# Equitable Access to Higher Education in Vietnam: Effects of Government's Financial Support for Low Income Students

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# Equitable Access to Higher Education in Vietnam: Effects of Government's Financial Support for Low Income Students

（　ベトナムにおける高等教育アクセス機会の公平性
－政府の低所得者財政支援の効果－　）

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## ABSTRACT

In the contemporary global economy, higher education plays increasingly important part in the socio-economic development of countries along with the lifetime success of its citizens. Higher education enrollment rates have consistently been on the upward spiral throughout the world including countries with less developed economies. Vietnam, an emerging economy with impressive economic growth in the recent decades, is certainly part of this global trend. The country's higher education sector has been going through a major transformation from the system which nurtures the cadre of elite members of the society to a more mass-based education system that caters to the educational needs of the general population.

The *Doi Moi* reform has integrated Vietnam more into market economy and the global businesses. The ensuing economic development has stimulated demand for higher education to an unprecedented level. Responding to the rising demand, a large number of colleges and universities were newly established or upgraded from vocational training institutions, rapidly increasing enrollment in both colleges and universities. To finance the rapid expansion of the country's higher education system, the government of Vietnam, following the examples of many other governments, adopted a cost-sharing policy by introducing tuition fees for all courses. Although the level of tuition for public higher education is tightly regulated and kept relatively low by the government, it still puts significant financial burden on the poor families. Partly due to this financial burden, there are persistent disparities in access to higher education between the rich and poor. The government has put in place three financial assistance schemes to help alleviate the financial burden

of higher education schooling for poor households. The schemes include tuition exemption, scholarship grants, and student loans.

With this background in perspective, the study examines the issues of equal access to higher education in Vietnam with special focus on the effectiveness of the government's financial assistance programs in promoting access to higher education among the low-income population. As part of the socialist era heritage, Vietnam has traditionally placed great emphasis on equality in the society and has been known for its success in maintaining relatively equal distribution of educational attainment in the basic education level. The challenge faced by the country now is how it can make sure the higher education sub-sector grows without leaving the poor behind. The research questions of this study are inspired by this very historic challenge that the Vietnamese higher education system is now striving to overcome.

The study sets out to investigate the following two major research questions: (1) what factors determine the chances of upper secondary graduates actually enrolling in higher education institutions, with special attention paid to the influence of financial constraints and differences between colleges and universities; and (2) to what extent the government's targeted financial assistance programs are effective in promoting access to higher education among low-income upper secondary graduates. The objectives of the study are to enhance understanding on the factors that contribute to an unequal distribution of opportunities of higher education and to analyze whether the financial assistances aimed at increasing the chances of higher education enrollment for poor students have been effective, and if so, to what extent they have been effective. Finally, based on the evidences obtained, the study aims to provide some

recommendations on the enhancement of those financial assistance policies.

The study's findings would add to the existing knowledge regarding the determinants of access to higher education in Vietnam, and contribute to the debate on financial constraints on access to higher education and the effectiveness of financial aid policies in higher education. The subject of determinants of higher education enrollment in Vietnam has only been researched in a few studies so far. Building on these past studies, the detailed analysis of the study will add to the existing empirical evidences especially with respect to differences between the types of institutions. The question about the presence of financial constraints is still being debated. The study intends to contribute to this debate by generating evidence related to the case of a developing country. Finally, with regard to the effectiveness of financial aids on higher education enrollment, the previous literatures are mostly from developed countries, the United States in particular, and those from developing countries are scarce even though more and more countries are introducing such policy measures. Furthermore, the findings from those studies have been mixed and inconclusive. The study attempts to provide some evidences on that front using the case of the Vietnamese higher education.

The analytical models are developed based on an education investment decision model utilizing two-period consumption maximization model. The model shows the level of higher education investment in the absence of financial constraints is decided independent of family wealth and just hinges on the marginal gain and costs of higher education investment. Once the borrowing constraints are introduced in

the model, higher education investment decision is also influenced by family wealth and borrowing limits. The model also shows that the financial assistances are effective in raising schooling investment levels in the presence of borrowing constraints. The mechanisms of the three financial assistances affecting higher education investment decisions are in principle identical for all the three assistances, and the extent of the effects of the assistances is determined by the size of the benefits.

The study bases its analysis related to the research question 1 on the following hypotheses: (1-1) Access to higher education in Vietnam is influenced by ethnicity, parental education, family income, and regional differences; (1-2) Financial constraint of education costs on family income is hindering access to higher education among lower income groups; and (1-3) Access to college is less influenced by family background, regional differences, and financial constraint compared to that to university. For research question 2, the study hypothesizes as follows: (2-1) Targeted financial assistances are reaching students from low income groups; (2-2) Financial assistances affect the level of expenditure in education of beneficiary students; and (2-3) The receipts of targeted financial assistances improve the chance of enrolling in higher education especially among low-income groups.

The study applies a multinomial logistic regression model to analyze the determinants of higher education enrollment and the influence of financial constraints, and instrumental variable estimation methods – 2SLS – to examine the impact of the financial assistances. The study utilizes a nationally representative household survey data, Vietnam Household Living Standard Survey (VHLSS), of the year 2010. The sub-sample of upper secondary graduates in the age group of 18-22 years is

used for the analyses.

The estimation results on the determinants of higher education enrollment shows that, while confirming the significant effects of individual, family and geographic factors as the past studies had shown, the effects of those variables differ considerably between college enrollment and university enrollment. College enrollment is much less influenced by family background and geographical factors. Parental education levels, family wealth, and urban-rural residency variables do not seem to have significant impact on college enrollment, whereas university enrollment continues to be strongly influenced by those factors. In the past years, the government expanded the supply of colleges in many provinces making college education more accessible for the population, especially for rural residents. This clearly points to the need of differentiating between colleges and universities in future discussions on accessibility of higher education. With regard to the issue of financial constraints, the estimation results indicate the existence of financial constraints over university enrollment. The directions of the influence are opposite for colleges and universities. Higher family income, after being controlled for other long-term factors like family wealth index, leads to higher probabilities of university enrollment and lower likelihood of college enrollment. Financial constraints are deterring lower-income upper secondary graduates from attending universities, while ushering them into attending colleges whose education services are more affordable.

Distributions of the beneficiaries of the financial assistance schemes across income groups show that lower-income groups are receiving larger shares of the benefits under the tuition exemption policy and the student loan programs. Scholarships, however, are found to be

more favorably distributed among mid-income to high-income groups, partly because of the existence of academic scholarships. Tuition exemption and student loans are found to have impacts on how much households spend on their children's higher education. Families of tuition exemption beneficiaries reduce the amount of higher education expenditure, which is a sign of reduced financial pressure on the part of families. The extent of the reduction of expenditure is substantial and more or less equal to the amount of payments waived. Student loan beneficiaries increase their spending on higher education, suggesting alleviated financial constraints. The amount of increase, however, appears to be smaller than the amount of additional funds made available by the student loan schemes, suggesting that cheap loans are crowding out the families' financial resources. Scholarships seem to have no obvious effect on the households' higher education expenditures. Perhaps scholarships provided to the poor students are too small in amount to make significant impact, while scholarships awarded to non-poor academically able students end up becoming expendable income.

The analyses on the effects of financial assistance programs revealed that the financial assistances are effective in increasing the chance of higher education enrollment only for low-income upper secondary graduates who are in the regions that have greater accessibility to higher education institutions – especially the three regions surrounding Hanoi and Ho Chi Minh City. In those regions the marginal costs of higher education enrollment are supposedly lower compared to other remote regions due to overall closer proximity to higher education institutions. This likely renders the effect of the financial assistances in terms of increased higher education schooling greater in those advantageous

regions than in other remote regions. The financial assistances are not found to be effective in raising the probability of higher education enrollment among higher income groups and among low-income groups in other remote regions.

Based on the findings, the study puts forth some recommendations. First, the study reveals that the financial assistances are distributed to students in higher income groups as well as those in low-income groups. The MOET and local authorities should modify eligibility criteria or be more stringent about enforcing the eligibility criteria at the screening process when selecting beneficiaries. It also may be advisable for the MOET to differentiate the way that the financial assistances are provided depending on students' regions or provinces of origin and to strengthen non-financial assistances which target college and university students from the remote regions or provinces specifically.

