial support from teachers with other supporting policies such as reducing the poor students' tuition fees. My fieldwork shows the combination of financial aid from teachers and other school policy in the school has been successful in eliminating dropouts due to financial reasons. Similar practices also exist in other schools and I call it a 'foster parents' program. It is recommended that every school adopt similar 'foster parents' programs.

#### **7.2.3.5. Interventions by Schools**

The interaction between teachers and students occurs every school day and is critically important. Therefore, teachers have a good understanding of students' characteristics and play an important role in creating a better academic environment in schools. Students' good perception of education is important, but it might decrease from time to time, so teachers are in the front line to help students stay in school. When the EWS signals a student has high odds of dropping out, teachers need to intervene. Concerned teachers can make the difference whether students stay in school or drop out (Furger, 2008).

This study shows that students who have good relationships with their teachers tend to stay in school. Therefore, it is suggested that teachers should have a good relationship with students and become a 'second' parent in school. One way of teachers intervening is to show care to potential dropouts. A small act of caring might have a significant impact on students. For example, teachers should be encouraged to know each student personally, even small things such as: Where they live, how they come to school, students' interest in particular subjects, etc. Another example is frequent visits to students' homes by teachers and having a light-hearted conversation with them and their parents. Students will study harder when they think their teachers care about

them. Creating a good relationship is not only important for potential dropouts, but for all students.

About four per cent of our respondents reported that they were victims of bullying and this study shows that bullied students tend to drop out. Therefore, schools have a responsibility to monitor students' deviant behaviours and should provide counselling to these students. Moreover, teachers can also observe bullying behaviour in and out of school and if they witness bullying, they need to immediately intervene to stop it. Schools, through principals, teachers and school administrators, need to create anti-bullying campaigns to help inform students about the serious effects of bullying and also repeatedly remind them of the consequences of bullying activities.

Teachers may be the main actor involved in bullying, instead of students. Sometimes teachers abuse their power over students they are supposed to protect. Teachers may believe (wrongly) that some actions, such as scolding, intimidation, humiliation and physical abuse, are intended to discipline students, but they do not realize the negative impacts of such actions on students. Before the schools can commence anti-bullying campaign, schools need to establish teachers' codes of conduct to establish a clear line between basic discipline and abusive discipline. To monitor teachers' behaviours, schools must encourage students and parents to report abusive actions by teachers.

It is important for teachers to be careful about *nrimo* and *pasrah* attitudes among students. To reduce *nrimo* and *pasrah* attitudes, teachers can encourage students by explaining the concept of *usaha* or *ikhtiar* as discussed in section 2.8.

#### **7.2.3.6. Interventions Aimed at Parents**

A study by Bridgeland et al. (2006, p. 9) in the US show that parents became aware of their children's education only when they realized that their children were 'inches away' from dropping out of school. According to Furger (2008), parents'

involvement in their children's school activities usually declines when their children get older and more independent. This parental practice creates a problem because children still need their parents' attention throughout their study. Often this is too late and sometimes parents cannot save their children from dropping out.

One of the research findings from the quantitative analysis presented in Chapter Six indicates that higher mother's academic support reduces the odds of dropping out. A mother's support eventually creates a better academic climate for their children. Therefore, when the proposed EWS detects potential dropouts, schools need to contact their parents immediately. It is not recommended that schools tell parents that their child has higher odds of dropping out. Instead, one of the intervention practices aimed at parents is to improve the relationship between schools and parents. The strategy is to raise awareness of the mother's role in children's academic activities. As suggested by social capital theory, a positive relationship between parents and children is important. The qualitative analysis shows that it is likely that parents had limited influence over students when they decided to drop out due to *pasrah* and *nrimo*, but the result from logit regressions shows that mother's academic support reduces the odds of dropping out. It is important to note that they are different results. The qualitative analyses indicate that parents have no power to persuade their children after they have made the decision to drop out. Logit regression results suggest that mother's academic support helps children to stay in school. It can be inferred that mother's support should begin at an early stage to avoid dropout, or in other words, before students make the decision to drop out. Parents cannot save their children from dropping out because sometimes it is too late and it is important to start at the very beginning of schooling. It is also important to explain the concept of *usaha* or *ikhtiar* to their children.

Connecting parents with the school is important. Schools should establish better communication with parents in order to raise their involvement in their children's schooling activities. Indonesian parents usually only meet teachers twice a year when they collect their children's academic reports. For those students at-risk,

meeting teachers twice a year is not enough to check children's progress. Therefore, in line with the strategy proposed in the previous section, it is important that teachers need to make frequent scheduled home visits to those identified as at-risk students. The aim of this strategy is not only to establish a better relationship with the at-risk students, but also to ensure that parents also engage with their children's school activities.

In addition, teachers are not the only ones who are available to do home visits. Other students' parents can be included in preventing student dropout. In Cambodia, a significant number of dropout students returned to school after they were visited by heads of the neighbourhood associations and parent-teacher association (PTA) (USAID, 2015).<sup>66</sup> In Indonesia, every school has a PTA and schools can ask the association to help to encourage students to return to school by approaching them and their parents.

### **7.3. Conclusion**

This chapter discussed current dropout prevention and return to school policies to address research question number four. Previous studies have explored the limitations of these policies and have also given some recommendations about how to improve them. This study examined previous studies and also proposed improvements to the existing policies over and above the recommendations given in these other studies. Overall, it is concluded that the existing policies need to be improved in order to reach the 12-year compulsory education target of 18-25 year old people.

This study also proposed some new policies with potential to reduce the number of dropouts. The interventions are developed based on the findings in previous chapters. The findings in Chapter Five suggest two main points: (1) Dropout prevention

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<sup>66</sup> There is a neighbourhood association in Indonesia called *Rukun Tetangga* (RT). Every household in an area automatically becomes a member of RT. Each RT consists of 20-40 households in the same area. The head of RT is selected by voting or unanimous agreement.

programs are the best strategy to reduce dropout; and (2) Students should be the main focus when developing the dropout prevention programs. The findings in Chapter Six suggest the importance of: (1) The students' good perception of education; (2) a good teacher-student relationship; and (3) a positive interaction between school, community, and parents.

There are two main strategies proposed in this chapter to address research question number five: (1) Dropout prevention programs; and (2) Return to school programs. Although the findings indicate that dropout prevention is important, there are some circumstances where it does not successfully keep students in school, and in some cases dropouts want to go back to school. Therefore, this study tries to incorporate those who want to return to school with return to school programs targeted at pregnant students.

There are some recommendations based on the study in relation to the dropout reduction policies. The first is the EWS. This study proposes the EWS as a tool that is able to detect students at risk of dropping out. The system is not claimed to be the best practice as it has not been implemented before, but the experiences of other countries that have used EWSs show them to be useful for detecting potential dropouts and for reducing dropout. The system is developed based on the significant explanatory variables from the quantitative analysis reported in Chapter Six as a starting point in order to develop more accurate EWS in the future. I believe that with some improvements and regular updating the EWS could be better in predicting dropout, especially in Central Java Province.

Another recommendation is to provide short documentary movies. One of the movies should be a short documentary movie about school dropout showing the consequences of being dropouts and the successes of former poor students. The other movie should be a short documentary movie about the life of former students who were expelled from school due to pregnancy and the life of former male students who were

expelled from school due to getting female students pregnant. The documentary should be played to the students. This practice is to increase the awareness of the importance of education. These two movies are considered low cost, but they might have positive impact on students.

This study also proposes policies that involve school and parent participation to reduce dropout. Although the findings indicate that students are the main focus when developing the dropout prevention programs, the roles of schools, community and parents cannot be neglected. Some practices are developed with the involvement of schools and parents, such as building a good relationship between schools and parents, so that schools can raise the awareness of the parents, especially mothers, to be more involved in their children's academic activities.

As mentioned before in section 7.2.3.4, a school in Magelang Regency has successfully implemented foster parents programs. This successful story should be spread out to other schools. Therefore, it is also important to make a documentary video aimed at teachers about the importance of "foster-parenting" programs in schools.

Potential costs for implementing the policies and the potential downsides of the policies were discussed in this chapter. Some proposed national policies may impact the national budget. However, there is a trend where every year the share of the national budget for social protection increases significantly, indicating the government's emphasis on the importance of allocating resources towards higher social protection in order to reduce poverty in the long run. With relatively little investment required for the policy changes recommended above, the opportunity to reduce school dropout, and in turn reduce poverty, has great potential.

In conclusion, the proposed policies recommended in this chapter work in combination with a single objective: To reduce dropout. Some policies need to be addressed by the central government, such as improvements in KIP, BOS, PKH and the

EE system. Schools for pregnant students will need to be established by local governments and the private sector. The other policies need to be addressed directly to students, schools and parents. Overall, this study is not claiming that the proposed policies are guaranteed to reduce dropout; the study does, however, suggest that they have great potential to do so. As some of these policies are new to Indonesia, they will need to be implemented with careful planning, monitored and evaluated regularly, and modified to ensure continual improvement.

## **8. CONCLUDING REMARKS**

The purpose of this study was to assess the dropout decision made by students in upper secondary school in Central Java Province, Indonesia. The key strength of this study is that it applied both quantitative and qualitative analyses to obtain a deeper and clearer portrait of the issues relating to dropout. The idea behind using both types of analyses is that because all methods have strengths as well as biases and weaknesses (Creswell, 2014, p. 15), using both methods is vital because one method can balance the weaknesses of the other.

The quantitative analysis was designed to determine the effect of potential factors on the likelihood of students to complete or drop out of upper secondary school. Unlike most previous studies, this study has collected primary data enabling more in-depth and systematic analysis of the issue. The main goal of the qualitative analysis was to understand the reasons behind student decisions to drop out. This study conducted interviews of both dropout students and their parents in order to collect information about dropout experiences. The findings of the qualitative analysis provided useful insights. For example, the results from the quantitative analysis (i.e., logit regressions) showed the impact of a family's low socioeconomic status on dropout was a significant factor in the dropout decision. The qualitative analysis suggested there are two main causes that lead students from low socioeconomic families to drop out: Push-out by schools and pull-out from school. The findings of this study provide a new understanding of student decisions to drop out in Central Java Province.

### **8.1. Summary of Major Findings**

This section summarises the major findings of the study, which are classified based on the research questions mentioned in Chapter One.

*Research Question One: What are the reasons for students dropping out of upper secondary school in Central Java Province?*

Results from both the survey and interviews indicate that financial problems were the main reason for dropout. Pregnancy, marriage, and being bored of schooling were also cited by the respondents as reasons to drop out. Interesting results appear when the reasons given for dropout were divided based on gender, as the results showed that pregnancy was the main reason for female students to drop out. The number of dropouts due to pregnancy was high because schools continuously expelled them as a consequence of violating school regulations. Financial problems are the main reason for most males to drop out.

*Research Question Two: How do upper secondary school students in Central Java Province describe their dropout processes, and how are they related to economic and other theories?*

This question was answered by qualitative analysis. Firstly, the student interviews focused on poor students. These interviews revealed that there are two different dropout processes at work. Some dropout processes are in line with pullout theory. Some respondents stated that family factors pulled them out of school. For example, they indicated that they did not want to burden their parents anymore. Other respondents stated that they gave their younger siblings a chance to get a better education than them. Interview results also indicate that the decision to drop out supports push-out theory. Some respondents stated that they had problems with school and they decided to leave. One respondent pointed out that his previous school continuously pushed him to pay the tuition fees. He could not pay them and because of the embarrassment caused by this, he decided to drop out.

Secondly, these interviews assessed the experiences of respondents who did not have financial problems. The assessment of the interviews suggest that both of them

have a similar pattern of dropout: They began to repeatedly skip school before they finally dropped out. The result was important because it supported previous studies that stated frequent absenteeism is one clear sign that a student will drop out.

Thirdly, the clearest finding to emerge from the qualitative analysis is the fact that the final decision to drop out was made by the students, not their parents. Some students discussed dropping out with their parents before finally deciding to drop out and some did not, but all dropout respondents claimed that their parents could not influence their decision to drop out. The recommendation that students should be the main focus when developing strategies to prevent dropout was based upon this finding. The other major finding reveals that the best strategy to reduce dropout is dropout prevention programs. The interviews also showed that there were many factors that stopped dropouts from returning to school.

Fourthly, this study argues that behavioural economics can explain why students act contrary to the traditional human capital investment model and later set goals other than the initial goals. The Javanese concepts of *pasrah* and *nrimo* are seen as a major explanation why students divert from their initial goals. As discussed in Chapter Five, *pasrah* and *nrimo* are beliefs that someone is under the protection of God as long as they believe in God. These concepts bring out an attitude of acceptance when something adverse occurs.

*Research Question Three: What variables best capture the reasons for, and determinants of, upper secondary school students dropping out in Central Java Province?*

Using quantitative analysis, this study has identified some statistically significant explanatory variables from individual characteristics, family characteristics, school characteristics, and Indonesian government policy and macroeconomic conditions that explain student dropout. From individual characteristics, being a

female, residing in a rural area, getting low grades at the previous level of schooling, more frequently changing school, and more deviant behaviour, significantly increased the log odds of dropping out. Only one of the individual characteristics has a significant impact on reducing dropout: Having *a good perception of education*.

From the family characteristics variables, there is evidence that students from a family with the lowest socioeconomic status, as a proxy for poverty, having a higher number of family members, and having other siblings who dropped out of school, significantly increases the log odds of students dropping out. In addition, the results also point out that students who live with household heads with at least university education, and greater support by mothers of students' academic activities, significantly reduce the log odds of dropping out.

The logit regression outputs for school characteristics indicate that students from urban schools have higher log odds of dropping out than those who studied in rural schools. Being bullied by peers and/or teachers also significantly increases the log odds of dropping out. In contrast, students who have good relationships with teachers, in comparison with those who only have a neutral relationship with teachers, are more likely to stay in school. From government policy, it is shown that government assistance for poor students significantly decreases the log odds of dropping out. It is also found that students in the southern part of Central Java Province are also less likely to drop out compared to their northern counterparts. From the macroeconomic conditions, a significantly higher real minimum wage in Central Java Province reduces the log odds of dropping out.

In addition, four interaction effects were explored: The interactions between *female* and *sibling rank*, *female* and *rural home location*, *female* and *non-working mother* and also between *urban school location* and *rural home location* variables. This study finds that female students with higher sibling rank are less likely to drop out in comparison to male students with higher sibling rank. Moreover, it is suggested that

female students who stay in rural areas are less likely to drop out than male students who stay in rural areas. It is found that urban students who study in urban schools have higher probability of dropping out than students from rural areas who study in urban schools.

For female and male only regressions, the results indicate that some explanatory variables have strong impacts on female students' decisions to drop out, such as *repeating a grade, low academic achievement at previous level of schooling, deviant behaviours, lowest SES and more time helping family in daily business and work*. They increase the log odds of females dropping out. Moreover, being bullied by peers and/or teachers also contributes to higher log odds of females dropping out. Other variables, such as *mother's/female guardian's academic support, sibling rank in family and helping family with household chores* are related to lower log odds of dropping out in the female only regressions. Male students' good perception of education and male students who have a household head with at least an upper secondary school education diminish their log odds of dropping out. It is also vital to note that mothers who are not working and are physically present in the house reduce the log odds of their sons dropping out.

*Research Question Four: What strategies and policies have been used by central and local government to counter dropout problems in Central Java Province? Are they effective or not?*

There are four national policies aimed at preventing dropout in Indonesia. This study concluded that the only target of the government's dropout prevention policies is poor students, for example, KIP, BOS and PKH programs only target poor students. The national dropout prevention neglected wealthier students that also dropped out of school. Therefore, current policies that focus only on financial assistance are not sufficient and not effective. These policies alone will not solve the dropout problem and

other policies are needed to prevent students from dropping out. The evaluation of KIP also indicated the ineffectiveness of these grants.

The government's return to school program is also ineffective. There is the popular EE system to reduce dropout, but it has been shown in Chapter Five that EE also burdens poor students and the graduates of this system were not being recognised by employers. Overall, it is suggested that the dropout prevention and return to school policies need to be revised and improved.

*Research Question Five: What new policies, if any, might be able to address the issues arising from the answers to research questions number one to four?*

The findings of this study have a number of policy implications. Firstly, dropout prevention programs are likely to be the best strategy to reduce dropout, not curative programs. Secondly, students should be the main focus when developing the dropout prevention programs. This study proposes an EWS to identify potential dropouts. Students identified as being at-risk should then receive appropriate support and guidance. The other proposed strategies are Stay in School Programs and Pregnancy Prevention Campaign Programs. This study proposes new policies that target schools and parents, such as encouraging schools to keep pregnant students who will take national final exams, and a foster parents program. A new suggested policy is the establishment of a school for pregnant and parenting students in Central Java Province.

Every new policy has its potential costs. The proposed changes and new national level policies are likely to slightly increase the national budget. The costs are likely to be relatively small, given the potential benefits of reduced dropout and a reduction in poverty. The government now stresses the importance of assigning a greater proportion of the national budget for social protection in order to alleviate poverty.

## 8.2. Limitations and Recommendations for Future Studies

This study tries its best to eliminate research bias. However, it is important to stress that this study is not without limitations, some of which are:

1. Some interview respondents were still hesitant to tell their stories. Therefore, in future, more conducive methods should be used to conduct interviews with dropouts that enable them to talk without any hesitation. For example, when the research assistants and I visited the homes of dropouts for the first time, we directly asked them to be the respondents and then conducted interviews directly at that time. In future, as interviewers need time to gain respondents' trust, it is suggested not to conduct an interview at the first meeting.
2. This study did not interview teachers about the tension between *nrimo* and *pasrah* vs. *asih*, *asah asuh*. It is recommended for future studies to incorporate this to get a better understanding of the potential tension between these cultural perspectives on parenting and education.
3. This study tries to include as many explanatory variables as possible. It is unfortunate that the study could not include some important factors in the models, such as absenteeism and course performance because this information was unavailable. It is suggested that these factors should be the main subjects of investigation in future studies of school dropout in Indonesia.
4. Absence of important variables (such as attendance) may create endogeneity problems and future research needs to test the potential endogeneity in the model.
5. Larger sample size is needed for gendered regressions. For logistic regression, there is a rule of thumb that a sample is to be used with a minimum of 10 events per predictor variable. There were 38 variables for both female and male only regressions, and this study only had 253 observations for female and 168 observations for male. This might explain why there was an unexpected result

for the *bad relation with teachers* variable in the female only regression and extremely large odds ratios.

6. This study drops students where there is only one parent who completes the questionnaire, for example: due to one of the parents having passed away. Future studies may include this type of students to get a better understanding about dropout decision.
7. This study was also unable to include in the sample ex-students who were no longer staying in Central Java Province. It is suggested to incorporate these ex-students as they are likely to differ in meaningful ways from those who remain in the region.

### **8.3. Closing Statement**

Notwithstanding the limitations, the empirical findings in this study still provide a new understanding of upper secondary school dropout in Central Java Province. The combination of quantitative and qualitative analysis has gone some way towards enhancing our understanding of dropout in Central Java Province. The current findings add to a growing body of literature, especially on the interaction effects between *female* and *sibling rank*, *female* and *rural home location*, *female* and the *non-working mother*. To the best of my knowledge, interaction terms using these variables have not been used in other studies. The interacted variables used in this study are my main contribution to the existing literature. It is also important to note that, as indicated by the goodness-of-fit tests, the regression models in this study reflect the real observations.

Human capital theory suggests that investing in human capital is exceptionally important. The intention of this study is to prevent students from dropping out, so they can get a better education and in the end, they will have a better life. Having a higher level of education is seen as the most effective solution to eradicate poverty in the long

run. As seen in Table 1.4, average years of schooling in Central Java Province are only seven years, equivalent to lower secondary school. This is a long way from the 12-year compulsory education target set by the Indonesian government.

However, human capital theory is not sufficient for explaining students' decisions to drop out of upper secondary school. Social capital theory contributes by identifying additional family factors that affect schooling and the decision to continue to higher level of education. In addition, there are deviations from the traditional human capital investment model where economic agents sometimes are not rational and differ from the standard economic view of rational decision making. Behavioural economics helps us to gain a better understanding why people are not rational. Human capital, social capital and behavioural economics complement each other in explaining the dropout decision.

This study is not claiming to represent all of Indonesia. It is argued that every area in Indonesia has its own unique characteristics and the findings in this study may not reflect the conditions in other areas. A main reason is the difference in cultures. This study was conducted in Central Java Province and partly used a Javanese cultural approach to get a better understanding about students' decision to drop out. The findings may be useful but may not explain the dropout decisions in other areas. For example, one of the other provinces in Java Island is West Java Province. The majority of people in West Java Province are ethnic Sundanese and they have different cultural views. The findings of this study might also not be applicable to explain students' decisions to drop out in the capital city of Indonesia, which is Jakarta Province. Although the province is in the same island as Central Java Province, its population has more diverse multicultural backgrounds. The findings of this study might apply more in the Special Region of Yogyakarta Province and most parts of West Java Province because these areas share the same Javanese culture. In conclusion, generalisation of this study's findings into other areas of Indonesia may create some bias.

Despite the limited scope of the study, this study nevertheless provides a framework for the exploration of students' dropout at any level of schooling in Indonesia. Moreover, it also offers potential guidelines to other researchers on how to conduct research on school dropout in other areas of Indonesia and in other countries. For example, as mentioned in Chapter Four, the main problem when studying dropout in Indonesia is a lack of data on dropout students. The officials did not have the lists of students' names. This study has provided the best possible technique of sampling to collect the data. It has also designed two types of questionnaire that can be adopted by other researchers and modified as required.

Finally, it is important to eliminate the impression that dropping out of school is a natural process. In other words, do not let society think that it is normal for someone to be a dropout of the education system. Society needs to understand the importance of education. Therefore, continuous dropout alleviation actions need to be developed over time. It is also essential to emphasise that the dropout alleviation actions are not solely the government's responsibility. Schools, parents, education practitioners, community, and the business sector together with researchers are also responsible for reducing dropout. This study has highlighted a number of important changes that schools can make that are not dependent on government policies. Schools and teachers are in the front-line and able to detect potential dropouts, and are able to design creative and innovative ways to prevent students from dropping out.

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## Appendix 1: Questionnaires English Version

Respondent No. : \_\_\_\_\_

### EX-STUDENT QUESTIONNAIRE

Please read each question carefully and answer as accurately as you can, by ticking (✓) a box. For some questions, you will need to write a short answer.

#### RESPONDENT INFORMATION

1. Gender :  Male  Female
2. Age : \_\_\_\_\_ Years old
3. Married Status :  Single  Married  Divorced  Widowed
4. Religion :  Islam  Protestantism  Catholicism  Hinduism  
 Buddhism  Other, please specify: \_\_\_\_\_
5. Race :  Javanese  Others
6. Your Upper Secondary School Location :  Rural  Urban

#### Section 1: YOUR EDUCATION

7. How old were you when you started grade ten while at upper secondary school?  
\_\_\_\_\_ Years old
8. Have you ever repeated a grade while at upper secondary school?  
 No (skip the next question and go to question no. 10)  Yes
9. If so, how many times?  
 Once  Twice  Three Times or more
10. Which of the following did you have to pay while attending upper secondary school? (*you may tick more than one*):  
 Tuition Fees  
 Uniforms  
 Textbooks  
 Transportation costs  
 Extracurricular activities costs  
 Exam fees  
 School supplies costs (shoes, school bag, hat, tie, notes, pen, and others)  
 Others, please specify: \_\_\_\_\_
11. What was your average expenditure for the following (*please be aware of the time unit*):  
 Tuition Fees per month: Rp. \_\_\_\_\_  
 Uniforms per year: Rp. \_\_\_\_\_  
 Textbooks per year: Rp. \_\_\_\_\_  
 Transportation costs to school per day: Rp. \_\_\_\_\_  
 Extracurricular activities costs per month: Rp. \_\_\_\_\_  
 Exam Fees per year: Rp. \_\_\_\_\_

- School supplies costs (shoes, school bag, hat, tie, notes, pen, and others) per year: Rp. \_\_\_\_\_
  - Others, please specify (per month/year\*): Rp. \_\_\_\_\_
- \*) please choose one

12. What is your Lower Secondary School's national final examination grade?  
 < 5.50       5.50 – 7.00       7.01 – 8.50       > 8.5

13. Do you have classmates/school peers who have not completed upper secondary school?  
 No       Yes

14. Have you ever considered withdrawing from upper secondary school?  
 No       Yes  
 If yes, what was the reason:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

15. Did you ever drop out of school? (at any level of school)  
 No       Yes

16. Did you ever drop out of upper secondary school?  
 No       Yes  
 (If no, skip all questions related to drop out and go to question no. 21)

17. At what level did you leave upper secondary school?  
 10<sup>th</sup> grade     11<sup>th</sup> grade     12<sup>th</sup> grade

18. Why did you drop out of school? (*you may tick more than one*)

<b>Individual</b>	<b>Family</b>	<b>School</b>
<input type="checkbox"/> Failing classes	<input type="checkbox"/> Marriage	<input type="checkbox"/> The school was too far
<input type="checkbox"/> Expelled	<input type="checkbox"/> Pregnancy	<input type="checkbox"/> Problems with peers
<input type="checkbox"/> Illness	<input type="checkbox"/> Family illness	<input type="checkbox"/> Problems with teacher
<input type="checkbox"/> Got a job	<input type="checkbox"/> Financial problems	
<input type="checkbox"/> Bored	<input type="checkbox"/> Running/Helping family's business	
<input type="checkbox"/> Arrest/Imprisonment		
<input type="checkbox"/> Illegal drug & alcohol use		

Other problems, please specify:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

19. If you ticked "financial problems" in Question 18, please tell us the expenditures you were unable to afford? (*you may tick more than one*):
- Tuition Fees
  - Uniforms
  - Textbooks
  - Transportation costs
  - Extracurricular activities costs
  - Exam fees
  - School supplies costs (shoes, school bag, hat, tie, notes, pen, and others)
  - Others, please specify: \_\_\_\_\_
20. Do you plan to return to school?
- No
  - Yes
  - I don't know

## Section 2: YOUR FAMILY

21. Did you live with both your parents while you were attending upper secondary school?
- Yes (go to question no. 23)
  - No, I lived with my father only
  - No, I lived mostly with my father
  - No, I lived with my mother only
  - No, I lived mostly with my mother
  - No, I lived with my grandfather/grandmother
  - No, I lived with other family
  - Others, please specify: \_\_\_\_\_
22. What is the reason for you not living with both your parents while you were attending upper secondary school?
- They were divorced
  - They was (or he/she was) working in other place (they live apart)
  - Both (or one of them) passed away
  - Others, please specify: \_\_\_\_\_
23. How many brothers and sisters do you have?     Brothers: \_\_\_\_\_     Sisters: \_\_\_\_\_  
(If none, go to question no. 26)
24. What is your sibling rank? (From oldest to youngest)
- 1<sup>st</sup>     2<sup>nd</sup>     3<sup>rd</sup>     4<sup>th</sup>     5<sup>th</sup>     other,    please    specify:  
\_\_\_\_\_
25. How many of your siblings, if any, dropped out at any level of school?
- No siblings
  - None
  - 1
  - 2
  - 3
  - 4 or more
26. How often did you help your parents/guardians with household chores after returning from school?
- Never
  - Rarely
  - Sometimes
  - Often
  - Most of the time
  - Always
27. How often did you help your parents'/guardians' daily business/work after returning from school?
- Never
  - Rarely
  - Sometimes
  - Often
  - Most of the time
  - Always

28. How often did your parents/guardians help you with your homework?  
 Never  Rarely  Sometimes  Often  Most of the time  Always
29. How often did your parents/guardians encourage you to study well in school and stay in school?  
 Never  Rarely  Sometimes  Often  Most of the time  Always

### Section 3: YOUR SCHOOLING EXPERIENCE

30. How far was your last school from your home?  
 Less than 5 km  Between 5 and 10 km  More than 10 km
31. How did you travel to your upper secondary school?  
 On foot  Bicycle  Motor-bike  public transportation  
 Other, please specify: \_\_\_\_\_
32. How many times did you change your school since primary school?  
 Never  Once  Twice  Three times  More than three times
33. On average, how would you define your teachers' quality?  
 Not good at all  
 Not quite good  
 Neutral  
 Good  
 Very good
34. How would you describe your relationship with your teachers at upper secondary school?  
 Not good at all  
 Not quite good  
 Neutral  
 Good  
 Very good
35. Did you have problems with one particular teacher?  
 No  Yes
36. Did you have the following problems at upper secondary school?
- Fought with peers or other students  
 No  Yes
  - Smoking or drinking  
 No  Yes
  - Using illegal drug?  
 No  Yes
  - Warned by principal or teachers because of your deviant behaviour (including bullying other students)  
 No  Yes
  - Arrested by the Police  
 No  Yes
  - Suspended from school  
 No  Yes
  - Bullied by peers or other students  
 No  Yes

37. Did you receive money from the government's Poor Students Assistance program?

- No                       Yes

38. Did you like school?

- No                       Yes

39. Do you think school was a waste of time?

- No                       Yes

#### **Section 4: OTHERS**

40. Have you ever earned money for your family when you were at upper secondary school?

- No                       Yes

41. Have you ever earned money for yourself when you were at upper secondary school?

- No                       Yes

(If your answers for question no. 40 and 41 are "No", skip the next question and go to question no. 42)

42. If one of your answers for no. 40 and 41 is "Yes", what was the type of job?

- Temporary job                       Permanent job

43. Are you currently employed?

- No (skip the next question and go to question no. 45)  
 Yes

44. If your answer for no. 43 is "Yes", what is the type of the job?

- Temporary job                       Permanent job

45. If you are not working, what do you do now?

\_\_\_\_\_

46. If you were asked to work while you were in upper secondary school, how much minimum salary/wages would you need? Rp. \_\_\_\_\_

47. Do you agree or disagree with the following statements:

a. Religious beliefs are important to me

- Strongly disagree     disagree     Neutral     agree     strongly agree

b. Religious beliefs influence my decisions

- Strongly disagree     disagree     Neutral     agree     strongly agree

c. It is important that my friends share my religious beliefs.