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| | |
|---|---|
| ADB | Asian Development Bank |
| AME | Average Marginal Effect |
| ATE | Average Treatment Effect |
| CCT | Conditional Cash Transfer |
| EDS | Education Development Strategy |
| EFA | Education for All |
| GDP | Gross Domestic Product |
| GER | Gross Enrollment Rate |
| GPE | Global Partnership on Education |
| GSO | General Statistics Office |
| HCMC | Ho Chi Minh City |
| ICT | Information Communication Technology |
| IMF | International Monetary Fund |
| IV | Instrumental Variable |
| JERI | Japan Economic Research Institute |
| LATE | Local Average Treatment Effect |
| MDGs | Millennium Development Goals |
| MOET | Ministry of Education and Training |
| NER | Net Enrollment Rate |
| NGO | Non-Governmental Organization |
| NLSY | National Longitudinal Survey of Youth |
| NSFAS | National Student Financial Aid Scheme |
| OECD | Organization for Economic Cooperation and Development |
| OLS | Ordinary Least Squares |
| PCA | Principal Component Analysis |
| PPA | Participatory Poverty Assessment |
| RD | Regression Discontinuity |
| SEM | Simultaneous Equations Model |
| SOFES | Sociedad de Fomento a la Educación Superior |
| TVET | Technical Vocational Education and Training |
| USD | United States Dollar |
| VBSP | Vietnam Bank for Social Policies |
| VHLSS | Vietnam Household Living Standard Survey |
| VND | Vietnam Dong |
| WDR | World Development Report |
| 2SLS | Two-Stage Least Squares |

# Chapter 1.
# INTRODUCTION

## 1.1. Background

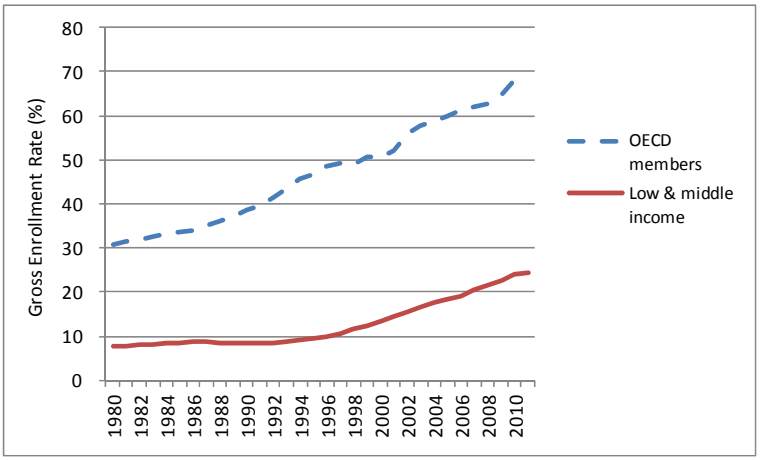
More than ever, the development of higher education system has become a central concern as one of the education development agendas in not only developed countries but also increasingly in developing countries. In the so-called knowledge society of the 21st century, knowledge has become the key factor of socio-economic development (World Bank, 2002). Higher education plays an increasingly important role in creating, disseminating and applying knowledge to economic and social development of a country through both its research and development capacity and effects on human capital development (World Bank, 2000, 2002, 2012). Preparing higher education system that is capable of efficiently and adequately producing a highly trained labor force is crucial if a country is to reap the benefit of the global knowledge society.

At the individual level, youths in developing countries face greater needs to seek higher education in order to succeed in the competitive labor market. Typically, foreign-owned enterprises which carry out business in low-income countries seek well-educated workers with Information and Communications Technology (ICT) skills and language proficiency; so do many of domestic companies. They often offer lucrative compensation packages to attract capable young employees. Higher education is becoming more of a prerequisite for white collar jobs in which wage premiums on educational qualifications are high.

Worldwide, the trend is consistent throughout most of the

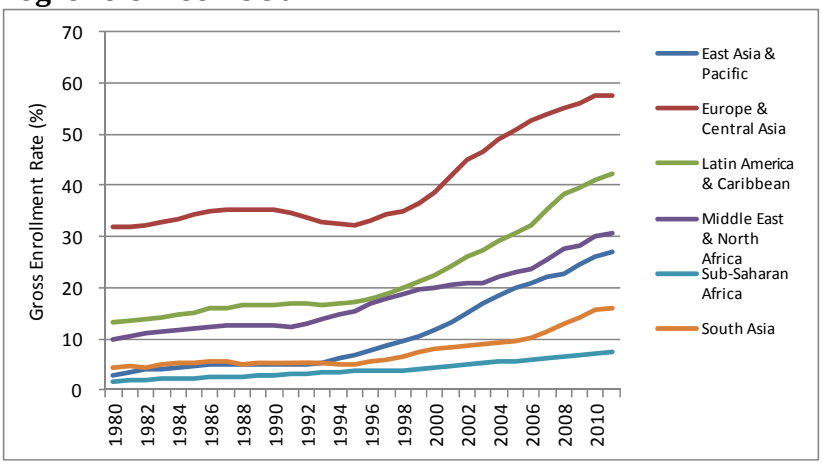
developing countries. Enrollment in higher education started to pick up around the mid-1990s. The gross enrollment rate (GER) of tertiary education for low-income and middle-income countries had hovered around slightly below 10% until 1995 while that for OECD countries grew steadily. Then, it exceeded 10% in 1996, quickly reaching 15% only six years later in 2002, and finally exceeding 20% in 2007 (Figure 1-1). The upward trend of tertiary education GER from the mid-1990s appears to be a consistent phenomenon across different regions of the world, and the East Asia & Pacific Region is one of the fastest growing regions (Figure 1-2).

**Figure 1-1 Tertiary Education GER since 1980**




Source: World Bank. *Education Statistics*. Retrieved June 13, 2013.

**Figure 1-2 Tertiary Education GER in developing countries by regions since 1980**




Source: World Bank. *Education Statistics*. Retrieved June 13, 2013.

The trend in the international development policy agenda has also shifted. Unlike in the basic education sub-sector where a series of landmark worldwide initiatives such as Education for All (EFA) and Global Partnership on Education (GPE) have been undertaken to boost investments, the higher education sub-sector has been relatively neglected in the global trend of education development and given low priority in the aid frameworks of most development partners. Through the 1980s and 1990s, attention was primarily given to the development of basic education and socially disadvantaged groups. Higher education remained severely underfunded during the same period. In 2000, the World Bank published an influential book on higher education development, *Higher Education in Developing Countries: Perils and Promises*, to illustrate the growing importance of knowledge to development and to call for renewed attention on the roles of higher education, advocating for a "more balanced approach to education at all levels" (World Bank, 2000, p.16). Another World Bank publication featuring higher education development, *Constructing Knowledge Societies: New Challenges for Tertiary Education*, quickly

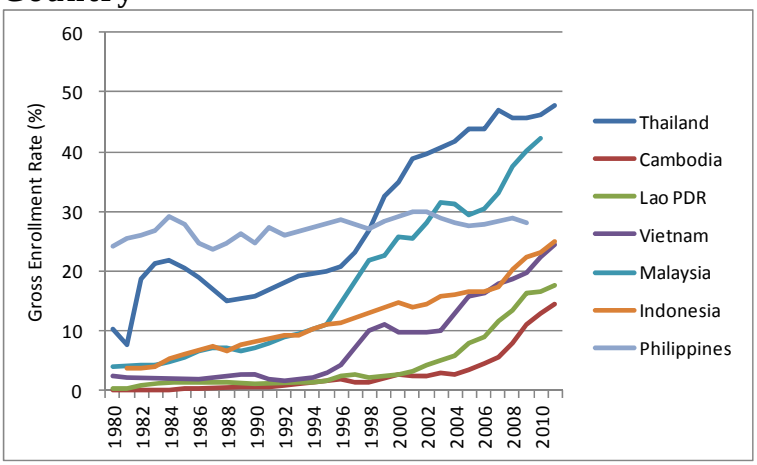
followed in 2002. Gradually discussion on the development of higher education gained momentum within the arena of international education development, and a larger share of investment started flowing into the higher education sub-sector to expand and renovate the higher education system.

Keeping in perspective the abovementioned circumstances, countries in the South East Asian Region have also expanded their higher education sub-sector considerably since the 1990s. Through the 1990s and the 2000s, despite the pressure from high population growth, the GERs of higher education have been on a steady and steep rise in most of the South East Asian countries including Vietnam. As Figure 1-3 shows, in only 20 years from 1990 to 2010 the GER of tertiary education grew almost threefold from 16% to 46% and from 8.2% to 23.1% in Thailand and Indonesia, respectively. It surged fivefold from 7.2% to 42.3% in Malaysia, while in Cambodia and Laos, the rate jumped from a virtually negligible level of 0.6% and 1.2% to 12.9% and 16.6%, respectively, taking a preliminary step towards mass education.

Vietnam also has made an astonishing growth of the higher education in the same period. Historically, the tertiary education GER never exceeded 3% in Vietnam before 1995. The prime role of higher education back then was to produce a cadre of high-ranking public servants to fill the key posts of the government. The system remained elitist until the mid-1990s. Since the 1990s, however, Vietnam's economy has made an impressive growth and undergone fundamental changes, increasing labor productivity substantially. A large proportion of workforce shifted from self-employed agricultural jobs into wage jobs in the service and industry sectors where labor productivity and earnings are

higher especially for well-educated workers. As the economic development prompted an increasing number of youths in Vietnam to take advantage of high-wage jobs in the formal employment, the demand for further education grew significantly. As a result of such structural changes in the economy and the surging demand for further education and training, the tertiary education enrollment in Vietnam took off dramatically since the mid-1990s. It did not take long for the country's tertiary education GER to exceed the 15% threshold which is often considered as a first step towards mass education (Figure 1-3).

**Figure 1-3 Tertiary Gross Enrollment Rates in South East Asian Country**




Source: World Bank. *Education Statistics*. Retrieved June 13, 2013.

This unprecedented massive expansion of higher education is the Southeast Asian Region, however, raised serious social and educational concerns at the same time. A report published by Asian Development Bank (ADB) highlighted seven major issues around which concerns related to the recent development of higher education in Asian countries are centered. Those issues include: (1) the cost of expansion and the sources of finance for such massive expansion; (2) the reasons behind unequal access and the

challenges of ensuring equitable access to higher education by all citizens including those marginalized; (3) the value of benefits derived from higher education to individuals, communities, and nations; and (4) the fears surrounding the erosion of quality as a result of massification and the uncertainty about the appropriateness of higher education curriculum (Asian Development Bank, 2012a). Particularly relevant to the study are the issues of rising costs and unequal access to higher education.