- Strongly disagree     disagree     Neutral     agree     strongly agree

48. Please rate your health condition while you were in upper secondary school:

- Excellent health  
 Very good health  
 Good health  
 Fairly health  
 Poor health

The following question is for dropout respondents only.

49. What have you been doing since you left upper secondary school?

- Still searching for a job
- Running/Helping family's business
- Working with other people in my hometown
- Working with other people outside my hometown
- Others, please specify: \_\_\_\_\_

**-- Thank you for your participation --**

**Respondent No. :** \_\_\_\_\_

**PARENT QUESTIONNAIRE  
(Father/Mother/Guardian<sup>\*)</sup>)**

<sup>\*)</sup> please choose one

Please read each question carefully and answer as accurately as you can, by ticking (√) a box. For a few questions, you will need to write a short answer.

**RESPONDENT INFORMATION**

1. Home Location :  Rural  Urban
2. Child's Upper Secondary School Type :  Public  Private
3. Type of Curriculum :  General  Vocational  Religious

**Section 1: EDUCATION**

4. What is the highest level of education achieved by you?  
 Never attended school / not finished primary school  
 Primary school / Islamic primary school  
 Lower secondary school / Islamic lower secondary school  
 General USS (upper secondary school) / Vocational USS / Islamic USS  
 Diploma degree  
 Undergraduate degree  
 Postgraduate degree (Master and/or Doctorate)

**Section 2: EMPLOYMENT**

5. What is your main job? (be as specific as possible)  
\_\_\_\_\_
6. What is the type of the job?  
 Temporary job  Permanent job
7. Have you earned any income from sources other than your main job?  
 No  Yes
8. How would you classify your total income at the time your child left/finished upper secondary school?  
 Less than Rp. 1,500,000.00 per month  
 Between Rp. 1,500,000.00 – Rp. 2,500,000.00 per month  
 Between Rp. 2,500,000.00 – Rp. 3,500,000.00 per month  
 More than Rp. 3,500,000.00 per month

**Section 3: FAMILY CIRCUMSTANCES**

9. Average monthly expenditure : Rp. \_\_\_\_\_/month
10. Number of household members (excluding household head): \_\_\_\_\_ people
11. Do you receive money from the government's temporary direct cash assistance program at the time your child at upper secondary school??  
 No  Yes

12. What type of building material are the walls of your house made of?  
 Woven Bamboo     Plywood     Wood     Brick
13. Which of the following items do you have at home? :
- |                                      |                             |                              |
|--------------------------------------|-----------------------------|------------------------------|
| a. Bicycle                           | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| b. Motorbike                         | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| c. Car                               | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| d. Colour television                 | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| e. Own toilet                        | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| f. Electricity                       | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| g. Earth/soil as main floor material | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| h. Own source of drinking water      | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
14. About how many books were there around your family's house when your child left/finished upper secondary school?  
 None  
 1 or 2  
 Around 10 to 50  
 Around 50 to 100  
 Around 100 to 200  
 More than 200
15. How often do you participate in the following household decisions?

<b>Decisions</b>	Never participate	Rarely participate	Sometimes participate	Very often participate	Always participate
on household expenditures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
on educational matters regarding the children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
on household labour regarding the children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
regarding health care for children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### **Section 4: YOUR CHILD'S SCHOOLING EXPERIENCE**

16. How many of your children, if any, dropped out of primary school and/or lower secondary school?  
 None     1     2     3     4 or more
17. How many of your children, if any, dropped out of upper secondary school?  
 None     1     2     3     4 or more
18. Have you ever encourage your child to study well in school and stay in school?  
 Never     Rarely     Sometimes     Often     Most of the time     Always
19. Have you ever talk/discuss with teachers about your child's development/activities in school?  
 Never     Rarely     Sometimes     Often     Most of the time     Always
20. Have you ever able to help with your child's homework?  
 Never     Rarely     Sometimes     Often     Most of the time     Always

**Additional Questions for Mother**

21. Did you have at least one binge drinking episode when you were age 17–25?  
 No       Yes
22. Did you initiate weekly use of alcohol before the age of 16?  
 No       Yes
23. Did you marry before you were 16 years old?  
 No       Yes
24. How many brothers and sisters do you have?     Brothers: \_\_\_\_\_   
Sisters: \_\_\_\_\_
25. What is your sibling rank? (From oldest to youngest)  
 1<sup>st</sup>     2<sup>nd</sup>     3<sup>rd</sup>     4<sup>th</sup>     5<sup>th</sup>     other, please specify: \_\_\_\_\_

**Additional Questions for Father**

26. Did you marry before you were 19 years old?  
 No       Yes
27. How many brothers and sisters do you have?     Brothers: \_\_\_\_\_  Sisters: \_\_\_\_\_
28. What is your sibling rank? (From oldest to youngest)  
 1<sup>st</sup>     2<sup>nd</sup>     3<sup>rd</sup>     4<sup>th</sup>     5<sup>th</sup>     other, please specify: \_\_\_\_\_

**-- Thank you for your participation --**

## Appendix 2: Questionnaires Indonesian Version

No. Responden: \_\_\_\_\_

### KUESIONER MANTAN SISWA

Mohon baca setiap pertanyaan dengan teliti dan jawablah seakurat mungkin, dengan mencentang (✓) kotak yang tersedia. Untuk beberapa pertanyaan, anda diminta untuk menulis jawaban singkat.

#### INFORMASI RESPONDEN

1. Jenis Kelamin :  Pria  Wanita
2. Tahun Kelahiran : \_\_\_\_\_
3. Status Pernikahan :  Belum menikah  Menikah  Cerai  Suami/istri meninggal
4. Agama :  Islam  Protestan  Katolik  Hindu  
 Budha  Lainnya, mohon sebutkan: \_\_\_\_\_
5. Suku :  Jawa  Lainnya
6. Lokasi Sekolah Menengah Atas Anda:  Perdesaan  Perkotaan

#### Bagian 1: PENDIDIKAN ANDA

7. Berapa umur anda ketika memulai kelas sepuluh sekolah menengah atas?  
\_\_\_\_\_ Tahun
8. Apakah anda pernah mengulang kelas (pada tingkatan kelas manapun) ketika sekolah menengah atas?  
 Tidak (lewati pertanyaan berikutnya dan langsung ke pertanyaan no. 8)  Ya
9. Jika Ya, berapa kali anda mengulang kelas?  
 Satu kali  Dua kali  Tiga kali atau lebih
10. Manakah dari pengeluaran yang terkait dengan sekolah berikut ini yang harus anda keluarkan ketika berada di sekolah menengah atas? (*anda dapat mencentang lebih dari satu*):  
 Uang sekolah  
 Seragam  
 Buku pelajaran  
 Biaya transportasi  
 Biaya kegiatan ekstrakurikuler  
 Biaya ujian  
 Biaya perlengkapan sekolah (sepatu, tas, topi, dasi, buku tulis, pulpen, dan lainnya)  
 Lainnya, mohon sebutkan: \_\_\_\_\_
11. Berapa rata-rata pengeluaran anda untuk biaya berikut ini (*mohon diperhatikan unit waktunya*):  
 Uang sekolah per bulan: Rp. \_\_\_\_\_  
 Seragam per tahun: Rp. \_\_\_\_\_  
 Buku pelajaran per tahun: Rp. \_\_\_\_\_  
 Biaya transportasi per hari: Rp. \_\_\_\_\_  
 Biaya kegiatan ekstrakurikuler per bulan: Rp. \_\_\_\_\_

- Biaya ujian per tahun: Rp. \_\_\_\_\_
  - Biaya perlengkapan sekolah (sepatu, tas sekolah, topi, dasi, buku tulis, pulpen, dan lain-lain) per tahun: Rp. \_\_\_\_\_
  - Lainnya, mohon sebutkan (per bulan/tahun\*): Rp. \_\_\_\_\_
- \*) Mohon pilih salah satu

12. Berapakah nilai Ujian Akhir Nasional Sekolah Menengah Pertama anda?  
 < 5.50       5.50 – 7.00       7.01 – 8.50       > 8.5

13. Apakah anda mempunyai teman sekelas / teman sekolah yang tidak menyelesaikan sekolah menengah atas?  
 Tidak       Ya

14. Apakah anda pernah mempertimbangkan diri untuk berhenti dari sekolah menengah atas?  
 Tidak       Ya  
 Jika Ya, Apa alasannya saat itu:

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15. Apakah anda pernah berhenti sekolah? (pada tingkatan sekolah manapun)  
 Tidak       Ya

16. Apakah anda pernah berhenti dari sekolah menengah atas?  
 Tidak       Ya  
 (Jika tidak, langsung ke pertanyaan no. 21)

17. Pada tingkatan kelas berapa anda meninggalkan sekolah menengah atas?  
 Kelas 10       Kelas 11       Kelas 12

18. Mengapa anda berhenti sekolah? (*anda dapat mencentang lebih dari satu*)

<b>Pribadi</b>	<b>Keluarga</b>	<b>Sekolah</b>
<input type="checkbox"/> Tidak naik kelas <input type="checkbox"/> Dikeluarkan <input type="checkbox"/> Sakit <input type="checkbox"/> Mendapatkan pekerjaan <input type="checkbox"/> Bosan dengan sekolah <input type="checkbox"/> Ditangkap/ditahan polisi <input type="checkbox"/> Memakai obat terlarang	<input type="checkbox"/> Menikah <input type="checkbox"/> Kehamilan <input type="checkbox"/> Ada keluarga yang sakit <input type="checkbox"/> Masalah keuangan <input type="checkbox"/> Menjalankan/membantu usaha milik keluarga	<input type="checkbox"/> Sekolah terlalu jauh <input type="checkbox"/> Masalah dengan teman sekolah <input type="checkbox"/> Masalah dengan guru

Masalah lainnya, mohon sebutkan:

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19. Jika anda mencentang "masalah keuangan" pada pertanyaan no. 18, mohon diinformasikan pengeluaran sekolah apa saja yang tidak mampu anda bayarkan? (*anda dapat mencentang lebih dari satu*):
- Uang sekolah
  - Seragam
  - Buku pelajaran
  - Biaya transportasi
  - Biaya kegiatan ekstrakurikuler
  - Biaya ujian
  - Biaya perlengkapan sekolah (sepatu, tas, topi, dasi, buku tulis, pulpen, dan lainnya)
  - Lainnya, mohon sebutkan: \_\_\_\_\_
20. Apakah anda berencana untuk kembali ke sekolah?
- Tidak
  - Ya
  - Saya tidak tahu

## **Bagian 2: KELUARGA ANDA**

21. Apakah anda tinggal dengan kedua orang tua anda ketika anda belajar di sekolah menengah atas?
- Ya (langsung ke pertanyaan no. 23)
  - Tidak, saya tinggal dengan ayah saja
  - Tidak, saya tinggal dengan ayah di sebagian besar waktu saya
  - Tidak, saya tinggal dengan ibu saja
  - Tidak, saya tinggal dengan ibu di sebagian besar waktu saya
  - Tidak, saya tinggal dengan kakek/nenek saya.
  - Tidak, saya tinggal dengan keluarga lain
  - lainnya, mohon sebutkan: \_\_\_\_\_
22. Mengapa anda tidak tinggal dengan kedua orang tua anda ketika anda belajar di sekolah menengah atas?
- Orang tua telah bercerai
  - Orang tua (atau salah satu dari orang tua) bekerja di tempat lain (Mereka tinggal terpisah)
  - Orang tua (atau salah satu dari orang tua) telah meninggal dunia
  - lainnya, mohon sebutkan: \_\_\_\_\_
23. Berapa jumlah saudara anda?  Saudara laki-laki: \_\_\_\_\_  Saudara perempuan: \_\_\_\_\_  
(jika tidak mempunyai saudara, langsung ke pertanyaan no. 26)
24. Anak urutan ke berapakah anda dalam keluarga? (dihitung dari yang tertua sampai termuda)
- 1
  - 2
  - 3
  - 4
  - 5
  - lainnya, mohon sebutkan: \_\_\_\_\_
25. Berapa orang saudara anda, Jika ada, yang berhenti sekolah pada tingkat sekolah manapun?
- Tidak ada
  - 1
  - 2
  - 3
  - 4 atau lebih
26. Seberapa seringkah anda membantu orang tua/wali anda dalam pekerjaan rumah tangga setelah pulang sekolah?
- Tidak pernah
  - Jarang
  - Kadang-kadang
  - Sering
  - Sebagian besar waktu
  - Selalu

27. Seberapa seringkah anda membantu pekerjaan/usaha sehari-hari orang tua/wali anda setelah pulang sekolah?  
 Tidak pernah       Jarang       Kadang-kadang       Sering  
 Sebagian besar waktu       Selalu
28. Seberapa seringkah orang tua/wali anda dapat membantu dalam pekerjaan rumah (PR)?  
 Tidak pernah       Jarang       Kadang-kadang       Sering  
 Sebagian besar waktu       Selalu
29. Apakah orang tua/wali anda mendorong anda untuk belajar dengan baik di sekolah dan tetap bersekolah?  
 Tidak pernah       Jarang       Kadang-kadang       Sering  
 Sebagian besar waktu       Selalu

**Bagian 3: PENGALAMAN BERSEKOLAH ANDA**

30. Seberapa jauh jarak sekolah terakhir anda dari rumah?  
 Kurang dari 5 km       Antara 5 dan 10 km       lebih dari 10 km
31. Bagaimana cara anda melakukan perjalanan ke tempat sekolah menengah atas anda?  
 Jalan kaki       Sepeda       Sepeda motor       Transportasi umum  
 Lainnya, mohon sebutkan: \_\_\_\_\_
32. Berapa kali anda pindah sekolah sejak sekolah dasar?  
 Tidak pernah       Sekali       Dua kali       Tiga kali       Lebih dari tiga kali
33. Secara rata-rata, bagaimana anda menilai kualitas guru-guru anda?  
 Tidak baik sama sekali  
 Tidak terlalu baik  
 Netral  
 Baik  
 Sangat baik
34. Bagaimana anda mendeskripsikan hubungan anda dengan para guru saat sekolah menengah atas?  
 Tidak baik sama sekali  
 Tidak terlalu baik  
 Netral  
 Baik  
 Sangat baik
35. Apakah anda dahulu mengalami masalah dengan satu orang guru?  
 Tidak       Ya
36. Apakah anda pernah mendapatkan masalah-masalah berikut ini ketika di sekolah menengah atas?  
 a. Berkelahi dengan teman sekolah atau siswa lain  
 Tidak       Ya  
 b. Merokok atau minum minuman keras  
 Tidak       Ya  
 c. Menggunakan obat-obatan terlarang  
 Tidak       Ya