The concerns related to the rising costs and unequal access to higher education have been provoking alarm among educators and policy makers throughout the world both in rich and poor countries. A case in point is that the United States has witnessed gaps in access to higher education between the rich and poor growing in recent decades because of widening quality gaps in secondary education, rising higher education tuitions, and shrinking government aids; making American Dreams harder to achieve for disadvantaged youths (Cohodes & Goodman, 2012; Coley & Baker, 2013). As even developed countries are besieged by the growing social tension caused by unequal higher education opportunities, developing countries have every reason to be concerned about ensuring equal access to higher education among their populations, and they must find a way to achieve that in a resource-efficient manner. Analyzing the case of Vietnam, this study will consider the issues related to the reasons behind the unequal access to higher education and the effectiveness of some of the policies for promoting equal access to higher education.

## 1.2. Problem Statement

Educational development in basic education in Vietnam has been achieved

with a relatively high level of equality in access among different population groups (Holsinger 2005). Moreover, as part of the legacy of the socialist control economy, the distribution of wealth in the country has traditionally been relatively equal among different income groups compared to other more capitalistic neighboring countries[1]. However, as the country moved towards a more marketized economy and away from an agriculture-based economy, there is a worrying prospect of gradually widening disparities between the rich and poor, and between urban and rural areas (Liu, 2001; Glewwe, Agrawal, & Dollar, 2004). The marketization of economy, so called the 'socialist oriented market economy' introduced by the *Doi Moi* reform, is set to continue as one of the foci in the country's socioeconomic development strategy to achieve the comprehensive renovation (Socialist Republic of Vietnam, 2011). At the same time, the government places an emphasis on achieving equitable and sustainable development. It demanded in the Socio-Economic Development Strategy that economic growth be combined with the implementation of social advance and equality, emphasizing the need for narrowing income gaps among areas and different population groups as one of the development objectives (Socialist Republic of Vietnam, 2011).

Clearly, education plays a major role in reducing poverty and achieving economic development with greater equality. A number of studies (e.g., Moock, Patrinos, & Venkataraman (2003); Doan & Gibson (2010); Oostendorp & Quang (2012); and World Bank (2013)) have examined the effects of education on economic development and individuals' earnings. At the national and provincial level, fostering a

[1] World Bank. (n.d.). Vietnam Overview. *The World Bank website*. Retrieved May 1, 2013, from http://www.worldbank.org/en/country/vietnam/overview.

larger pool of educated labor force is increasingly important to attract domestic and international direct investment because people with necessary educational qualifications and skills to work in such industrial sectors are becoming scarce (Joint Donor Report, 2012). Workers with higher education are expected to meet such human resource needs. At the individual level, returns on education and skills in Vietnam have increased in recent decades for those who have knowledge and skills, and especially returns on higher education are found to be higher than returns on other education levels (Liu, 2001; Joint Donor Report, 2003, 2007; Glewwe et al., 2004; Phan, 2009a; Dang, 2010; Doan, 2011; Van Kinh & Westbrook, 2011). It is clear that equally distributed education attainment, especially on the higher education level, is essential if the economy in Vietnam is to continue to not only grow rapidly but also sustain a good level of equality and participation of all groups of the society including low-income groups.

Data on the current higher education attainment show there are considerable gaps in access to higher education between different income groups (Nguyen, 2008). Higher education enrollment has grown for majority of the groups in the 1990s and 2000s. The extent of growth, however, has been considerably smaller for those from disadvantaged backgrounds, which resulted in widening gaps in access to higher education across income groups, ethnic affiliations, and geographical areas (World Bank, 2008).

The government of Vietnam has been keen on achieving a more equal distribution of higher education attainment and has implemented a number of policies which target the poor and ethnic minority students. For instance, the government of Vietnam has put in place three targeted financial assistance policies for poor students in post-secondary education

and training institutions: (1) tuition exemption, (2) scholarships, and (3) student loans. In order to enhance those efforts, it is important to deepen the understanding on the factors contributing to unequal opportunities of enrollment in higher education and to evaluate the effectiveness of targeted assistance policies that have been put in place so far. The evidences produced by such inquiries will help policy-makers review policy options and improve existing interventions by adopting more effective design and implementation strategies.

### 1.3. Research Question

The analyses of this study revolve around the following two main questions: (1) what are the demand-side factors that affect the likelihood of enrolling in higher education institutions in Vietnam?; and (2) to what extent have the targeted financial assistances been effective in improving the chances of enrolling in higher education institutions among poor youths?

The first research question is to examine the factors that influence the likelihood of young people of Vietnam to enroll in higher education institutions. Among the various factors, the study pays particular attention to the extent of influence of financial constraint on the individuals' decision of enrollment. In Vietnam, like in many low-income countries, it is not easy for parents of students to borrow money from credit providers to cover the costs of higher education of their children. This is especially true for poorer households. People may be able to rely on their relatives for some private lending, but again this option is probably less feasible for poorer families whose relatives are most likely poor as well. In the

human capital theory, under the assumption of an imperfect credit market, people with smaller financial resources are often forced to make sub-optimal education investment decisions due to the lack of means to defer the current expenditures even if the expected returns to that investment is deemed high (Becker, 1994). In Vietnam, there are quite a few anecdotal evidences of families having to have their children drop out from school even at the secondary education level due to lack of money to pay for the costs of schooling. Judging from this, the financial constraint may be a serious negative factor influencing higher education enrollment for the poor. The presence of financial constraint is an underlying implicit assumption for the targeted financial assistance schemes. The idea of those schemes is to assist those who are academically able but constrained in their ability to borrow to break through the borrowing constraints by leveraging the funds provided by or cost exemptions obtained from the assistance schemes, and, in doing so, increase the chances of academically qualified poor youths to receive the higher education they deserve regardless of their families' financial standing.

In addition to the factors of financial constraint, the study also lays special emphasis on the differences in the effects of these influencing factors on the two alternative outcomes, namely, enrollment in colleges and enrollment in universities. University and college enrollment may have widely different implications for students' families in terms of costs of education and future returns. Colleges normally charge smaller tuition fees and are often located within more easily accessible distance for rural youths. Universities not only charge higher tuition fees but are often located in large cities where students from rural areas need to pay extra for housing and transportation. Furthermore, university education takes

more years to complete (four years) compared to college education (two or three years). All in all, sending a child to university often costs his/her family considerably more than sending him/her to college. However, in terms of pay-offs to the investment, university degrees are normally regarded as of higher value than college degrees, and the university graduates tend to have better employability. Moreover, academic requirements to enter public universities are known to be competitive and significantly more so than public colleges. Because of these differences, the effects of the determinants of enrollment on university and college enrollment are expected to vary considerably.

The second overall research question is about the effects of the targeted financial assistance policies on increasing the chances of higher education enrollment, particularly among low-income students. The study will examine the effects of the three government policies (i.e., tuition exemption, scholarship, and student loans) that are designed to alleviate the financial pressure of students from poor families. The effectiveness of the assistance policies is analyzed in three stages. First, the study looks into the distributional issue and checks how efficiently they are reaching the poor. Secondly, the study analyzes how households' education expenditures are affected by the receipts of those financial assistances. Seeing that the financial assistance schemes are intended to empower the households' financial capacity to pay for their educational expenses, assessing how they affect the beneficiary households' education expenditure may offer some useful insight. Finally, the study examines whether and to what extent these financial assistances are improving the chances of low-income youths to enroll in higher education institutions.

In summary, the study sets forth two main research questions

together with six sub-research questions as outlined below.

Research Question 1: What are the determinants of the likelihood of enrollment in higher education institutions in Vietnam?

1-1: What kinds of factors are affecting the likelihood of upper secondary graduates enrolling in higher education in Vietnam?

1-2: To what extent is the financial constraint affecting the likelihood of higher education enrollment in Vietnam?

1-3: How are these factors affecting differently for college and university enrollment?

Research Question 2: To what extent have the targeted financial assistances been effective in promoting the equality of access to higher education?

2-1: To what extent are the targeted financial assistances reaching the low-income groups?

2-2: How are the targeted financial assistances affecting higher education expenditures of the beneficiary households?

2-2: How effective have the three targeted financial assistances been in improving the chances for upper secondary graduates from low-income groups to enroll in higher education institutions?

## 1.4. Objective of Study

By answering the research questions, the study intends to examine: (1) the

factors contributing to unequal distribution of opportunity of accessing higher education in Vietnam with special attention paid to the influence of financial constraints and differences in the effects of the factors between college and university enrollment; and (2) the effectiveness of the government's targeted financial assistance policies to promote access to higher education among low income groups. Finally, based on the evidences gained, the study aims to produce recommendations towards the enhancement of the current financial assistance policies.

The objective of the study is to contribute to enriching the evidence base regarding the determinants of access to higher education in Vietnam and the effects of the financial assistance schemes, which can serve as useful references for the policy makers in considering the equality issues concerning access to higher education and in designing effective equity-oriented assistance policies in the higher education sub-sector.

## 1.5. Significance of Study

This study is important in terms of both academic knowledge accumulation and contribution to practical policy development in Vietnam.

Firstly, to the best knowledge of the author, the topic of determinants of access to higher education in Vietnam has been researched in only a few studies in the past. These studies have provided evidences about the determinants of enrollment in higher education institutions in Vietnam typically using nationally representative household surveys or the census data. Several individual, family, and geographic factors have been identified as contributing to unequal access to higher education (World Bank, 2008; Vu, Le, & Giang, 2010; Vu, Le, & Muhajarine, 2012).

However, there still remain some issues that need to be addressed. One of such issues that the study looks to address is a more detailed analysis across different types of institutions. Most of the previous studies in Vietnam did not study the factors separately by the types of higher education institutions even though the country's higher education systems are becoming more heterogeneous as it grows. In general, a broad distinction can be drawn between colleges and universities. Universities and colleges cater to different needs of students, and have different physical accessibility and academic requirements for entrance. Colleges offer shorter courses of academic studies as well as technical and vocational studies, which usually take two to three years to complete. Courses at universities require longer years to complete both in case of academic courses and vocational courses, usually four to six years. Colleges are now available in more provinces, whereas universities are still highly concentrated in the central municipality cities (Socialist Republic of Vietnam, 2005).

Furthermore, the study attempts to analyze the effect of financial constraints. It will look into whether and to what extent the families' short-term financial conditions are constraining the chances of higher education enrollment of their children. Debate on the presence and influence of financial constraints is still inconclusive as mixed results have been presented in studies from various countries. Studies on the effects of financial constraint on school enrollment decisions in developing countries are rare. Nevertheless, the presence of financial constraints has often been implicitly assumed. The World Bank (2009) reports the liquidity constraint as one of the major monetary barriers to access to higher education, and one of the expected benefits of student

loans is the alleviation of financial constraints for low-income families (Johnstone, 2005). To the best of the author's knowledge, none of the studies in Vietnam examined the factor of financial constraint separately, and little is known about the existence of financial constraints in the context of access to higher education in Vietnam. Among practitioners of education development in the country, however, the existence of financial constraints seems to be accepted as a matter of fact. One of the projects funded by Asian Development Bank piloted a grant aid program for poor ethnic minority college students in teacher education institutions with an assumption that they would not be able to attend the college or would frequently have to drop out from the college because of financial difficulties (Asian Development Bank, 2007).The study intends to deepen the understanding about the presence and influence of financial constraints on higher education enrollment in Vietnam.

The study's second research question is on the effects of targeted financial assistance schemes. The previous literatures on the effects of financial assistance on access to higher education have mostly been done in developed countries, particularly the United States. The studies in this field in the United States have been extensive. They examined the financial aid schemes of the federal government in the 1970s through 1980s and a variety of financial aid programs offered by individual higher education institutions. These studies mostly utilized longitudinal panel schooling data collected by the government, or applicant and student data produced by educational institutions. These data often came with rich information such as the amount of financial aid offered or taken, as well as subsequent enrollment decision of individual students. The approaches in the studies in the United States vary widely in terms of the

methodologies and target institutions. However, the general tendency was to find a significant impact of grant-type aid rather than that of loans or work programs. However, their findings are likely to have only limited direct relevance to developing countries. In many developing countries, including Vietnam, higher education is an extremely expensive investment relative to the income of the average population, and access to credit market for education is constrained for many. Therefore, decision-making about progressing to higher education and considerations given to available financial assistances should be analyzed in different viewpoints than in the cases of the United States. Moreover, the United States' higher education system relies much more heavily on private funding sources. According to OECD (2012), 62% of the expenditure on higher education comes from private sources in the United States, while the average for the OECD countries is about 30%. All in all, the studies in the United States are likely of limited relevance for the understanding of the effectiveness of financial assistance programs in developing countries like Vietnam. The literatures in the United States have prepared the valuable groundwork for the studies of financial assistances in other countries in terms of methodologies.

Studies on the effectiveness of financial assistances in the higher education in the context of developing countries have been scarce. Perhaps, it is, in part, because the data available in developing countries are often much more limited than data used in the United States. Even so, targeted financial assistance programs have been widely implemented in developing countries. In addition to traditional aids such as tuition waiver and scholarships, the student loan schemes have been increasingly popular in developing countries. It is clear that more researches are urgently

needed in order to provide concrete evidences that support evidence-based policy formulations for financial assistance programs for higher education in developing countries. The study is meaningful because it will contribute to accumulating much-needed empirical evidences with respect to the effectiveness of financial assistance programs in promoting higher education enrollment in developing countries.

# Chapter 2.

# EDUCATION SECTOR DEVELOPMENT IN VIETNAM

## 2.1. National Education System in Vietnam

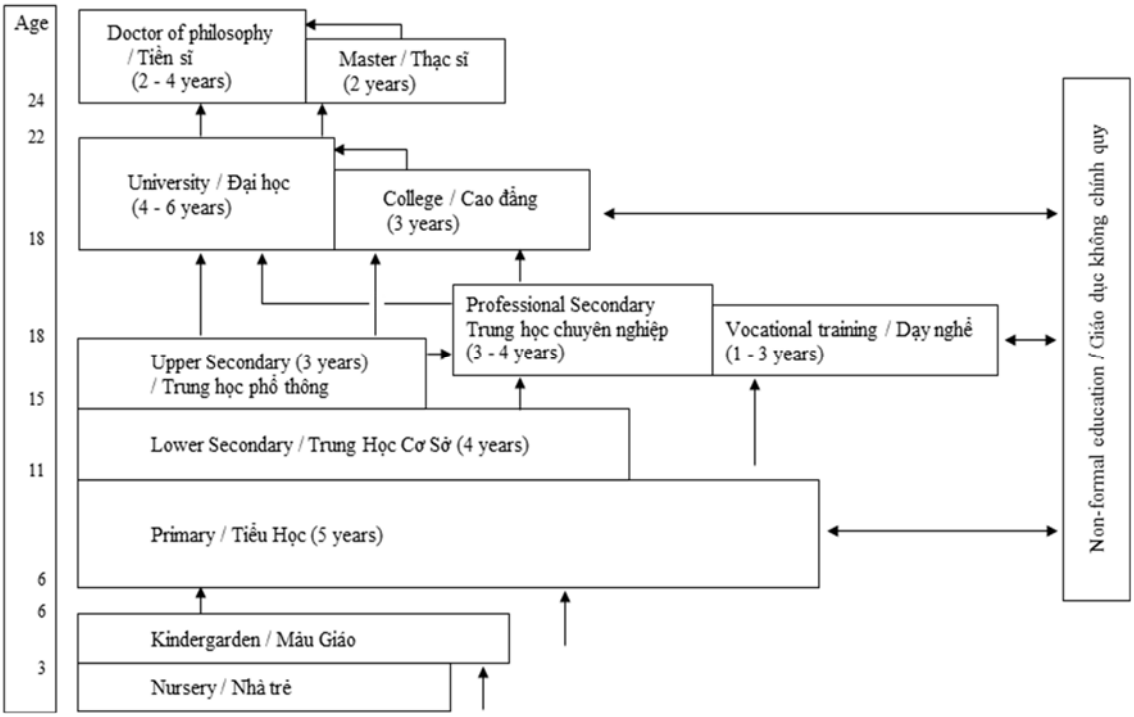
The Figure 2-1 below presents the national education system of Vietnam. Vietnam adopts the 5-4-3 system in basic education consisting of five years of primary education (tieu hoc), four years of lower secondary education (trung hoc co so), and three years of upper secondary education (trung hoc pho thong). Children normally start attending primary schools at the age of six, lower secondary schools at the age of 11, and upper secondary schools at the age of 15. Primary education and lower secondary education are compulsory. Tuition is, in principle, free for everyone at public primary schools, but it is common that families are required to pay various types of fees. Lower secondary education is not tuition free; however, the tuition levels are kept relatively low at well affordable levels for most families. Upper secondary schools charge higher tuition fees and other contribution fees than lower secondary schools do.

Vietnamese upper secondary graduates have three major choices if they want to continue their studies. If the result of the national examination is sufficiently high, one can choose to enroll in a university (truong dai hoc) for four to six years of education and training. Alternatively, one can enroll in a college (truong cao dang) for shorter years of education and training. University qualifications are usually deemed to be of higher value than college qualifications. If one opts for occupational training, he/she may choose to attend one to three years of

mid-term or long-term vocational training either at professional secondary schools (trung hoc chuyen ngiep) or at various vocational institutions (day nghe).

It should be made clear that this study focuses its analysis on higher education (i.e., university and college education) and does not cover vocational trainings.

**Figure 2-1 National Education System in Vietnam**




Source: Ministry of Education and Training, "Education landscape" (http://en.moet.gov.vn/index.php?page=6.7&view=3401)

## 2.2. Development of Basic Education in Vietnam

The basic education sector of Vietnam has witnessed an impressive growth in the past 20 years. Education has been one of the priority development sectors of the government of Vietnam which recognizes the role of education in boosting the country's economic productivity. In 1998, the

government promulgated the Education Law to present a legal framework for the education system in Vietnam. It was the intention of the 1998 Education Law to formulate comprehensive educational principals in the context of the increasingly market-oriented society in the post-*Doi Moi* Vietnam (Chikada, 2013). On June 27, 2005 a new Education Law came into effect to replace the 1998 Education Law. Till now, the 2005 Education Law remains effective and provides a legal framework for all the education levels. According to Chikada (2013) the 2005 Education Law newly incorporated legal frameworks for quality oriented policies such as school accreditation system, school councils, and teacher professional standards and certifications with the vision to raise the quality of education to the international standards as the country was faced with the challenge of improving the quality of education after having achieved a great success in expanding access to education.