- d. Diperingatkan oleh kepala sekolah atau guru-guru karena perilaku yang menyimpang (termasuk mengintimidasi siswa lain)
  - Tidak       Ya
- e. Ditangkap oleh polisi
  - Tidak       Ya
- f. Diskors dari sekolah
  - Tidak       Ya
- g. Diintimidasi oleh teman sekolah atau guru
  - Tidak       Ya

37. Apakah anda dahulu menerima uang dari program bantuan siswa miskin dari pemerintah?

- Tidak       Ya

38. Apakah anda menyukai sekolah?

- Tidak       Ya

39. Apakah anda berpikir bahwa sekolah hanya membuang-buang waktu saja?

- Tidak       Ya

**Bagian 4: LAIN-LAIN**

40. Apakah anda pernah bekerja mendapatkan uang untuk keluarga ketika anda berada di sekolah menengah atas?

- Tidak       Ya

41. Apakah anda pernah bekerja mendapatkan uang untuk diri anda sendiri ketika anda berada di sekolah menengah atas?

- Tidak       Ya

(Jika kedua jawaban anda untuk pertanyaan no. 40 dan 41 adalah "Tidak", lewati pertanyaan berikut dan langsung ke pertanyaan no. 43)

42. Jika salah satu jawaban dari pertanyaan no. 40 dan 41 adalah "Ya", apa jenis pekerjaan saat itu?

- Pekerjaan tidak tetap       Pekerjaan tetap

43. Apakah anda bekerja saat ini?

- Tidak (lewati pertanyaan berikutnya dan langsung ke pertanyaan no. 45)  
 Ya

44. Jika jawaban untuk no. 43 adalah "Ya", apa jenis pekerjaan tersebut?

- Pekerjaan tidak tetap       Pekerjaan tetap

45. Jika anda tidak bekerja saat ini, apa yang anda lakukan sekarang?

\_\_\_\_\_

46. Jika anda diminta untuk bekerja ketika di sekolah menengah atas, berapa gaji/upah minimum yang akan anda minta? Rp. \_\_\_\_\_

47. Apakah anda setuju atau tidak setuju dengan pernyataan-pertanyaan berikut ini:

- a. Kepercayaan terhadap agama penting buat saya
  - Sangat tidak setuju     Tidak setuju       Netral       Setuju
  - Sangat setuju
- b. Kepercayaan terhadap agama mempengaruhi keputusan-keputusan saya
  - Sangat tidak setuju     Tidak setuju       Netral       Setuju
  - Sangat setuju

- c. Penting bagi teman-teman saya untuk berbagi kepercayaan saya  
 Sangat tidak setuju    Tidak setuju    Netra    Setuju  
 Sangat setuju

48. Mohon menilai tingkat kesehatan anda ketika berada di sekolah menengah atas:  
 Istimewa  
 Sangat baik  
 Baik  
 Cukup baik  
 Buruk

Pertanyaan berikut ini hanya untuk responden yang putus sekolah saja.

49. Apa yang telah anda lakukan sampai saat ini sejak anda meninggalkan sekolah menengah atas?  
 Masih mencari pekerjaan  
 Menjalankan/membantu usaha keluarga  
 Saya saat ini bekerja dengan orang lain di dalam daerah asal saya  
 Saya saat ini bekerja dengan orang lain di luar daerah asal saya  
 lainnya, mohon sebutkan: \_\_\_\_\_

**-- Terima kasih untuk partisipasi anda --**

**No. Responden:** \_\_\_\_\_  
**KUESIONER ORANG TUA**  
**(Ayah/Ibu/Wali\*)**

\*) mohon pilih salah satu

Mohon baca setiap pertanyaan dengan teliti dan jawablah seakurat mungkin, dengan mencentang (√) kotak yang tersedia. Untuk beberapa pertanyaan, anda diminta untuk menulis jawaban singkat.

**INFORMASI RESPONDEN**

1. Lokasi Rumah :  Perdesaan  Perkotaan
2. Jenis Sekolah Menengah Atas Anak :  Negeri  Swasta
3. Jenis Kurikulum :  SMA  SMK  MA

**Bagian 1: PENDIDIKAN**

4. Apa pendidikan tertinggi yang telah anda capai?  
 Tidak pernah sekolah / Tidak selesai Sekolah Dasar  
 Sekolah Dasar / Madrasah Ibtidaiyah  
 Sekolah Menengah Pertama / Madrasah Tsanawiyah  
 Sekolah Menengah Atas/ Sekolah Menengah Kejuruan / Madrasah Aliyah  
 Diploma  
 Sarjana  
 Pascasarjana (Master dan/atau Doktor)

**Bagian 2: PEKERJAAN**

5. Apa pekerjaan utama anda? (Mohon sedetil mungkin)  
\_\_\_\_\_
6. Apa jenis pekerjaan tersebut?  
 Pekerjaan tidak tetap  Pekerjaan tetap
7. Apakah anda memiliki pendapatan dari sumber-sumber selain dari pekerjaan utama anda?  Tidak  Ya
8. Bagaimana anda mengklasifikasikan pendapatan total anda pada saat anak anda meninggalkan/selesai sekolah menengah atas?  
 Kurang dari Rp. 1.500.000,00 per bulan  
 Antara Rp. 1.500.000,00 – Rp. 2.500.000,00 per bulan  
 Antara Rp. 2.500.001,00 – Rp. 3.500.000,00 per bulan  
 Lebih dari Rp. 3,500,000.00 per bulan

**Section 3: KEADAAN KELUARGA**

9. Rata-rata pengeluaran bulanan : Rp. \_\_\_\_\_/bulan
10. Jumlah anggota keluarga (tidak termasuk kepala keluarga): \_\_\_\_\_ orang
11. Apakah anda menerima program Bantuan Langsung Sementara Masyarakat (BLSM) pada saat anak anda berada di sekolah menengah atas?  
 Tidak  Ya

12. Dinding rumah anda terbuat dari bahan apa?  
 Anyaman bambu    Tripleks    Kayu    Batu bata
13. Manakah dari barang-barang berikut yang anda miliki di rumah?:
- |                               |                                |                             |
|-------------------------------|--------------------------------|-----------------------------|
| a. Sepeda                     | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| b. Sepeda motor               | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| c. Mobil                      | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| d. Televisi berwarna          | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| e. Toilet pribadi             | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| f. Listrik                    | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| g. Tanah sebagai lantai rumah | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
| h. Sumber air minum sendiri   | <input type="checkbox"/> Tidak | <input type="checkbox"/> Ya |
14. Berapa banyak buku yang ada di rumah anda ketika anak Anda meninggalkan/selesai sekolah menengah atas?  
 Tidak ada  
 1 atau 2  
 Sekitar 10 sampai 50  
 Sekitar 50 sampai 100  
 Sekitar 100 sampai 200  
 Lebih dari 200
15. Seberapa sering anda ikut serta mengambil keputusan rumah tangga berikut ini?

<b>Keputusan</b>	Tidak pernah ikut serta	Jarang ikut serta	Kadang-kadang ikut serta	Sangat sering ikut serta	Selalu ikut serta
mengenai pengeluaran rumah tangga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mengenai pendidikan anak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mengenai jenis pekerjaan rumah tangga yang harus dilakukan anak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mengenai perawatan kesehatan anak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Bagian 4: PENGALAMAN BERSEKOLAH ANAK ANDA**

16. Berapa jumlah anak anda, jika ada, yang berhenti sekolah di tingkat sekolah dasar dan/atau sekolah menengah pertama?  
 Tidak ada    1    2    3    4 atau lebih
17. Berapa jumlah anak anda, jika ada, yang berhenti sekolah di tingkat sekolah menengah atas?  
 Tidak ada    1    2    3    4 atau lebih
18. Apakah anda mendorong putra/putri anda untuk belajar dengan baik di sekolah dan tetap bersekolah?  
 Tidak pernah    Jarang    Kadang-kadang    Sering  
 Sebagian besar waktu    Selalu
19. Apakah anda berbicara/berdiskusi dengan para guru tentang perkembangan/aktivitas putra/putri anda di sekolah?  
 Tidak pernah    Jarang    Kadang-kadang    Sering  
 Sebagian besar waktu    Selalu

20. Apakah anda dapat membantu anak putra/putri anda dalam pekerjaan rumah (PR) mereka?

- Tidak pernah                       Jarang                       Kadang-kadang     Sering  
 Sebagian besar waktu    Selalu

**Pertanyaan tambahan untuk Ibu**

21. Apakah anda pernah pesta minuman keras ketika berumur 17-25 tahun?

- Tidak                       Ya

22. Apakah anda meminum minuman beralkohol sebelum berumur 16 tahun?

- Tidak                       Ya

23. Apakah anda menikah sebelum berumur 16 tahun?

- Tidak                       Ya

24. Berapa jumlah saudara anda?  Saudara laki-laki: \_  Saudara perempuan: \_\_

25. Anak urutan ke berapakah anda dalam keluarga? (dihitung dari yang tertua sampai termuda)

- 1     2     3     4     5     lainnya, mohon sebutkan: \_\_\_\_\_

**Pertanyaan tambahan untuk Ayah**

26. Apakah anda menikah sebelum berumur 19 tahun?

- Tidak                       Ya

27. Berapa jumlah saudara anda?  Saudara laki-laki: \_\_\_\_\_  Saudara perempuan: \_\_\_\_\_

28. Anak urutan ke berapakah anda dalam keluarga? (dihitung dari yang tertua sampai termuda)

- 1     2     3     4     5     lainnya,    mohon    sebutkan:  
\_\_\_\_\_

**-- Terima kasih untuk partisipasi anda --**

## Appendix 3: Pilot Project Information Sheet

# UPPER SECONDARY SCHOOL DROPOUT: LESSON FROM CENTRAL JAVA PROVINCE, INDONESIA

## PILOT STUDY INFORMATION SHEET

### Researcher Introduction

My name is Andryan Setyadharma and I am currently a PhD student in Economics at Massey University, New Zealand. As part of this degree I am required to undertake a project. My research investigates why students in upper secondary school level in Central Java Province, Indonesia, decide to drop out of school. The outcomes from this research are expected to provide evidence on the main factors determining dropout. This should help in designing policies to reduce dropout.

### Objective of Pilot Study

The objective of this pilot study is to test the questionnaire designed by me and gather information prior to a larger study. This should improve the latter's quality and efficiency. More specifically, in this pilot study, I want to find out whether respondents encounter any difficulties when answering the questionnaire.

### Project Description and Invitation

- *A brief summary of the project.*

Why do students drop out of high school? In general, Rumberger & Lim (2008) identified two types of factors that predict whether students drop out or graduate from high school: (1) factors associated with *individual characteristics* of students, such as students' attitudes, behaviors, and school performance; and (2) factors associated with *institutional characteristics* that focus on the contextual aspects found in their families, schools, and communities. Compared with other school levels, the data show that dropout rates in upper secondary schools in Indonesia have been higher than in primary schools and in lower secondary schools. This study tries to explain why students at upper secondary school level in Indonesia, especially in Central Java Province, decide to drop out of school.

- *An invitation to participate in the research*

I would like to invite you to take part in this pilot study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part. Your participation in this study involves completing a questionnaire and interview.

### Participant Identification and Recruitment

- *Recruitment method.*

All the participants in this research are former upper secondary school students and their parents/guardians. Therefore you are invited to be a respondent if:

- you are identified as a former upper secondary school student in Central Java Province in last three years, or;
- you are identified as a parent or a guardian of a former upper secondary school student.

- *Number of participants to be involved and the reason for this number.*

The number of respondents for this pilot study is approximately 5 - 10 former upper secondary school students and their parents/guardians.

- *Description of discomforts or risks to participants as a result of participation.*

The risks of your participation in this pilot study are low as this questionnaire is just to test your understanding of the questions. Your answers will not be used **for any other purpose**.

### **Pilot Project Procedures**

- *The procedures in which participants will be involved*  
I will visit you in your home. You will be given a questionnaire and asked to answer the questions in writing.
- *The time involved*  
It should take you about 15 minutes to fill in the questionnaire and 15 minutes for interview.
- *Any conflict of financial interest and/or role*  
You will not benefit financially from this research as this research is not for-profit research. It is conducted as a part of the requirement of my PhD Program at Massey University.

### **Data Management**

- *Use of data*  
Your answers will not be used in the larger study. The objective of the pilot project is to test whether the questionnaire is easy to understand by respondents or not. The data will be used to determine whether the questionnaire needs to be revised or not.
- *Storage and disposal of data*  
Your answers will be kept strictly confidential. Your answer sheet paper will be stored in a locked cabinet, within a locked office, accessed only by me. Your answer sheet will be disposed of securely after I finish my PhD Program.
- *Method for preserving confidentiality of identity*  
The data received by the researcher will not be shared with other people, except my PhD supervisors. In addition, a master list identifying participants by research codes will be held on a password protected computer accessed only by me and electronic data will be stored on a password protected computer used only by me.

### **Participant's Rights**

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the pilot study anytime;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

### **Invitation to Main Study**

You are also invited to participate in the main study which will be conducted next year. Should you decide to participate, a new consent form will be given to you for your approval.

### **Project Contacts**

- Andryan Setyadharma  
PhD Student, School of Economics and Finance, College of Business, Massey University, New Zealand  
Cellphone: +64223893311 (New Zealand) or +628122690035 (Indonesia)  
E-mail : A.Setyadharma@massey.ac.nz
- Prof Hans-Jurgen Engelbrecht  
Primary Supervisor, School of Economics and Finance, College of Business, Massey University, New Zealand  
E-mail : H.Engelbrecht@massey.ac.nz

Please feel free to contact me and/or my supervisor if you have any questions about the project.

## Appendix 4: First Year Student Information Form

### DROPOUT PREVENTION PROGRAM

#### FIRST YEAR STUDENT INFORMATION FORM

Please note that you are under no obligation to fill this form. Please refer to Information Sheet.