In 2001, the government of Vietnam issued Education Development Strategy for the Period of 2001-2010 (EDS 2001-2010). EDS 2001-2010 reviewed the situation of education development before 2000, and analyzed the achievements and weaknesses. It set out a set of ambitious quantitative target indicators for the basic education sectors to achieve by 2010. It was envisioned that by 2010 the net enrollment rate (NER) will reach 99% in primary education, 90% in lower secondary education, and 50% in upper secondary education. The goal for higher education sector was equally ambitious and was to increase the number of university students per 10,000 of population from 117 in 1999 to 200 by 2010 (Socialist Republic of Vietnam, 2001). Throughout much of the 1990s, development strategies were primarily focused on the expansion of education services (World Bank, 2011). The quality of education was one

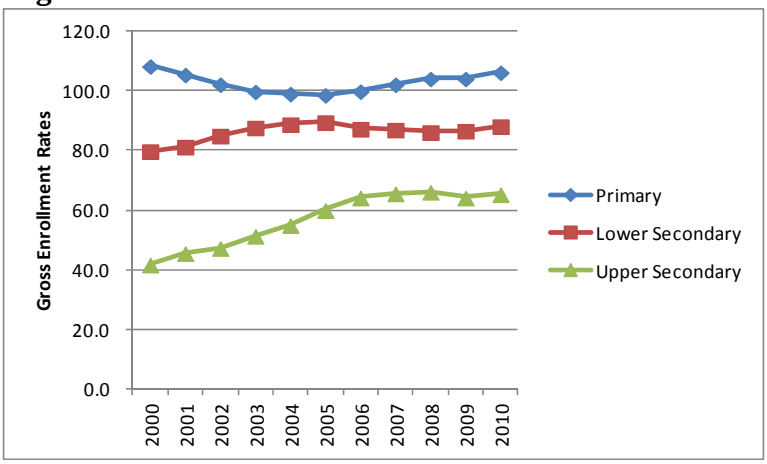
of the focuses of EDS 2001-2010 calling for more attention to the quality of education service in parallel with the expansion of the supply of education services.

The Education Development Strategy for the Period of 2011-2020 (EDS 2011-2020) was issued in 2012. In reviewing the achievements made between 2001 and 2010, it acknowledged access to education was greatly expanded throughout the country at every level, achieving NER of 97% in primary education, 83% for lower secondary education, and 50% in upper secondary education. As for higher education, the number of university students per 10,000 people reached about 250 in 2010, overachieving the goal set by the previous EDS. Overall, EDS 2011-2020 confirmed that the country had made great strides in education development in the previous decade not only in terms of expanding the quantity and networks of education institutions, but also in terms of improving the quality of education and equal access for girls, ethnic minorities, and disadvantaged children (Socialist Republic of Vietnam, 2012). The quality of teaching and learning and the practice of education management were identified as key weaknesses of the education. The quantitative targets defined in EDS 2011-2020 include achieving NER of 99% for primary, 95% for lower secondary, and 85% for upper secondary education; and the target for higher education was the ratio of higher education students per 10,000 people reaching 350-400 by 2020. This time, more emphasis was also placed on ensuring the improvement of the quality of education and management.

Figure 2-2 and Figure 2-3 below show the enrollment rates and the number of enrolled students in basic education in Vietnam for the period of 2000 – 2010. After the turn of the century, the expansion of secondary

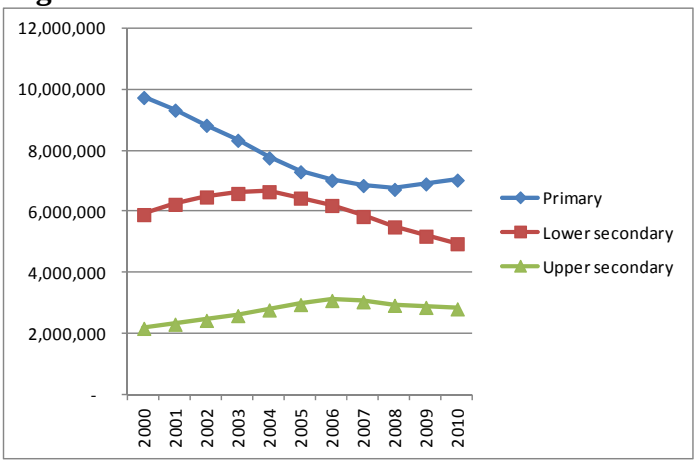
education was accelerated particularly at the upper secondary level. The GER in upper secondary education has reached about 65% in 2010 from just about 42% in the year 2000, a jump of more than 20% point. On the other hand, the trend of the actual enrollment size seems to present a slightly different picture. While the enrollment in upper secondary did increase since 2000, it has not grown after 2006. The enrollment in primary and lower secondary education have actually been shrinking in recent years. This is due to the declining population size in the young generation of Vietnam which outruns the increase in the rates of enrollment. This offers a unique opportunity for the government of Vietnam to shift more of its attention and resources to the efforts for improving the quality of education and to upgrading existing school infrastructures instead of having to continue to build more school facilities. It may also enable the government to channel more resources to the development of post-secondary education.

**Figure 2-2 GER in Basic Education in Vietnam**




Source: World Bank. *Education Statistics*. Retrieved in 2013.

**Figure 2-3 Number of Enrollment in Basic Education in Vietnam**




Source: MOET, Annual Education Statistics 2000/01 – 2010/11

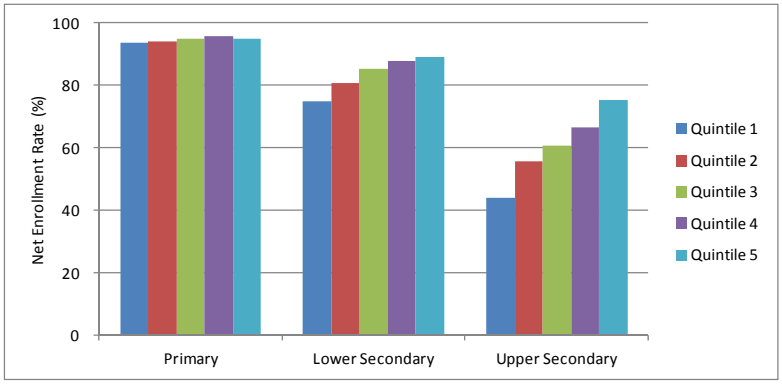
### 2.2.1. Challenges and Inequality in Basic Education

The issue of equality of access to higher education can never be fully grasped without paying proper attention to the equality issues in the basic education sector. This section reviews some of the key issues in the recent discussions on challenges surrounding basic education in Vietnam.

In the recent publication, the World Bank (2011) outlined three key challenges that are prevalent in the basic education system in Vietnam. It pointed out that after having achieved tremendous success in expanding the supply of education services, Vietnam is still faced with (1) persistent inequalities in grade attainment and the internal efficiency among the most disadvantaged, (2) generally low student learning outcomes compared with other countries, and (3) large, growing gaps in student learning performance across different segments of the student population (Attfield & Vu, 2012; World Bank, 2011). In terms of grade attainment, the gaps are more pronounced at the upper secondary level as shown in Figure 2-4. In relation to access to higher education, it can be said that many of the low-income students and students from disadvantaged backgrounds often drop

out during the transition process at an earlier stage of education before the completion of upper secondary education. It should be noted, therefore, that the sub-sample used in this study[2] embodies inequalities that had accumulated through the 12 years of basic education. One of the possible implications for the study is that the effects of family background factors on access to higher education are likely to be somewhat underestimated compared to what would be found by using a full sample of the age-group irrespective of upper secondary graduation.

**Figure 2-4 Gaps in Primary and Secondary Enrollment by Income Group**




Source: GSO, VHLSS 2010

Gaps in grade attainment are further exacerbated and complicated by the large gaps which exist in students' learning performance. Disadvantaged students are not only completing fewer years and lower levels of education, but also are learning less even when they do go to school. Education production function studies in Vietnam show that students' learning outcomes (usually test scores) are strongly affected by students' individual and family background factors such as ethnicity,

[2] The study uses a sub-sample of upper secondary graduates who are in the age group of 18-22 years of age (refer to the 0).

family income levels, and parental education (Dang, 2007; MOET, 2009a; World Bank, 2004). The shift to full-day schooling has also been identified as a significant influencing factor of students learning outcome, but schools' decisions to shift to full-day schooling are also influenced by the availability of funding resources of the community and parents of students because the shift is made on a cost-recovery basis (Ushiogi, 2008).

All these factors taken together, it can be summarized that students from disadvantaged families are likely to be less well-performing in terms of test scores, which makes it even more challenging for these students to win the acceptance to universities in the competitive selection process. However, there is also a possibility that disadvantaged students who are able to complete the upper secondary education are more academically talented because they had to be academically capable in order to survive through various constraints.

## 2.3. Development of Higher Education in Vietnam

### 2.3.1. Economic Growth and Growing Demand for Higher Education

Demand for higher education has grown substantially and continues to be very high in Vietnam in large part because of the advancement and structural changes of the country's economy. Vietnam before the reform was one of the poorest economies in the world suffering from hyperinflation, hunger, and stagnation. The past two decades following the introduction of the so-called *Doi Moi* reform in the late 1980s have been marked by a stable political environment and solid, remarkable economic growth with dramatically improved living standards and income levels of people. In 20 years between 1990 and 2010 Vietnam's economy grew at an

annual rate of 7.3%, and the GDP per capita almost quintupled (Joint Donor Report, 2012). The GDP per capita reached USD 1,064 in 2009 and estimated to have reached USD 1,169 in 2010 (GSO, 2010a) making Vietnam one of the fastest growing emerging economies in the South East Asia region.

The reform and subsequent economic growth fundamentally altered the country's economic system towards a more market-oriented system with competitive dimensions introduced to various aspects of its economy. State-Owned Enterprises were given more autonomy and freedom in the market, restrictions on private businesses were drastically reduced, and labor market was liberalized to allow rural-urban labor migration and freer labor mobility in hiring practices (Hau & Dickie, 2006; Joint Donor Report, 2012). This transition has stimulated young people in urban and rural areas to seek for more education and training opportunities to develop competencies and improve their competitive edge in the labor market (Huong & Fry, 2005).

Vietnam's labor market has an abundant supply of labor force; and thanks to a largely agriculture-based employment structure and steady economic growth, unemployment rates have long been low and stable in Vietnam compared to the international standards (Phan, 2009b). Labor market in Vietnam has been undergoing a structural shift toward a more service and industry oriented employment structure. The proportion of labor force employed in the agriculture sector shrunk from 73% in 1990 to 54% in 2007 while that in the service and industry sectors leaped from 26% to 44% in the same period (Phan, 2009b). As a result of this massive shift of workforce away from self-employed agriculture towards wage employment in the formal sector, skill-intensive jobs are becoming more

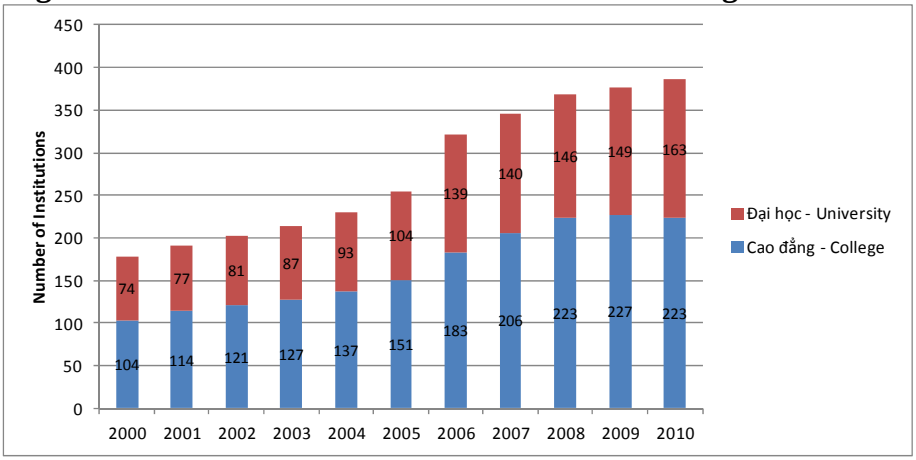
prominent in the labor market especially for young people, pushing up demand for a skilled workforce and wage premium for skilled workers (World Bank, 2013). These shifts in the labor market have contributed to higher returns to education in Vietnam especially at the higher education level (Phan, 2009a; Doan & Gibson, 2010; Doan, 2011; Oostendorp & Quang, 2012). Coupled with the market-oriented reform since Doi Moi, the economic incentives continue to draw able young people into the competition for higher education qualifications.

### 2.3.2. Increasing Supply of Higher Education

Responding to rising demand, supply of higher education has also grown sharply. The government issued Resolution 14 (14/2005/NQ-CP) in 2005 which sets development objectives and outlines key reforms to be undertaken in the higher education sector. Recently, in 2012, the government approved the Higher Education Law for the first time after much internal debate. Many colleges and universities were newly established or upgraded from other training institutions. Figure 2-5 shows that the number of colleges and universities grew from a total of 178 in 2000 to 386 in 2010, an increase of nearly 2.2 times in just about 10 years. This impressive increase is a result of not only the establishment of new institutions but also the upgrades of colleges and other vocational training institutions. For instance, teacher training centers for primary school and lower secondary teachers used to be part of mid-term vocational training institutions, and they were upgraded to teacher training colleges after 2000. According to the MOET report (2009b), between 1984 and 2009, 33 universities were newly established while 54 universities were upgraded

from colleges.

**Figure 2-5 Number of Universities and Colleges in Vietnam**




Source: MOET, Annual Education Statistics 2000/01 – 2010/11

Thanks to the rapid expansion, higher education institutions are now more widely distributed than before throughout provinces other than Hanoi and Ho Chi Minh City (HCMC). According to MOET(2009b), in 2009, among 63 provinces and municipalities in Vietnam, 40 provinces and municipalities had at least one university, and 60 provinces and municipalities had at least one college. Higher education institutions in the mountainous and disadvantaged areas have also increased.

Yet, the distribution of higher education institutions is far from equal. The five central municipalities (namely, Hanoi, HCMC, Da Nang, Can Tho, and Hai Phong) continue to enjoy far greater concentration of higher education institutions. The concentration in the big cities is especially evident for universities. In 2009, 102 out of 149 universities (68%) are located in the five central municipalities whereas 82 out of 227 colleges (36%) are in the five central municipalities (MOET, 2009b). Overall, 184 of 376 colleges and universities (49%) are concentrated in the five central municipalities. Furthermore, among the five central

municipalities, Hanoi and HCMC host far greater numbers of higher education institutions than other three cities. For students who are residents of the provinces that are far from the five central municipalities, it poses an additional challenge because it would require them to bear higher costs for transportation and accommodation to attend colleges or universities.

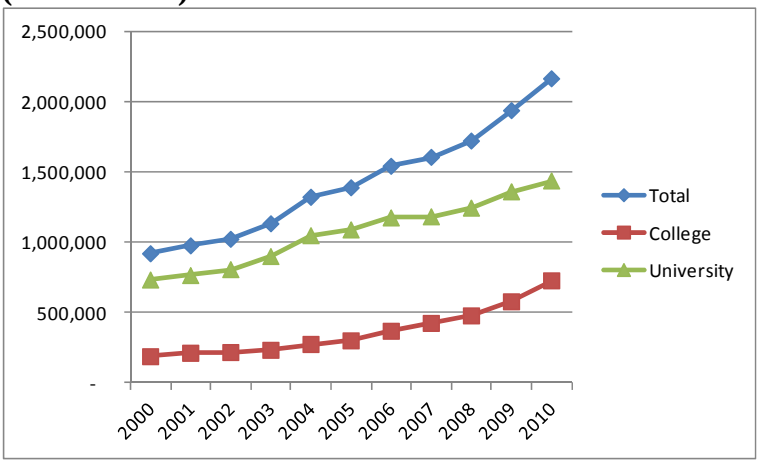
### 2.3.3. Growing Enrollment in Higher Education

As a result of the strong demand for and the extraordinary growth in the supply of higher education, Vietnam is increasingly approaching or has reached the *massification* stage of higher education development, which according to the classification proposed by Trow (1973) is the stage of higher education development where "transmission of skills and preparation for a broader range of technical and economic elite" (Trow 2006; p.1) occur. As such it can be said that in Vietnam, just like in other South East Asian countries, the opportunities of higher education is no longer a privilege of or confined to a small elite group of the society but has become an object of rational investment decision for many talented youths who aspire for better prospects of life.

The number of students enrolled in higher education institutions increased dramatically in the past decade as shown in Figure 2-6 and Table 2-1. According to the annual statistics of MOET, the total number of students in higher education grew from about 918,000 in the school year 2000/01 to 2,162,000 in 2010/11. The average growth rate of this period is calculated to be 9%. This increase is even more striking if we take account of the stable enrollment size in the upper secondary education in

recent years. Chikada (2013) estimated that the transition rate from upper secondary to higher education jumped from around 27% in 2002/03 to about 60% in 2009/10. Although serious challenges still remain in the quality and management aspects of higher education (MOET, 2009b; T. L. H. Nguyen, 2008), it is clear that opportunities to receive higher education have become much more widely available to the country's young generations.

**Figure 2-6 Number of Enrollment in College and University in Vietnam (2000-2010)**




Source: MOET, Annual Education Statistics 2000 - 2010

**Table 2-1 College and University Enrollment in 2000/01 and 2010/11**

| | College | | University | |
|---|---|---|---|---|
| | 2000/01 | 2010/11 | 2000/01 | 2010/11 |
| No. of institutions | 104 | 223 | 74 | 163 |
| Public | 99 | 193 | 57 | 113 |
| Non-Public | 5 | 30 | 17 | 50 |
| No. of Students Enrolled | 186,723 | 726,219 | 731,505 | 1,435,887 |
| Female | 91,457 | 386,265 | 309,506 | 693,175 |
| Public | 171,922 | 581,829 | 642,041 | 1,246,356 |
| Non-Public | 14,801 | 144,390 | 89,464 | 189,531 |
| No. of Teaching Staff | 7,843 | 23,622 | 24,362 | 50,951 |
| Ph.D. holders | 109 | 586 | 4,454 | 7,338 |

Source: MOET, Annual Education Statistics 2000 - 2010

Demand for higher education appears to have been rising not only among urban residents but also among residents of rural and mountainous areas. The MOET report showed that in the period between 2004 and 2008 64.5% of the candidates who passed the national entrance examination[3] of universities and colleges were residents of rural and mountainous areas; 26.3% of them were from high mountainous areas, and 4.7% were ethnic minority students. Although these figures among the candidates do not necessarily correspond to the ratio of representation in the actual enrollment in universities and colleges, it is evident that the interest and demand for higher education are just as strong among residents of rural and mountainous areas and ethnic minorities as among urban residents.

### 2.3.4. Entrance Examination for Higher Education Institutions

This sub-chapter provides brief description of entrance to colleges and universities in Vietnam. As of 2002, the MOET introduced a unified system for the entrance examination for colleges and universities applicable to both public and private institutions.

In order to be qualified to take the entrance examination, students must first pass the secondary school leaving examination and attain an upper secondary qualification. Once they pass the secondary school leaving examination, they become eligible to sit the national university entrance examination which takes place in July every year. The university entrance examination is divided into four groups to which three subjects are assigned: Group A for math, physic, and chemistry subjects; Group B

[3] Vietnam has a unique system of entrance examination for universities and colleges. There is one national examination, the result of which is used for the applications to all the universities and colleges in the country. There is no institution specific examination.

for math, science, and biology subjects; Group C for literature, history, and geography; and Group D for literature, math, and foreign language. Each department of colleges and universities is assigned with one of those four groups, and applicants are judged based on the scores of the three subjects of the group. The scores from the national university entrance examination are used to screen the applicants at all the colleges and universities uniformly, and the policy does not allow institution-level examinations.

Students need to take the examination of the group that is assigned to the institution he/she wishes to apply for. After sitting the national university entrance examination, students may choose to apply for up to three higher education institutions. Colleges and universities screen the applicants based on the scores of the entrance examination. Students may be accepted at the institution of his/her second choice if they fail at the first-choice institutions.