1. Your school ID : \_\_\_\_\_
2. Gender :  Male  Female
3. Home address : \_\_\_\_\_  
\_\_\_\_\_
4. Year of Birth : \_\_\_\_\_
5. Lower Secondary School's national final examination grade:  
 < 5.50  5.50 – 7.00  7.01 – 8.50  > 8.5
6. Number of siblings (if any) : \_\_\_\_\_
7. Your sibling rank : \_\_\_\_\_
8. How many of your siblings, if any, dropped out at any level of school? : \_\_\_\_\_
9. How many times did you change your school since primary school?: \_\_\_\_\_ times
10. Do you receive Government's Poor Students Assistance program? :  No  Yes
11. Do you receive any financial assistance other than from your parents/guardians?:  
 No  Yes
12. How often do you help your parents/guardians with household chores after returning from school?  
 Never  Rarely  Sometimes  Often  Most of the time  Always
13. How often did you help your parents'/guardians' daily business/work after returning from school?  
 Never  Rarely  Sometimes  Often  Most of the time  Always
14. Your father's highest level of education : \_\_\_\_\_
15. What is your father's/guardian's main job? : \_\_\_\_\_
16. Your mother's highest level of education : \_\_\_\_\_
17. What is your mother's/guardian's main job? : \_\_\_\_\_
18. Do you live with both your parents?  No  Yes
19. If not, what are the reasons? : \_\_\_\_\_  
\_\_\_\_\_
20. Do your parents receive any assistance from government (for example: Family Hope Programme (PKH))? :  No  Yes
21. Do your parents have Social Assistance Cards (KPS) or Certificate of Poverty (SKTM)? :  
 No  Yes
22. Do you think your parents are able to finance your education until you finish upper secondary school?:  No  Yes  I don't know/ I am not sure
23. If you do not know or you are not sure, what are the reasons?: \_\_\_\_\_  
\_\_\_\_\_

-- Thank you for your participation --

#### For researchers use only

Date of Visit:

- School ID : \_\_\_\_\_
- Home location :  Rural  Urban
- Upper Secondary School Location :  Rural  Urban
- Upper Secondary School Type :  Public  Private

## Appendix 5: Second and Third Year Student Information Form

### DROPOUT PREVENTION PROGRAM

#### SECOND AND THIRD YEAR STUDENT INFORMATION FORM

Please note that you are under no obligation to fill this form. Please refer to Information Sheet.

1. Your school ID : \_\_\_\_\_
2. Have you ever considered withdrawing from upper secondary school? :  No  Yes  
If Yes, what were the reasons: \_\_\_\_\_  
\_\_\_\_\_
3. Roughly, how was your attendance record at last academic year?: \_\_\_\_\_% attended class
4. If you did not receive Government's Poor Students Assistance program at last academic year, do you receive it now? :  No  Yes
5. If you did not receive any financial assistance other than from your family at last academic year, do you receive it now? :  No  Yes
6. How would you describe your relationship with your teachers at last academic year?  
 Not good at all  Not quite good  Neutral  Good  Very good
7. Did you have problems with one particular teacher at last academic year?  
 No  Yes
8. Please inform us your last year academic record: \_\_\_\_\_
9. Did you have the following problems at last academic year?
  - a. Fought with peers or other students :  No  Yes
  - b. Smoking or drinking :  No  Yes
  - c. Using illegal drug? :  No  Yes
  - d. Warned by principal or teachers because of your deviant behaviour (including bullying other students) :  No  Yes
  - e. Arrested by the Police for a crime :  No  Yes
  - f. Suspended from school :  No  Yes
  - g. Bullied by peers or teachers :  No  Yes
10. So far, do you like school?  
 No  Yes
11. So far, do you think school was a waste of time?  
 No  Yes
12. Do you still live with both your parents?  No  Yes  
If not, what are the reasons? : \_\_\_\_\_  
\_\_\_\_\_
13. If your parents did not receive any assistance from government last year, do they receive it now??  No  Yes

-- Thank you for your participation --

**Appendix 6: Appendix Tables**  
**Appendix Table 6.1. Duration of Compulsory Education**

<b>Year</b>	<b>Region</b>	<b>Country's Name</b>	<b>No. of Countries</b>
5 Years	Africa	Madagascar,	1
	Asia	Bangladesh, Lao PDR, Myanmar, Pakistan	4
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	-	0
6 Years	Africa	Angola, Benin, Cameroon, Cape Verde, Central African Republic, Democratic Republic of the Congo, Equatorial Guinea, Gambia, Guinea-Bissau, Liberia, Niger, Sao Tome and Principe, Sierra Leone	13
	Asia	Iraq, Malaysia, Philippines, Saudi Arabia, Singapore	5
	Europe	-	0
	North America	Haiti, Honduras, Jamaica, Nicaragua, Trinidad and Tobago	5
	Oceania	-	0
	South America	Suriname	1
7 Years	Africa	Mozambique, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe	6
	Asia	Maldives	1
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	-	0
8 Years	Africa	Comoros, Eritrea, Kenya, Malawi	4
	Asia	Iran, Turkey	2
	Europe	Bulgaria, Croatia, Serbia	3
	North	-	0

	America		
	Oceania	Marshall Islands, Micronesia, Samoa, Tuvalu	4
	South America	Bolivia	1
9 Years	Africa	Algeria, Djibouti, Egypt, Libya, Mali, Morocco, Nigeria, Rwanda, South Africa, Tunisia	10
	Asia	Afghanistan, Bahrain, Brunei Darussalam, Cambodia, China, India, Indonesia, Japan, Kuwait, Kyrgyzstan, Lebanon, Mongolia, Republic of Korea, Sri Lanka, Syria, Tajikistan, Thailand, Timor-Leste, United Arab Emirates, Vietnam, Yemen	21
	Europe	Albania, Armenia, Austria, Belarus, Bosnia and Herzegovina, Cyprus, Czech Republic, Estonia, Georgia, Latvia, Liechtenstein, Lithuania, Macedonia, Montenegro, Poland, Portugal, Slovakia, Slovenia, Switzerland	19
	North America	Cuba, Dominican Republic, El Salvador, Panama	4
	Oceania	Kiribati, Palau, Tonga	3
	South America	Brazil, Guyana, Paraguay	3
	10 Years	Africa	Botswana, Burkina Faso, Chad, Congo, Côte d'Ivoire, Gabon, Guinea, Mauritania, Namibia, Senegal, Seychelles, Togo
Asia		Jordan, Russian Federation, Turkmenistan	3
Europe		Andorra, Denmark, Finland, Greece, Hungary, Ireland, Italy, Luxembourg, Monaco, Moldova, Romania, San Marino, Sweden	13
North America		Belize, Costa Rica, Guatemala, Saint Lucia	4
Oceania		Fiji	1
South America		Colombia, Ecuador	2
11 Years	Africa	Ghana,	1
	Asia	Democratic People's Republic of Korea, Israel, Kazakhstan	3
	Europe	Azerbaijan, France, Iceland, Malta, Norway, Spain, Ukraine	7
	North America	Antigua and Barbuda, Barbados, Canada, Mexico	4

	Oceania	Australia, Nauru	2
	South America	-	0
12 Years	Africa	Mauritius	1
	Asia	Qatar, Uzbekistan,	2
	Europe	Belgium, United Kingdom of Great Britain and Northern Ireland	2
	North America	Bahamas, Dominica, Grenada, Saint Kitts and Nevis, Saint Vincent and the Grenadines, United States of America	6
	Oceania	New Zealand	1
	South America	Chile, Peru	2
13 Years	Africa	-	0
	Asia	-	0
	Europe	Germany, Netherlands	2
	North America	-	0
	Oceania	-	0
	South America	Argentina	1
14 Years	Africa	-	0
	Asia	-	0
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	Uruguay, Venezuela	2
Not Applicable	Africa	-	0
	Asia	Bhutan, Nepal	2
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	-	0
No Data	Africa	Burundi, Ethiopia, Lesotho, Somalia, South	6

Available		Sudan, Sudan	
	Asia	Oman	1
	Europe	Vatican	1
	North America	-	0
	Oceania	Papua New Guinea, Solomon Islands, Vanuatu	3
	South America	-	0

Source: UNESCO - Institutes for Statistics (2011a)

**Appendix Table 6.2. Starting Age of Compulsory Education**

<b>Year</b>	<b>Region</b>	<b>Country's Name</b>	<b>No. of Countries</b>
3 Year-Old	Africa	-	0
	Asia	-	0
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	Venezuela	1
4 Year-Old	Africa	Ghana	1
	Asia	-	0
	Europe	-	0
	North America	Mexico	1
	Oceania	-	0
	South America	Uruguay	1
5 Year-Old	Africa	Mauritius	1
	Asia	Israel, Myanmar, Pakistan, Sri Lanka	4
	Europe	Greece, Malta, Netherlands, United Kingdom of Great Britain and Northern Ireland	4
	North America	Antigua and Barbuda, Bahamas, Barbados, Belize, Costa Rica, Dominica, Dominican Republic, Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines	11
	Oceania	Australia, New Zealand, Samoa	3
	South America	Argentina, Colombia, Ecuador, Peru	4
	6 Year-Old	Africa	Algeria, Angola, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Gabon, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mauritania, Morocco, Mozambique, Nigeria, Sao Tome and Principe, Seychelles, Sierra Leone, Swaziland, Togo, Tunisia, Uganda, Zimbabwe
Asia		Bahrain, Bangladesh, Brunei Darussalam, Cambodia, China, India, Iran, Iraq, Japan, Jordan, Kuwait, Lao PDR, Lebanon, Malaysia, Maldives, Mongolia, North Korea, Philippines, Qatar, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, Syria, Thailand, Timor-Leste, Turkey, United Arab Emirates, Vietnam, Yemen	29

	Europe	Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Czech Republic, Denmark, France, Georgia, Germany, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Macedonia, Monaco, Montenegro, Norway, Portugal, Republic of Moldova, San Marino, Slovakia, Slovenia, Spain, Ukraine	30
	North America	Canada, Cuba, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Trinidad and Tobago, United States of America	10
	Oceania	Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Tonga	7
	South America	Bolivia, Brazil, Chile, Guyana, Paraguay	5
7 Year-Old	Africa	Equatorial Guinea, Eritrea, Gambia, Guinea, Mali, Namibia, Niger, Rwanda, Senegal, South Africa, Tanzania, Zambia	12
	Asia	Afghanistan, Indonesia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	7
	Europe	Bulgaria, Croatia, Estonia, Finland, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Sweden, Switzerland	12
	North America	El Salvador	1
	Oceania	Tuvalu	1
	South America	Suriname	1
Not Applicable	Africa	-	0
	Asia	Bhutan, Nepal	2
	Europe	-	0
	North America	-	0
	Oceania	-	0
	South America	-	0
No Data Available	Africa	Burundi, Ethiopia, Lesotho, Somalia, South Sudan, Sudan	6
	Asia	Oman	1
	Europe	Vatican	1
	North America	-	0
	Oceania	Papua New Guinea, Solomon Islands, Vanuatu	3
	South America	-	0

Source: UNESCO - Institutes for Statistics (2011a)

**Appendix Table 6.3. Initial Variables Coding**

<b>Variables</b>	<b>Instruments</b>	<b>Measurement</b>	<b>Coding</b>
Dropout	Ex-student Questionnaire Q15	Nominal	0 = if individual has completed an upper secondary school education 1= if individual has dropped out of an upper secondary school education permanently
<b>INDIVIDUAL CHARACTERISTICS</b>			
Gender	Ex-student Questionnaire Q1	Nominal	0 = Male 1 = Female
Age at First School Entry	Ex-student Questionnaire Q7	Scale	-
Working Experience	Ex-student Questionnaire Q40	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q41	Ordinal	0 = No 1 = Yes
Perception of education	Ex-student Questionnaire Q38	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q39	Ordinal	0 = No 1 = Yes
Students' Home Location	Parent Questionnaire Q1	Nominal	0 = Urban 1 = Rural
Repeat a Grade	Ex-student Questionnaire Q8 & Q9	Ordinal	0 = Never 1 = Once 2 = Twice 3 = Three Times or more
Previous Academic Performance	Ex-student Questionnaire Q12	Ratio	1 = < 5.50 2 = 5.50 – 7.00 3 = 7.01 – 8.50 4 = > 8.5
Changing School Experience	Ex-student Questionnaire Q32	Ordinal	1 = Never 2 = Once 3 = Twice 4 = Three times 5 = More than three times
Deviant Behaviour	Ex-student Questionnaire Q36a	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q36b	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q36c	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q36d	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q36e	Ordinal	0 = No 1 = Yes
	Ex-student Questionnaire Q36f	Ordinal	0 = No 1 = Yes

<b>Variables</b>	<b>Instruments</b>	<b>Measurement</b>	<b>Coding</b>
	Ex-student Questionnaire Q36g	Ordinal	0 = No 1 = Yes
Health Condition	Ex-student Questionnaire Q48	Ordinal	0 = Poor health 1 = Fairly health 2 = Good health 3 = Very good health 4 = Excellent health
<b>FAMILY CHARACTERISTICS</b>			
Family's Socio-Economic Status	Parent Questionnaire Q8	Ratio	1 = Less than Rp. 1,500,000.00 per month 2 = Between Rp. 1,500,000.00 – Rp. 2,500,000.00 per month 3 = Between Rp. 2,500,000.00 – Rp. 3,500,000.00 per month 4 = More than Rp. 3,500,000.00 per month
	Parent Questionnaire Q9	Scale	-
	Parent Questionnaire Q11	Ordinal	0 = No 1 = Yes
	Parent Questionnaire Q12	Ordinal	1 = Woven Bamboo 2 = Plywood 3 = Wood 4 = Brick
	Parent Questionnaire Q12	Ordinal	0 = No 1 = Yes
Parent Education Level	Parent Questionnaire Q4	Ordinal	1 = Never attend School/ not finished primary school 2 = Primary school/ Islamic primary school 3 = Lower secondary school/Islamic lower secondary school 4 = Upper secondary school/ Islamic upper secondary school/ Vocational secondary school 5 = Diploma degree 6 = Undergraduate degree 7 = Postgraduate degree (Master and Doctorate)