After securing an acceptance at a college or university, student may apply for or are selected to receive financial assistances. In this sense, students are not certain whether they can receive financial assistances at the time of the university entrance examination. Therefore, in examining the impact of financial assistances, the study assume that students have reasonably accurate expectations about the likelihood of their receiving financial assistances at the time of applications for enrollment. This is a reasonable assumption considering that similar financial assistances are available at the secondary education level to which students had been exposed, and poor family certificate, which will be explained in detail in a subsequent section, creates predictable increases in the likelihood of receiving financial assistances.

## 2.4. Financing Higher Education in Vietnam

### 2.4.1. Public Expenditure on Higher Education

As shown in Table 2-2 Vietnam compares well with other countries in the region in terms of public education expenditure. The government of Vietnam allocated nearly 20% of its public expenditure on education in 2008, which is higher than most of the South East Asian neighbors. Because the public sector accounts for a larger portion of economy in Vietnam than in other more capitalistic neighbors, the total public spending on education tends to be large. The government spent an amount equivalent to 5.3% of GDP on education in 2008, which is higher than other South East Asian countries. Vietnam, therefore, is investing heavily on education relative to its economic size.

**Table 2-2 Public Expenditure on Education in South East Asia Countries in 2008**

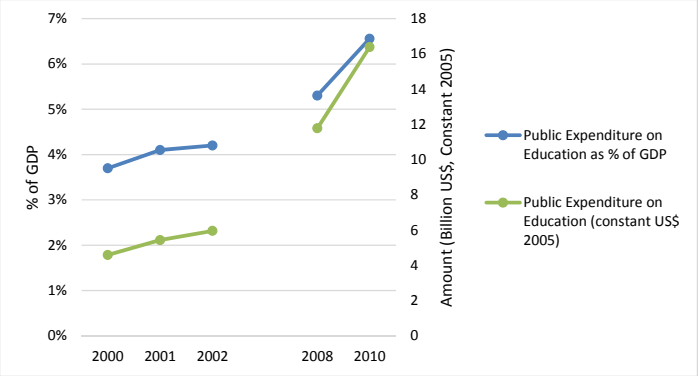
| Country | Public Education Expenditure as % of GDP | Public Education Expenditure as % of Total Public Exp. | Total Public Expenditure as % of GDP [*1] |
|---|---|---|---|
| Indonesia | 2.8% | 17.9% | 15.6% |
| Lao PDR | 2.3% | 12.2% | 18.9% |
| Malaysia | 4.1% | 17.2% | 23.8% |
| Philippines | 2.7% | 16.9% | 16.0% |
| Thailand | 3.8% | 20.5% | 18.5% |
| **Vietnam** | **5.3%** | **19.8%** | **26.8%** |

Source: World Bank. *Education Statistics*. Retrieved in 2013.
(*1) Calculated by Author as: Total public expenditure as % of GDP = public education expenditure as % of GDP / public education expenditure as % of total public expenditure.

The level of public expenditure on education changed somewhat overtime. The level of public education expenditure in terms of the ratio

to GDP was around 4% in the early years of 2000s, and gradually increased to 5.3% in 2008 and 6.5% in 2010 as shown in Figure 2-7. In addition, the size of the country's GDP also went through a period of high growth. As a result, the actual amount of public investment in education grew dramatically.

**Figure 2-7 Public Expenditure on Education in Vietnam between 2000 and 2010**




Source: World Bank. *Education Statistics*. Retrieved in 2013.

The proportion of Vietnam's public expenditure on the higher education sub-sector has not been growing, however. Within the education sectors, allocation to the training component, including vocational training and higher education, has risen only slightly to 26% of the total education expenditure in 2008, and then declined to about 15% in 2010 as presented in Table 2-3.

**Table 2-3 Figure 2-8 Composition of Public Expenditure within Education Sector in Vietnam**

| | 2000 | 2001 | 2002 | 2008 | 2010 |
|---|---|---|---|---|---|
| Education Component (Pre-primary, Primary, Lower/Upper Secondary) | 76% | 76% | 78% | 74% | 85% |
| **Training Component (TVET, Higher Education)** | **24%** | **24%** | **22%** | **26%** | **15%** |

Source: World Bank (2008) (for 2000-2002 data), World Bank. *Education Statistics*. Retrieved in 2013. (for 2008-2010 data)

All in all, overtime the proportion of public expenditure on tertiary education seems to have fluctuated, but has not increased. Compared internationally, the proportion of allocation to tertiary education in Vietnam, about 15% in 2010, is more or less on par with the levels that are prevalent in South East Asia. Table 2-4 shows the international comparison of the ratios of education expenditure on tertiary education as well as unit expenditure by education levels. The ratio of public education expenditure on tertiary education against the total public education expenditure in Vietnam was more or less equal to those of other South East Asian nations, except for Malaysia which has a much higher ratio. In terms of unit expenditure, Vietnam is spending more to train one student in tertiary education than one primary or secondary student. Other South East Asian countries such as Cambodia, Indonesia, and Malaysia also have similar tendencies of investing more on a student in the tertiary education sector. Taken together, it can be summarized that while Vietnam is allocating a substantial proportion of its public resources to the development of its tertiary education, the proportion of resource allocated to tertiary education is not particularly favorable relative to other education sub-sectors, and is more or less on par with the average of the neighboring South East Asian countries.

**Table 2-4 Expenditure on Tertiary Education and Unit Expenditure by Education Levels in 2010 in Asia**

| Country | Expenditure on Tertiary Ed. as % of Total Public Ed. Expenditure | Public Expenditure per Student as % of GDP per capita | | |
|---|---|---|---|---|
| | | Tertiary | Secondary | Primary |
| Cambodia | 15% | 27% | 7% | |
| Indonesia | 16% | 23% | 11% | 9% |
| Malaysia | 35% | 47% | 14% | 19% |
| Philippines | 12% | 10% | 9% | 9% |
| Thailand | 17% | 23% | 24% | 9% |
| **Vietnam** | **15%** | **43%** | **28%** | **26%** |

Source: World Bank. *Education Statistics*. Retrieved in 2013.

### 2.4.2. Private Expenditure and Cost Sharing Policy in Higher Education

In the previous section, the focus was on public expenditure. This section will review the situation and trends surrounding the private side of education expenditure in Vietnam. Prior to the introduction of Doi Moi in 1986, public universities in Vietnam were fully funded by the government and were basically functioning as one of the state administrative apparatus with very close tie with the Communist Party of Vietnam (George, 2011; L. H. Vu et al., 2010). Students were supported by the government for their tuition and living expenses, and were trained to meet the labor needs of a planned socialist economy. Most of them were guaranteed to be employed as civil servants after graduation. Under such regime of higher education, private expenditure in the higher education sector was limited.

However, throughout the 1980's and 1990's the government's ability to cover the financial requirements of its higher education system

became increasingly constrained in the face of growing demand and extended supply of higher education as discussed in the previous section. Following the announcement of Doi Moi at the Sixth Party Congress in 1986, the MOET started allowing universities to accept students on fee-paying basis. The number of fee-paying students dramatically increased reflecting the desperate need for universities to look for alternative income source and the ever growing demand for higher education among families of students. In 1988/89 school year, universities in total enrolled 4,489 fee-paying students. The number surged in the subsequent years reaching 28,731 fee-paying students enrolled in the 1992/93 school year, about a six-fold increase in just 4 years (George, 2011).

The dual system of fee-paying enrollment was abandoned in 1993, followed by the introduction of tuition fee charged from all students. Now all university students are required to pay tuition fees. In 1998, the government set the tuition fee scheme for all public universities and colleges. It set the tuition fee for public undergraduate universities at VND 50,000 to 180,000 per month and that for master's degree course at VND 75,000 to 200,000 per month. The tuition fee for college is somewhat lower and set at VND 40,000 to 150,000 per month (Decision 70/1998/QD-TTg by Prime Minister). Tuition fees have been revised periodically since then. With all these policy reforms to introduce cost sharing schemes in support of the expansion of higher education, the revenue from tuition and fee charges now accounts for about 30% of the total revenue of public universities (Table 2-5). Private financing is now an indispensable revenue source for the Vietnamese higher education system.

**Table 2-5 Tuition and Other Non-State Budget Revenues as % of Total Revenue**

| Institution Ownership | Tuition, Fees and Others | | | Contractual R& D | | |
|---|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2003 | 2004 | 2005 |
| **Public** | **32%** | **32%** | **29%** | 1.6% | 2.1% | 1.3% |
| Semi-public | 89% | 90% | 89% | 4.9% | 4.6% | 2.0% |
| People-found / Private | 88% | 94% | 83% | 2.4% | 2.3% | 2.5% |

Source: MOET University Survey, 2005, as quoted in World Bank (2008)

### 2.4.3. Tuition Fee Charges and Increasing Burden on Households

The overall framework and the upper ceilings are determined by the policy of the government while the levels of actual tuition fees can be determined by the institutions. According to the latest Decree on tuition collection for public schools between the school years 2010/11 and 2014/15 (Decree 49/2010/ND-CP), public higher education institutions are allowed to set tuition fees in compliance with the principle of cost-sharing with the government; and the tuition fees should be commensurate with covering the cost of providing high-quality training. The cost-sharing principle has become an integral part of higher education policy in Vietnam. The Decree also provides general guidance for non-public institutions. Non-public higher education and vocational training institutions are required to publicly announce their tuition fees every academic year and for each training course. No concrete upper ceilings are defined for non-public institutions.