<b>Variables</b>	<b>Instruments</b>	<b>Measurement</b>	<b>Coding</b>
Parents Academic Supports	Parent Questionnaire Q18	Ordinal	1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Most of the time 6 = Always
	Parent Questionnaire Q19	Ordinal	
	Parent Questionnaire Q20	Ordinal	
Number of Family members	Ex-student Questionnaire Q22	Nominal	1 = They were divorced 2 = They was (or he/she was) working in other place (they live apart) 3 = Both (or one of them) passed away 4 = Others
	Ex-student Questionnaire Q23	Scale	-
Sibling Rank in family	Ex-student Questionnaire Q24	Ordinal	1 = 1 <sup>st</sup> 2 = 2 <sup>nd</sup> 3 = 3 <sup>rd</sup> 4 = 4 <sup>th</sup> 5 = 5 <sup>th</sup> 6 = others
Divorced Parents	Ex-student Questionnaire Q22	Nominal	1 = divorced parents 0 = others
Sibling's dropout experience	Ex-student Questionnaire Q25	Ordinal	0 = No Siblings 1 = None 2 = 1 3 = 2 4 = 3 5 = 4 or more
Time helping Family	Ex-student Questionnaire Q26	Ordinal	1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Most of the time 6 = Always
	Ex-student Questionnaire Q27	Ordinal	
Father and Mother Participation in Household Decision-making	Parent Questionnaire Q15	Ordinal	1 = Never participate 2 = Rarely participate 3 = Sometimes participate 4 = Very often participate 5 = Always participate
<b>SCHOOL CHARACTERISTICS</b>			
School Location (Rural Vs. Urban)	Ex-student Questionnaire Q6	Nominal	0 = Rural 1 = Urban
Relation with Teachers	Ex-student Questionnaire Q34	Likert	1 = Not good at all 2 = Not quite good 3 = Neutral 4 = Good 5 = Very good
Bullied by Peers and/or Teachers	Ex-student Questionnaire Q36g	Ordinal	0 = No 1 = Yes

<b>Variables</b>	<b>Instruments</b>	<b>Measurement</b>	<b>Coding</b>
Type of School's curriculum	Parent Questionnaire Q3	Nominal	0 = General Upper Secondary School 1 = Vocational Upper Secondary School
	Parent Questionnaire Q3	Nominal	0 = Religious School 1 = General School
School's type	Parent Questionnaire Q2	Nominal	0 = Public 1 = Private
Distance To School	Ex-student Questionnaire Q30	Ordinal	1 = Less than 5 km 2 = Between 5 and 10 km 3 = More than 10 km
Students' Schooling Expenditure	Ex-student Questionnaire Q11	Scale	-
Teachers' quality	Ex-student Questionnaire Q33	Likert	1 = Not good at all 2 = Not quite good 3 = Neutral 4 = Good 5 = Very good
<b>GOVERNMENT POLICY AND MACROECONOMIC CONDITION</b>			
Government's Poor Students Assistance	Ex-student Questionnaire Q37	Ordinal	0 = No 1 = Yes
Spatial Dummy	Questionnaire ID	Nominal	0 = Northern Central Java 1 = Southern Central Java
Minimum Wages	Data from Indonesian Central Statistics Agency	Scale	-
Unemployment rate	Data from Indonesian Central Statistics Agency	Scale	-

**Appendix Table 6.4. Variables' Description and Summary Statistics**

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
Dependent Variable: School dropout	A dummy for ex-students denoting whether they dropped out of upper secondary school or not (Dropout = 1, Graduated = 0)	439	0.210	0.407	0	1
<b>Individual Characteristics</b>						
Gender	A dummy for ex-students denoting their gender (Female = 1, Male = 0)	439	0.592	0.492	0	1
Age at first entry	Ex-students' age when they started grade ten at upper secondary school	439	15.651	0.891	14	20
Working experiences	A dummy for ex-students denoting whether they ever earned money when they were at upper secondary school or not (Yes = 1, No = 0)	439	0.271	0.445	0	1
Perception of education	A combination of dummy for ex-students denoting whether they think school was a waste of time or not and/or whether they like school or not (Good = 1, Bad = 0)	439	0.970	0.170	0	1
Home location	A dummy for ex-students denoting their home location (Rural = 1, Urban = 0)	439	0.540	0.499	0	1
Repeat a grade	A dummy for ex-students denoting whether they ever repeated a grade while at upper secondary school or not (Ever repeated a grade = 1, No = 0)	439	0.052	0.223	0	1
<b>Lower Secondary School's national final examination grade:</b>						
Low (Between 5.01 – 7.00)	A dummy for ex-students denoting their Lower Secondary School's national final examination grade was between 5.50 – 7.00	439	0.364	0.482	0	1
Average (Between 7.01 – 8.50)	A dummy for ex-students denoting their Lower Secondary School's national final examination grade was between 7.01 – 8.50	439	0.569	0.496	0	1
High (Above 8.50)	A dummy for ex-students denoting their Lower Secondary School's national final examination grade was above 8.5	439	0.066	0.249	0	1
<b>Changing school experience</b>						
Deviant behaviour	Indicate how many times ex-students changed school since primary school	439	0.273	0.698	0	4
	Sum of ex-students' responses to the following six items:	439	0.337	0.791	0	4
	fought with peers or other students at upper secondary school (yes=1)	439	0	0	0	1
	smoking/drinking at upper secondary school (yes=1)	439	0	0	0	1
	using illegal drug or not at upper secondary school (yes=1)	439	0	0	0	1
	warned by principal or teachers because of their deviant behaviour at upper secondary school (yes=1)	439	0	0	0	1
	arrested by the Police at upper secondary school (yes=1)	439	0	0	0	1
	suspended from school at upper secondary school (yes=1)	439	0	0	0	1
Health	Indicate ex-students' health condition while they were in upper secondary school (poor health = 0 up to excellent health = 4)	439	1.973	0.679	0	4
<b>Family Characteristics</b>						
Lowest socioeconomic status	A dummy for families with lowest socioeconomic status	439	0.264	0.441	0	1
Household Head with at least university degree	Indicates the household head has a university degree	439	0.064	0.245	0	1
Father's academic supports	Sum of father's responses to following three questions:	439	6.920	2.918	0	15

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
	Have you ever encouraged your child to study well in school and stay in school?				0	5
	Have you ever talked/discussed with teachers about your child's development/activities in school?				0	5
	Have you ever been able to help with your child's homework? (No support = 0, Max support = 15)				0	5
Mother's academic supports	Sum of mother's responses to following three questions:	439	7.344	2.858	0	15
	Have you ever encouraged your child to study well in school and stay in school?				0	5
	Have you ever talked/discussed with teachers about your child's development/activities in school?				0	5
	Have you ever been able to help with your child's homework? (No support = 0, Max support = 15)				0	5
Family size	Indicate number of household members (including household head)	439	5.132	1.512	3	12
Sibling rank	Indicate students' sibling rank in the family (1 = first born, 2 = second born, ... 10 = 10 <sup>th</sup> born)	439	2.251	1.400	1	10
Parents are divorced	A dummy for ex-students denoting that their parents were divorced while they were attending upper secondary school (Divorced = 1, No = 0)	439	0.011	0.106	0	1
Nonworking mother	A dummy to indicate that mother was not working while ex-students were attending upper secondary school (Not working = 1, Working = 0)	439	0.608	0.489	0	1
Number of siblings dropping out	Indicate how many siblings dropped out at any level of school	439	0.280	0.759	0	4
Time helping family with household chores	A dummy for ex-students denoting whether they helped their parents / guardians with household chores after returning from school (Yes = 1, No = 0)	439	0.970	0.170	0	1
Time helping family with daily business/work	A dummy for ex-students denoting that they helped their parents'/guardians' daily business/work after returning from school (Yes = 1, No = 0)	439	0.872	0.334	0	1
Father participation in household decision	Sum of father's responses to following four questions:	438	15.121	3.817	4	20
	How often do you participate in household expenditure decisions?				1	5
	How often do you participate in decisions about educational matters regarding the children?				1	5
	How often do you participate in decisions about household labour regarding the children?				1	5
	How often do you participate in decisions regarding health care for children?				1	5
Mother participation in household decision	Sum of mother's responses to following four questions:	439	16.961	3.060	4	20
	How often do you participate in household expenditure decisions?				1	5
	How often do you participate in decisions about educational matters regarding the children?				1	5
	How often do you participate in decisions about household labour regarding the children?				1	5
	How often do you participate in decisions regarding health care for children?				1	5

## School Characteristics

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
School location	A dummy for ex-students denoting their upper secondary school location (Urban = 1, Rural = 0)	439	0.636	0.482	0	1
Relation with teacher:						
Not good	A dummy for ex-students denoting that their relationship with their teacher at upper secondary school was not good	439	0.032	0.176	0	1
Neutral	A dummy for ex-students denoting that their relationship with their teacher at upper secondary school was neutral	439	0.273	0.446	0	1
Good	A dummy for ex-students denoting that their relationship with their teacher at upper secondary school was good	439	0.695	0.461	0	1
Bullied by Peers and/or teachers	A dummy for ex-students denoting whether they were bullied by peers or teachers or not at upper secondary school (Yes = 1, No = 0)	439	0.041	0.199	0	1
School's curriculum:						
General	A dummy denoting that ex-student's school curriculum is general	439	0.346	0.476	0	1
Vocational	A dummy denoting that ex-student's school curriculum is vocational	439	0.453	0.498	0	1
Religious	A dummy denoting that ex-student's school curriculum is religious	439	0.200	0.401	0	1
School's type	A dummy denoting ex-student's upper secondary school type (Private school = 1, Public school = 0)	439	0.768	0.423	0	1
School distance more than 10 km	A dummy denoting that ex-student's last school was more than 10 km from their home (More than 10 Km = 1, less than 10 Km = 0)	439	0.173	0.379	0	1
Log School's expenditures	Log of average annual school's expenditures	422	15.078	0.588	12.206	17.063
Teachers' quality	A dummy for ex-students denoting their teachers' quality (Good=1, others = 0)	439	0.661	0.474	0	1
<b>Government Policy &amp; Macroeconomics Conditions</b>						
Government's cash transfer to poor students	A dummy for ex-students denoting whether they received money from the Government's Poor Students Assistance program or not at upper secondary school (Received=1, Not received = 0)	439	0.374	0.484	0	1
Part of Central Java Province:						
North	A dummy denoting the ex-student's home being located in the northern part of Central Java Province	439	0.472	0.500	0	1
Central	A dummy denoting the student's home being located in the central part of Central Java Province	439	0.437	0.497	0	1
South	A dummy denoting the ex-student's home being located in the southern part of Central Java Province	439	0.091	0.288	0	1
Log real minimum wages	Log of real minimum wages from each regency and city in Central Java Province are obtained by deflating nominal minimum wages by Central Java Province's consumer price Index. Minimum wages based on student's home location and last year of study. Data are from Indonesia Central Statistical Agency.	439	8.772	0.085	8.641	9.045
Unemployment rate	Unemployment rate for each regency and city in Central Java Province. Unemployment rate is applied to the student based on student's home location and last year of study. Data from Indonesia Central Statistical Agency.	439	6.562	1.824	2.97	14.22

**Appendix Table 6.5. Parental Education in Previous Studies**

<b>Studies</b>	<b>Parents' education variable</b>	<b>Results</b>
South et al. (2007)	Respondent's parents' highest education (no separation between father and mother)	Higher parents' education level significantly reduce dropout
Terry (2008)	Qualitative studies	dropout mothers tend to lead students to drop out
Blanchard & Sinthon (2011)	Respondent's parents' highest education (no separation between father and mother)	Chances of dropout weaken as parental level of education arises
Tomas et al. (2012)	<ul style="list-style-type: none"> <li>- Father and mother with only primary or no education (References)</li> <li>- Father and mother with secondary education</li> <li>- Father and mother with higher education</li> </ul>	Fathers and mothers with secondary education or higher significantly reduce dropout
Shahidul (2013a)	<ol style="list-style-type: none"> <li>1. Fathers and mothers' years of education</li> <li>2. Put fathers' and mothers' education level in same equation</li> </ol>	Both fathers and mothers' education level reduce dropout
Traag & van der Velden (2011)	Parents' years of education (no separation between father and mother)	Higher parents' education level significantly reduce dropout
Amadi et al. (2013)	Descriptive statistics	the perceptions of teachers that parental education attainment is contributing to dropout
Yi et al. (2012)	Whether the mother of the student had graduated from primary school or not and Whether the father of the student had graduated from primary school or not (put in same equation)	Only fathers' education influence dropout
No & Hirakawa (2012)	Father and mother's educational attainment (put in same equation)	Three different model: <ul style="list-style-type: none"> <li>- Only fathers' education level reduce dropout in first model</li> <li>- Fathers and mothers' education level do not influence dropout in last two models</li> </ul>
No et al. (2012)	Two equations: <ol style="list-style-type: none"> <li>1. Parental education level (sum up of both parents' education level) in two models</li> <li>2. Separate fathers' and mothers' education level and put both variables in second equation together</li> </ol>	<ol style="list-style-type: none"> <li>1. Higher parental education level significantly reduce dropout only in one model</li> <li>2. Only fathers' education level significantly reduce dropout</li> </ol>
Manandhar & Sthapit (2012a)	Father and mother's educational attainment (put on same equation)	Only fathers' education level significantly reduce dropout
Cardoso & Verner (2007)	Mother did not complete intermediate schooling	Not significant
Cameron (2009) in Indonesia	Head of household's education level: <ol style="list-style-type: none"> <li>1. Primary educated head</li> <li>2. Lower secondary educated head</li> <li>3. Upper secondary educated head and more</li> </ol>	Head of households with at least upper secondary school education level significantly reduce dropout at primary school level

## Appendix Table 6.6. VIF Test

### VIF Test: Full samples with Interaction Effects

Variable	VIF	SQRT VIF
Gender	5.86	2.42
Age at first entry	1.31	1.15
Working experiences	1.11	1.05
Perception of education	1.27	1.13
Home location	8.80	2.97
Repeat a grade	1.28	1.13
Low Lower Secondary School's national final examination grade	1.29	1.14
High Lower Secondary School's national final examination grade	1.23	1.11
Changing school experience	1.19	1.09
Deviant behaviour	1.66	1.29
Health	1.11	1.06
Lowest socioeconomic status	1.55	1.25
Household head with at least upper secondary school education	1.25	1.12
Father's academic supports	2.05	1.43
Mother's academic supports	2.07	1.44
Family size	1.80	1.34
Sibling rank in family	3.74	1.93
Parents are divorced	2.87	1.69
Nonworking mother	2.81	1.68
Number of siblings dropping out	1.46	1.21
Helping family with household chores	1.35	1.16
Helping family with daily business/work	1.22	1.1
Father's participation in household decision making	1.49	1.22
Mother's participation in household decision making	1.53	1.24
<u>School location</u>	6.18	2.49
<u>Not good relation with teacher</u>	1.33	1.15
<u>Good relation with teacher</u>	1.70	1.3
Bullied by peers and/or teachers	1.27	1.13
Vocational curriculum	1.51	1.23
Religious curriculum	1.49	1.22
School's type	1.29	1.14
School distance more than 10 km	1.16	1.08
Log school's expenditures	1.17	1.08
Teachers' quality	1.66	1.29
<u>Receive government's cash transfer to poor students</u>	1.68	1.3
Central part of Central Java Province	1.55	1.25
South part of Central Java Province:	1.86	1.36
Log real minimum wages	1.54	1.24
Unemployment rate	1.40	1.18
<u>Gender (Female = 1) * Sibling rank</u>	6.17	2.48
<u>Gender (Female = 1) * Home location</u>	4.19	2.05
<u>Gender (Female = 1) * Non-working mother</u>	3.55	1.88
<u>Home location (Rural = 1) * School location (Urban =1)</u>	6.07	2.46

Note:

VIF = Variance Inflation Factor

SQRT VIF = Square root of VIF

### VIF Test: Female Only

Variable	VIF	SQRT VIF
Age at first entry	1.22	1.1
Working experiences	1.17	1.08
Perception of education	1.34	1.16
Home location	1.5	1.23
Repeat a grade	1.16	1.08
Low Lower Secondary School's national final examination grade	1.37	1.17
High Lower Secondary School's national final examination grade	1.36	1.17
Changing school experience	1.16	1.08
Deviant behaviour	1.56	1.25
Health	1.18	1.08
Lowest socioeconomic status	1.69	1.3
Household head with at least upper secondary school education	1.36	1.17
Father's academic supports	2.37	1.54
Mother's academic supports	1.97	1.4
Family size	1.86	1.36
Sibling rank in family	1.94	1.39
Nonworking mother	1.14	1.07
Number of siblings dropping out	1.52	1.23
Helping family with household chores	1.29	1.14
Helping family with daily business/work	1.23	1.11
Father's participation in household decision making	1.76	1.32
Mother's participation in household decision making	1.45	1.2
School location	1.69	1.3
Not good relation with teacher	1.43	1.2
Good relation with teacher	1.75	1.32
Bullied by peers and/or teachers	1.18	1.09
Vocational curriculum	1.67	1.29
Religious curriculum	1.63	1.28
School's type	1.34	1.16
School distance more than 10 km	1.29	1.14
Log school's expenditures	1.26	1.12
Teachers' quality	1.81	1.34
Receive government's cash transfer to poor students	1.62	1.27
Central part of Central Java Province	1.58	1.26
South part of Central Java Province	1.89	1.37
Log real minimum wages	1.53	1.24
Unemployment rate	1.53	1.24

Note:

VIF = Variance Inflation Factor

SQRT VIF = Square root of VIF

## VIF Test: Male Only

Variable	VIF	SQRT VIF
Age at first entry	1.45	1.20
Working experiences	1.21	1.10
Perception of education	1.50	1.23
Home location	2.02	1.42
Repeat a grade	1.47	1.21
Low Lower Secondary School's national final examination grade	1.38	1.17
High Lower Secondary School's national final examination grade	1.31	1.14
Changing school experience	1.34	1.16
Deviant behaviour	1.79	1.34
Health	1.36	1.17
Lowest socioeconomic status	1.80	1.34
Household head with at least upper secondary school education	1.59	1.26
Father's academic supports	2.15	1.47
Mother's academic supports	2.49	1.58
Family size	2.05	1.43
Sibling rank in family	2.06	1.43
Nonworking mother	1.24	1.11
Number of siblings dropping out	1.47	1.21
Helping family with household chores	1.61	1.27
Helping family with daily business/work	1.60	1.27
Father's participation in household decision making	1.51	1.23
Mother's participation in household decision making	1.94	1.39
School location	2.14	1.46
Not good relation with teacher	1.58	1.26
Good relation with teacher	1.91	1.38
Bullied by peers and/or teachers	1.41	1.19
Vocational curriculum	1.59	1.26
Religious curriculum	1.53	1.24
School's type	1.38	1.18
School distance more than 10 km	1.33	1.15
Log school's expenditures	1.33	1.15
Teachers' quality	1.69	1.30
Receive government's cash transfer to poor students	1.98	1.41
Central part of Central Java Province	2.14	1.46
South part of Central Java Province	2.20	1.48
Log real minimum wages	1.73	1.32
Unemployment rate	1.84	1.36

Note:

VIF = Variance Inflation Factor

SQRT VIF = Square root of VIF

**Appendix Table 6.7. OLS Regressions**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	0.02 (0.04)	0.09** (0.04)	0.02 (0.04)	0.04 (0.04)	0.02 (0.04)	0.07** (0.03)
<u>Age at first entry</u>	0.06** (0.02)	0.02 (0.02)	0.05** (0.02)	0.06** (0.02)	0.05** (0.02)	0.03 (0.03)
<u>Working experiences (Yes = 1, No = 0)</u>	0.03 (0.04)	0.03 (0.04)	0.01 (0.04)	0.005 (0.04)	0.02 (0.04)	-0.01 (0.04)
<u>Perception of education (Good = 1, Bad = 0)</u>	-0.43*** (0.11)	-0.33*** (0.11)	-0.38*** (0.11)	-0.40*** (0.10)	-0.45*** (0.11)	-0.27*** (0.10)
<u>Home location (Rural = 1, Urban = 0)</u>		0.05 (0.04)				0.05 (0.04)
<u>Repeat a grade (Ever repeated a grade = 1, No = 0)</u>		0.32*** (0.11)				0.16 (0.11)
<u>Lower Secondary School's national final examination grade:</u>						
Low (Between 5.01 – 7.00)		0.09** (0.04)				0.09** (0.04)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.01 (0.04)				0.04 (0.04)
<u>Changing school experience</u>		0.05* (0.03)				0.06** (0.03)
<u>Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)</u>		0.09*** (0.03)				0.07** (0.03)
<u>Health (poor health = 0, up to excellent health = 4)</u>		-0.00002 (0.03)				-0.01 (0.02)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.10* (0.05)	0.07 (0.05)	0.10** (0.05)	0.11** (0.05)	0.08* (0.05)	0.08* (0.05)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-0.15*** (0.04)	-0.15*** (0.04)	-0.14*** (0.04)	-0.14*** (0.04)	-0.15*** (0.04)	-0.15*** (0.05)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.001 (0.01)	-0.001 (0.01)	0.01 (0.01)	0.003 (0.01)	0.002 (0.01)	0.01 (0.01)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)
<u>Family size</u>	0.03** (0.01)	0.03** (0.01)	0.03* (0.02)	0.03** (0.01)	0.02* (0.01)	0.02 (0.01)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>			-0.03** (0.02)			-0.02 (0.02)
<u>Nonworking mother (Not working = 1, Working = 0)</u>			0.002 (0.03)			0.001 (0.03)
<u>Parents are divorced (Yes = 1, No = 0)</u>			-0.03 (0.20)			-0.05 (0.15)
<u>Number of siblings dropping out</u>			0.15*** (0.03)			0.12*** (0.03)
<u>Helping family with household chores (Yes = 1, No = 0)</u>			-0.05 (0.15)			-0.003 (0.14)
<u>Helping family with daily business/work (Yes = 1, No = 0)</u>			-0.05 (0.06)			-0.06 (0.05)
<u>Father's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.003 (0.01)			-0.004 (0.01)
<u>Mother's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.004 (0.01)			-0.002 (0.01)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.06* (0.04)	0.07 (0.04)	0.06* (0.04)	0.07* (0.04)	0.07** (0.04)	0.11** (0.04)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.31** (0.12)	0.20 (0.12)	0.26* (0.13)	0.20* (0.12)	0.31** (0.12)	0.07 0.12 ()
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.13*** (0.05)	-0.10** (0.05)	-0.15*** (0.05)	-0.11** (0.05)	-0.13*** (0.05)	-0.11** (0.05)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.31** (0.13)		0.23* (0.12)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.04 (0.04)		0.03 (0.04)
Madrasah (Islamic Religious School)				0.10** (0.05)		0.06 (0.05)
School's type (Private school = 1, Public school = 0)				0.03 (0.04)		0.002 (0.04)
School distance more than 10 km (Yes = 1, No = 0)				-0.02 (0.05)		-0.03 (0.05)
Log school's expenditures				0.03 (0.04)		0.02 (0.03)
Teachers' quality (Good = 1, Not good = 0)				-0.05 (0.05)		-0.04 (0.05)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.15*** (0.04)	-0.13*** (0.04)	-0.16*** (0.04)	-0.15*** 0.04	-0.14*** (0.05)	-0.13*** 0.04
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.04 (0.05)	-0.04 (0.05)
South					-0.001 (0.08)	-0.14* (0.08)
Log real minimum wages					-0.63*** (0.22)	-0.70*** (0.22)
Unemployment rate					0.01 (0.02)	-0.01 (0.02)
F-Stat	12.21***	11.51***	9.59***	9.66***	6.63***	5.47***
R <sup>2</sup>	0.19	0.28	0.27	0.24	0.21	0.36
Adjusted R <sup>2</sup>	0.17	0.24	0.23	0.20	0.18	0.29
Number of observation	439	439	438	422	439	421
Jarque-Bera normality test	108.82***	93.82***	90.41***	98.15***	100.97***	73.76***

Notes: Dependent Variable: School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

**Appendix Table 6.8. OLS Regressions with Interaction Effects**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	0.20*** (0.08)	0.25*** (0.08)	0.23*** (0.08)	0.23*** (0.08)	0.23*** (0.08)	0.28*** (0.07)
<u>Age at first entry</u>	0.05** (0.02)	0.01 (0.02)	0.04** (0.02)	0.05** (0.02)	0.04* (0.02)	0.02 (0.02)
<u>Working experiences (Yes = 1, No = 0)</u>	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.02 (0.04)	0.03 (0.04)	0.004 (0.04)
<u>Perception of education (Good = 1, Bad = 0)</u>	-0.42*** (0.11)	-0.32*** (0.11)	-0.36*** (0.11)	-0.39*** (0.11)	-0.44*** (0.11)	-0.28*** (0.10)
<u>Home location (Rural = 1, Urban = 0)</u>	0.12 (0.09)	0.14 (0.09)	0.17* (0.09)	0.14 (0.09)	0.12 (0.09)	0.13*** (0.09)
Repeat a grade (Ever repeated a grade = 1, No = 0)		0.33*** (0.11)				0.14 (0.11)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.08** (0.04)				0.08** (0.04)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.05 (0.06)				0.004 (0.06)
Changing school experience		0.05* (0.03)				0.06* (0.03)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.09*** (0.03)				0.07** (0.03)
Health (poor health = 0, up to excellent health = 4)		-0.01 (0.03)				-0.02 (0.02)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.10** (0.05)	0.07 (0.05)	0.11** (0.05)	0.12** (0.05)	0.09* (0.05)	0.09* (0.05)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-0.16*** (0.04)	-0.16*** (0.04)	-0.14*** (0.04)	-0.14*** (0.04)	-0.15*** (0.04)	-0.14*** (0.05)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	-0.0001 (0.01)	-0.002 (0.01)	0.002 (0.01)	0.001 (0.01)	0.0002 (0.01)	0.003 (0.01)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)
<u>Family size</u>	0.04** (0.02)	0.03** (0.01)	0.03** (0.01)	0.03** (0.02)	0.03** (0.02)	0.02 (0.01)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>	0.04 (0.02)	0.03 (0.02)	0.02 (0.02)	0.04* (0.03)	0.04 (0.02)	0.03 (0.02)
<u>Nonworking mother (Not working = 1, Working = 0)</u>	-0.11** (0.05)	-0.14*** (0.05)	-0.09* (0.05)	-0.13** (0.05)	-0.10* (0.05)	-0.13*** (0.05)
<u>Parents are divorced (Yes = 1, No = 0)</u>			-0.01 (0.19)			0.02 (0.15)
Number of siblings dropping out			0.15*** (0.03)			0.13*** (0.03)
Helping family with household chores (Yes = 1, No = 0)			-0.09 (0.15)			-0.03 (0.15)
Helping family with daily business/work (Yes = 1, No = 0)			-0.04 (0.05)			-0.05 (0.05)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.002 (0.01)			-0.004 (0.01)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.01 (0.01)			-0.004 (0.01)
<b>School Characteristics</b>						
<u>School location (Urban = 1, Rural = 0)</u>	0.11 (0.08)	0.11 (0.08)	0.16* (0.08)	0.12 (0.07)	0.10 (0.08)	0.16** (0.08)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.28** (0.13)	0.16 (0.13)	0.23* (0.13)	0.17 (0.13)	0.28** (0.13)	0.05 (0.12)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.13*** (0.05)	-0.09** (0.04)	-0.14*** (0.04)	-0.11** (0.05)	-0.12*** (0.05)	-0.10** (0.05)
Bullied by peers and/or teachers (Yes = 1, No = 0)				0.32** (0.13)		0.22* (0.13)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.03 (0.04)		0.02 (0.04)
Madrasah (Islamic Religious School)				0.11** (0.05)		0.07 (0.05)
School's type (Private school = 1, Public school = 0)				0.03 (0.04)		0.003 (0.04)
School distance more than 10 km (Yes = 1, No = 0)				-0.02 (0.05)		-0.03 (0.05)
Log school's expenditures				0.0003 (0.03)		0.0002 (0.03)
Teachers' quality (Good = 1, Not good = 0)				-0.04 (0.05)		-0.02 (0.05)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.16*** (0.04)	-0.13*** (0.04)	-0.17*** (0.04)	-0.16*** (0.04)	-0.14*** (0.05)	-0.14*** (0.04)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.05 (0.04)	-0.04 (0.05)
South					-0.01 (0.08)	-0.12 (0.08)
Log real minimum wages					-0.01*** (0.21)	-0.01*** (0.21)
Unemployment rate					0.02 (0.02)	0.002 (0.02)
<b>Interaction Effects</b>						
<u>Gender (Female = 1) * Sibling rank</u>	-0.08*** (0.03)	-0.07*** (0.02)	-0.09*** (0.02)	-0.08** (0.03)	-0.09*** (0.03)	-0.08*** (0.02)
<u>Gender (Female = 1) * Home location (Rural = 1)</u>	-0.08 (0.07)	-0.09 (0.07)	-0.10 (0.07)	-0.12 (0.07)	-0.12 (0.07)	-0.14** (0.07)
<u>Gender (Female = 1) * Non-working mother</u>	0.11 (0.07)	0.14** (0.07)	0.10 (0.07)	0.13* (0.07)	0.13* (0.07)	0.14** (0.07)
<u>School location (Urban = 1) * Home location (Rural = 1)</u>	-0.03 (0.09)	-0.05 (0.09)	-0.09 (0.09)	-0.03 (0.09)	-0.03 (0.09)	-0.06 (0.10)
F-Stat	8.35***	9.57***	8.48***	7.24***	7.86***	8.41***
R <sup>2</sup>	0.22	0.30	0.30	0.27	0.25	0.39
Adjusted R <sup>2</sup>	0.18	0.26	0.25	0.22	0.20	0.32
Number of observation	439	439	438	422	439	421

Notes: Dependent Variable: School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

**Appendix Table 6.9. Probit Regressions**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
Gender (Female = 1, Male = 0)	0.12 (0.16)	0.50*** (0.19)	0.15 (0.16)	0.25 (0.17)	0.15 (0.16)	0.59*** (0.21)
Age at first entry	0.25*** (0.09)	0.12 (0.10)	0.26*** (0.09)	0.28*** (0.09)	0.23*** (0.09)	0.18 (0.12)
Working experiences (Yes = 1, No = 0)	0.10 (0.16)	0.08 (0.17)	0.07 (0.18)	0.03 (0.18)	0.10 (0.17)	0.06 (0.21)
Perception of education (Good = 1, Bad = 0)	-1.46*** (0.41)	-1.28*** (0.44)	-1.39*** (0.45)	-1.43*** (0.40)	-1.56*** (0.43)	-1.29*** (0.49)
Home location (Rural = 1, Urban = 0)		0.27 (0.18)				0.37* (0.20)
Repeat a grade (Ever repeated a grade = 1, No = 0)		0.99*** (0.36)				0.40 (0.40)
Lower Secondary School's national final examination grade:						
Low (Between 5.01 – 7.00)		0.43*** (0.16)				0.65*** (0.21)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.04 (0.35)				0.20 (0.36)
Changing school experience		0.22** (0.11)				0.31** (0.13)
Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)		0.34*** (0.12)				0.33*** (0.13)
Health (poor health = 0, up to excellent health = 4)		0.01 (0.12)				0.09 (0.13)
<b>Family Characteristics</b>						
Lowest socioeconomic status (Yes = 1, No = 0)	0.36* (0.21)	0.28 (0.21)	0.43** (0.22)	0.44** (0.22)	0.31 (0.21)	0.55** (0.23)
Household head with at least university education (Yes = 1, No = 0)	-1.19*** (0.37)	-1.23*** (0.40)	-1.11*** (0.37)	-1.25*** (0.39)	-1.19*** (0.38)	-1.40*** (0.52)
Father's/male guardian's academic supports (No support = 0, Max support = 15)	0.01 (0.03)	0.005 (0.03)	0.03 (0.04)	0.02 (0.03)	0.01 (0.03)	0.03 (0.04)
Mother's/female guardian's academic supports (No support = 0, Max support = 15)	-0.07** (0.03)	-0.09*** (0.03)	-0.06* (0.03)	-0.08** (0.03)	-0.07** (0.03)	-0.09* (0.04)
Family size	0.12** (0.05)	0.13*** (0.05)	0.14** (0.06)	0.13*** (0.05)	0.11** (0.05)	0.14* (0.07)
Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)			-0.14* (0.07)			-0.10 (0.08)
Nonworking mother (Not working = 1, Working = 0)			0.21 (0.17)			0.04 (0.19)
Parents are divorced (Yes = 1, No = 0)			-0.12 (0.71)			-0.21 (0.60)
Number of siblings dropping out			0.52*** (0.11)			0.58*** (0.13)
Helping family with household chores (Yes = 1, No = 0)			-0.16 (0.46)			0.15 (0.52)
Helping family with daily business/work (Yes = 1, No = 0)			-0.26 (0.23)			-0.37 (0.26)
Father's participation in household decision making (No participation = 0, Max participation = 20)			-0.02 (0.02)			-0.01 (0.03)
Mother's participation in household decision making (No participation = 0, Max participation = 20)			-0.01 (0.03)			-0.01 (0.03)
<b>School Characteristics</b>						
School location (Urban = 1)	0.27* (0.16)	0.33* (0.19)	0.30* (0.17)	0.38* (0.18)	0.29* (0.17)	0.71*** (0.24)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<u>Relation with teacher:</u>						
<u>Not good</u>	0.92*** (0.39)	0.61 (0.43)	0.71 (0.43)	0.60 (0.40)	0.95** (0.38)	0.05 (0.47)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.51*** (0.16)	-0.43** (0.17)	-0.63*** (0.17)	-0.45** (0.19)	-0.50*** (0.16)	-0.56** (0.23)
Bullied by peers and/or teachers (Yes = 1, No = 0)				1.03** (0.42)		1.07** (0.40)
<u>School's curriculum:</u>						
General				Reference		Reference
Vocational				0.23 (0.19)		0.14 (0.25)
Madrasah (Islamic Religious School)				0.48** (0.23)		0.23 (0.27)
School's type (Private school = 1, Public school = 0)				0.23 (0.21)		0.17 (0.24)
School distance more than 10 km (Yes = 1, No = 0)				-0.08 (0.21)		-0.14 (0.24)
Log school's expenditures				0.001 (0.15)		0.001 (0.15)
Teachers' quality (Good = 1, Not good = 0)				-0.28 (0.19)		-0.21 (0.22)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Government's cash transfer to poor students</u>	-0.60*** (0.20)	-0.50** (0.20)	-0.73*** (0.21)	-0.64*** (0.21)	-0.55*** (0.21)	-0.85*** (0.22)
<u>Part of Central Java Province:</u>						
North					Reference	Reference
Central					-0.15 (0.18)	-0.07 (0.22)
South					-0.13 (0.30)	-0.99*** (0.43)
Log real minimum wages					-0.04*** (1.27)	-0.06*** (1.69)
Unemployment rate					0.04 (0.05)	0.03 (0.08)
Wald $\chi^2$	93.80***	112.50***	107.78***	124.43***	109.56***	127.00***
Pseudo R <sup>2</sup>	0.19	0.27	0.26	0.24	0.22	0.40
Log Pseudolikelihood	-183.23	-164.29	-164.84	-162.03	-176.94	-127.04
Number of observation	439	439	438	422	439	421

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.

**Appendix Table 6.10. Probit Regressions with Interaction Effects**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Individual Characteristics</b>						
<u>Gender (Female = 1, Male = 0)</u>	1.01*** (0.35)	1.56*** (0.44)	1.36*** (0.38)	1.25*** (0.39)	1.20*** (0.36)	2.54*** (0.53)
<u>Age at first entry</u>	0.23*** (0.09)	0.10 (0.10)	0.23* (0.09)	0.27*** (0.09)	0.21** (0.09)	0.18* (0.11)
<u>Working experiences (Yes = 1, No = 0)</u>	0.16 (0.17)	0.16 (0.18)	0.16 (0.19)	0.10 (0.18)	0.16 (0.17)	0.15 (0.21)
<u>Perception of education (Good = 1, Bad = 0)</u>	-1.56*** (0.45)	-1.56*** (0.52)	-1.53*** (0.47)	-1.60*** (0.47)	-1.69*** (0.45)	-1.87*** (0.53)
<u>Home location (Rural = 1, Urban = 0)</u>	0.78 (0.50)	1.23** (0.57)	1.20** (0.55)	1.08** (0.55)	0.80 (0.52)	1.94*** (0.67)
<u>Repeat a grade (Ever repeated a grade = 1, No = 0)</u>		1.11*** (0.38)				0.49 (0.43)
<u>Lower Secondary School's national final examination grade:</u>						
Low (Between 5.01 – 7.00)		0.50*** (0.17)				0.73*** (0.22)
Average (Between 7.01 – 8.50)		Reference				Reference
High (Above 8.50)		-0.22 (0.37)				-0.01 (0.36)
<u>Number of changing school since primary school</u>		0.25** (0.11)				0.31** (0.13)
<u>Deviant behaviour (no deviant behaviour = 0, up to six deviant behaviours = 6)</u>		0.42*** (0.12)				0.47*** (0.14)
<u>Health (poor health = 0, up to excellent health = 4)</u>		-0.05 (0.12)				-0.13 (0.15)
<b>Family Characteristics</b>						
<u>Lowest socioeconomic status (Yes = 1, No = 0)</u>	0.40* (0.21)	0.30 (0.22)	0.52** (0.22)	0.48** (0.22)	0.35 (0.22)	0.68*** (0.25)
<u>Household head with at least university education (Yes = 1, No = 0)</u>	-1.11*** (0.37)	-1.11*** (0.41)	-1.02*** (0.38)	-1.14*** (0.39)	-1.10*** (0.38)	-1.14** (0.50)
<u>Father's/male guardian's academic supports (No support = 0, Max support = 15)</u>	0.01 (0.03)	0.001 (0.03)	0.01 (0.04)	0.02 (0.03)	0.004 (0.03)	0.03 (0.04)
<u>Mother's/female guardian's academic supports (No support = 0, Max support = 15)</u>	-0.07** (0.03)	-0.09*** (0.03)	-0.05 (0.04)	-0.09** (0.04)	-0.07** (0.03)	-0.10* (0.04)
<u>Family size</u>	0.17*** (0.06)	0.17*** (0.06)	0.16** (0.07)	0.16** (0.07)	0.15** (0.07)	0.18** (0.08)
<u>Sibling rank in family (1 = first born, 2 = second born, ... 10 = 10th born)</u>	0.13 (0.09)	0.16 (0.11)	0.07 (0.10)	0.17 (0.11)	0.14 (0.10)	0.24* (0.14)
<u>Nonworking mother (Not working = 1, Working = 0)</u>	-0.53** (0.25)	-1.06*** (0.32)	-0.46* (0.26)	-0.70** (0.30)	-0.45*** (0.26)	-1.10** (0.38)
<u>Parents are divorced (Yes = 1, No = 0)</u>			0.37 (0.64)			0.36 (0.60)
<u>Number of siblings dropping out</u>			0.61*** (0.13)			0.77*** (0.16)
<u>Helping family with household chores (Yes = 1, No = 0)</u>			-0.36 (0.47)			-0.17 (0.52)
<u>Helping family with daily business/work (Yes = 1, No = 0)</u>			-0.20 (0.23)			-0.18 (0.29)
<u>Father's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.01 (0.02)			-0.02 (0.03)
<u>Mother's participation in household decision making (No participation = 0, Max participation = 20)</u>			-0.02 (0.03)			-0.03 (0.03)
<b>School Characteristics</b>						
<u>School location (Urban = 1)</u>	0.71 (0.45)	0.86* (0.49)	1.02* (0.50)	1.00** (0.49)	0.63 (0.46)	1.45** (0.58)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Relation with teacher:</b>						
<u>Not good</u>	0.77* (0.42)	0.34 (0.49)	0.52 (0.46)	0.41 (0.45)	0.82** (0.40)	-0.52 (0.62)
<u>Neutral</u>	Reference	Reference	Reference	Reference	Reference	Reference
<u>Good</u>	-0.53*** (0.17)	-0.43** (0.18)	-0.64*** (0.18)	-0.51*** (0.20)	-0.51*** (0.17)	-0.65*** (0.24)
Bullied by peers and/or teachers (Yes = 1, No = 0)				1.12*** (0.43)		1.23*** (0.44)
<b>School's curriculum:</b>						
General				Reference		Reference
Vocational				0.22 (0.20)		0.002 (0.26)
Madrasah (Islamic Religious School)				0.60** (0.24)		0.29 (0.30)
School's type (Private school = 1, Public school = 0)				0.25 (0.21)		0.11 (0.26)
School distance more than 10 km (Yes = 1, No = 0)				-0.03 (0.22)		0.03 (0.24)
Log school's expenditures				0.001 (0.15)		0.0002 (0.15)
Teachers' quality (Good = 1, Not good = 0)				-0.22 (0.19)		-0.03 (0.24)
<b>Government Policy &amp; Macroeconomics Conditions</b>						
<u>Receive government's cash transfer to poor students (Yes = 1, No = 0)</u>	-0.65*** (0.21)	-0.56*** (0.21)	-0.86*** (0.22)	-0.72*** (0.21)	-0.60*** (0.22)	-1.16*** (0.26)
<b>Part of Central Java Province:</b>						
North					Reference	Reference
Central					-0.19 (0.18)	-0.19 (0.22)
South					-0.08 (0.31)	-1.01** (0.43)
Log real minimum wages					-0.0004*** (1.27)	-0.0005*** (1.76)
Unemployment rate					0.07 (0.05)	0.05 (0.08)
<b>Interaction Effects</b>						
<u>Gender (Female = 1) * Sibling rank</u>	-0.35*** (0.11)	-0.37*** (0.13)	-0.44*** (0.13)	-0.36*** (0.13)	-0.37*** (0.11)	-0.61*** (0.17)
<u>Gender (Female = 1) * Home location (Rural = 1)</u>	-0.46 (0.33)	-0.71* (0.38)	-0.73** (0.35)	-0.67* (0.36)	-0.60* (0.35)	-1.33*** (0.46)
<u>Gender (Female = 1) * non-working mother</u>	0.55* (0.32)	1.06*** (0.37)	0.60* (0.34)	0.73** (0.37)	0.48 (0.33)	1.31*** (0.45)
<u>School location (Urban = 1) * Home location (Rural = 1)</u>	-0.35 (0.49)	-0.54 (0.53)	-0.70 (0.54)	-0.54 (0.53)	-0.21 (0.52)	-0.78 (0.64)
Wald $\chi^2$	95.30***	112.18***	107.12***	110.38***	115.46***	153.04***
Pseudo R <sup>2</sup>	0.22	0.32	0.31	0.28	0.25	0.47
Log Pseudolikelihood	-174.87	-152.66	-154.52	-152.73	-167.97	-113.28
Number of observation	439	439	438	422	439	421

Notes: Dependent Variable = School dropout (Dropout = 1, Graduated = 0); \*\*\* $p \leq 0.01$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.10$ . A constant is also included in every model but its coefficient is not reported here. Standard errors reported in parentheses. Reference = base category; Benchmark explanatory variables are underlined.



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### STATEMENT OF CONTRIBUTION TO DOCTORAL THESIS CONTAINING PUBLICATIONS

(To appear at the end of each thesis chapter/section/appendix submitted as an article/paper or collected as an appendix at the end of the thesis)

We, the candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of Candidate: **Andryan Setyadharma**

Name/Title of Principal Supervisor: **Professor Hans-Jürgen Engelbrecht**

Name of Published Research Output and full reference:

Setyadharma, A., Engelbrecht, H. J., & Ozzer-Balli, H. (2015a). Analysis of upper secondary school dropout in Central Java Province, Indonesia: Preliminary results and insights. Paper presented at the 56th Annual Conference of the New Zealand Association of Economists, Wellington, New Zealand.

In which Chapter is the Published Work: **6**

Please indicate either:

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The candidate contributed 85% to the published work. The supervisors helped to improve the presentation of the conference paper.

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## Appendix 8: Statement of Contribution 2

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Name of Published Research Output and full reference:

Setyadharma, A., Engelbrecht, H. J., & Ozzer-Balli, H. (2015b). Determinants of upper secondary school dropout in Central Java Province, Indonesia: A gender-differentiated approach. Proceedings of the 1st Unnes International Conference on Research Innovation and Commercialization (UICRIC) for Better Life 2015, Semarang, Indonesia, pp. 303 - 313.

In which Chapter is the Published Work: **6**

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- The percentage of the Published Work that was contributed by the candidate:  
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- Describe the contribution that the candidate has made to the Published Work:  
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