The latest tuition upper ceilings defined for public universities for each academic year are shown in Table 2-6. The ceiling amounts vary across courses; and are set for social science courses, natural science courses, and medical courses. The ceiling rates have been continuously

pushed up every academic year partly in order to reflect the continuous inflation, but the rates of increase in tuition seem to exceed those of annual inflation. According to the IMF World Economic Outlook, the inflation rates of Vietnam in 2010, 2011, and 2012 were 9.2%, 18.7%, and 9.1%, respectively, whereas the rates of increase in the tuition upper ceilings have been significantly higher in those periods. Although the increase in the upper ceilings are not always equal to the level of increase in the actual tuition charges, it is highly likely that the real-term costs of higher education have been on a continuous rise in past several years.

**Table 2-6 Latest Upper Ceilings for Tuition Fee Charges at Public Universities**

| Category | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|
| 1. Social sciences, economics, law, agriculture, forestry, fisheries | 290 ($14.7) | 355 ($18.0) | 420 ($19.9) | 485 ($22.9) | 550 |
| Rate of increase | | 22.4% | 18.3% | 15.5% | 13.4% |
| 2. Natural sciences, engineering, technology, sports, arts, hotel and tourism | 310 ($15.7) | 395 ($20.0) | 480 ($22.7) | 565 ($26.7) | 650 |
| Rate of increase | | 27.4% | 21.5% | 17.7% | 15.0% |
| 3. Medicine | 340 ($17.2) | 455 ($23.1) | 570 ($26.9) | 685 ($32.4) | 800 |
| Rate of increase | | 33.8% | 25.3% | 20.2% | 16.8% |

Source: Decree 49/2010/ND-CP issued by the government on May 14, 2010
Unit: '000 VND per month per student; the amount in the bracket are equivalent in US dollars as calculated by Author using the exchange rates of the 1st of September of each year

The rates shown above are the ceilings for tuition charges applicable for public universities. Other public higher education institutions have different upper ceilings for their tuition charges, which

are decided based on the ceilings for public universities. Shown in Table 2-7 below are the rates of discounts or increase in the tuition upper ceilings for different types of institutions relative to the ceilings for public universities. For instance, public colleges have tuition upper ceilings that are set at 80% of those of public universities. Public colleges, therefore, are always cheaper than public universities conditional on the discipline. Combined with easier accessibility of colleges outside of major cities, college education is usually a more affordable option for rural population and low-income groups.

**Table 2-7 Different Upper Ceilings by Types of Institution, relative to University**

| Institution Type | Coefficients to the university |
|---|---|
| 1. Colleges | 0.8 |
| 2. University | 1 |
| 3. Masters Training | 1.5 |
| 4. PhD | 2.5 |

Source: Decree 49/2010/ND-CP issued by the government on May 14, 2010

Even though the upper ceilings of tuition for public universities and colleges do not seem excessively expensive relative to the general income levels of people in Vietnam, tuition constitutes only a small portion of the total private expenditures for higher education that students and students' families have to bear. Other expenses for higher education include costs for learning materials, other fees for school, contribution to school, and living and travelling expenses. Taken together, the total costs of higher education can be considerably higher than the tuition upper ceilings, and may cause financial constraints for poor families.

The expenses for higher education born by students and their families amount to significant proportions of the household expenditures

especially for those in lower income groups. Table 2-8 below shows the total expenditure on higher education per student and its ratios to the total family expenditure by income quintile groups. Although the amounts of higher education expenditure do not differ significantly across income groups except for the richest quintile, the ratios to the total household expenditure do. Families in the poorest quintile and the 2nd quintile need to spend as much as 27% and 24% of their total family expenditure, respectively, to pay for the cost of higher education of their child while those in the 4th quintile spend 12% - less than half the ratio of the poorest and the 2nd quintile group – of their total family expenditures, and the ratio goes down to 8.6% for the families in the richest quintile. Partly due to these gaps in the burden of private financing and the gaps in learning performances discussed previously, the disparities in access to higher education across different income groups have become more evident in the past decade, which we shall discuss in the next section.

**Table 2-8 Expenditure on Higher Education and Ratio to Total Household Expenditure by Income Quintile**

| Income Quintile | Total household expenditure on higher education (thousand VND) | As % of the total household expenditure |
|---|---|---|
| Poorest | 3,071 | 27% |
| The 2nd quintile | 2,679 | 24% |
| The 3rd quintile | 3,029 | 17% |
| The 4th quintile | 3,092 | 12% |
| Richest | 4,490 | 8% |

Source: Calculated based on VHLSS 2004 in Nguyen (2008)

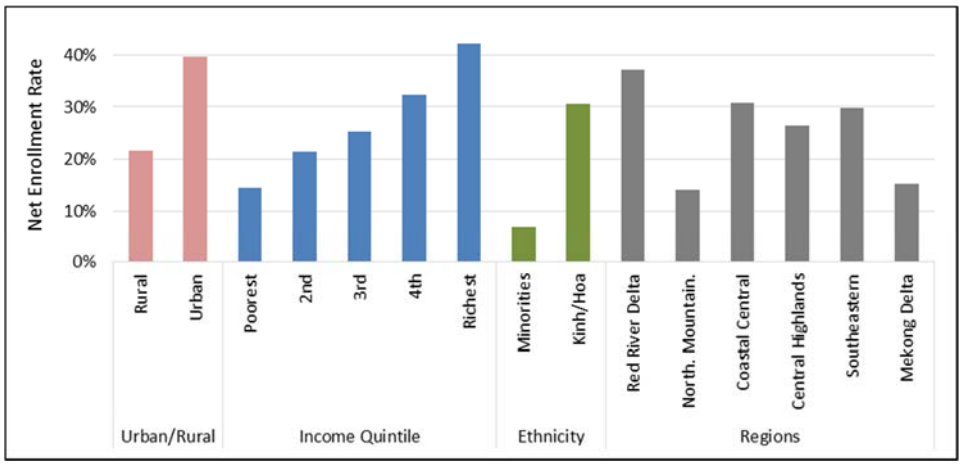
## 2.5. Disparities in Access to Higher Education in Vietnam

Disparities in access to higher education as measured by the differences

in enrollment rates exist particularly along the lines of ethnicity, region, and family income. The disparities exist in basic education as well, but they become substantially more pronounced at the higher education level. Gender disparity does not seem to be a major issue in Vietnam as the enrollment rates of female children almost always exceed those of male children at the level of secondary education.

Figure 2-9 below shows the disparities in higher education enrollment across some dimensions. The figure is calculated using the Vietnam Household Living Standard Survey (VHLSS) 2010.

**Figure 2-9 Disparities in Higher Education Enrollment**




Source: Calculated by Author based on VHLSS 2010

As most of the higher education institutions are concentrated in urban areas, it is not surprising to see a large gap between urban and rural residents. While the enrollment rate of urban students was about 40%, the rate of rural students was just slightly over 20%. Unequal access among income groups is also evident. About 42% of the youth who are enrolled in universities or colleges are from families belonging to the richest group, but those who managed to get into higher education from the poorest

quintile group were only about 15%, less than half of the ratio of those in the riches quintile.

The ethnicity gap is even more staggering. Among the majority groups, Kinh and Hoa, the enrollment rate was about 30% on average, whereas that for the ethnic minority youth was a mere 7%. In Vietnam, there are 54 officially recognized ethnic minority groups. Kinh is the largest group which occupies around 86% of the entire population. Hoa people are ethnic Chinese and usually considered as part of the majority group. Other 52 ethnic groups constitute ethnic minorities in Vietnam. Some ethnic minority groups are larger than others with a population of more than 1 million, while some smallest ethnic minority groups have a population of less than a few thousand. The larger ethnic minority groups that are more assimilated to the majority Kinh culture (such as Tay and Muong) tend to be better off economically than other minorities, and have higher chances of enrolling in HEIs than other smaller minority groups (Ito, 2011).

Regional differences are at least in part associated with income differences and ethnicity composition. Regions with higher ethnic minority concentrations tend to have smaller enrollment sizes. Northern Mountainous and Mekong Delta regions have high ratios of ethnic minority concentration, and have by far the lowest higher education enrollment rates. Red River Delta and Southeastern regions are economically more endowed than other regions as they have the two largest cities, Hanoi and HCMC, respectively. In addition, there are large disparities in terms of supply of higher education institutions across regions. Red River Delta, Coastal Central, and Southeastern regions have been traditionally centers of higher education boasting large universities

such as Hanoi University in Red River Delta, Da Nang University and Hue University in Coastal Central, and Ho Chi Minh University in Red River Delta region. These are the most prestigious public universities which many students aspire to enroll in and they take in a large number of students every year as well. These differences in the supply of higher education institutions are likely to be enlarging the regional disparities in higher education enrollment.

## 2.6. Pro-Poor Financial Assistance Policies for Higher Education in Vietnam

The cost-sharing policy was introduced to help finance the extended supply of higher education institutions, and is set to stay in South East Asia including Vietnam (Asian Development Bank, 2012b). In 2005, the revenue from tuition constituted about 30% of the total revenue of public universities in Vietnam (World Bank, 2008). However, it is widely believed that the financial burdens of private financing has been preventing or discouraging students from low-income families from gaining entrance into higher education institutions. On the other hand, there is no doubt that expanding the higher education system to keep up with rising demand is beyond the means of any government if it were to be achieved through the traditional low or no tuition higher education model. Many of the scholars agree that cost-sharing policies supported by well-targeted financial assistance policies for disadvantaged groups, sometimes referred to as 'high tuition high aid model' will likely be a more resource-efficient model for higher education development (Johnstone, 2007, 2009; Leslie & Brinkman, 1987). The low tuition model

is less resource-efficient because it would provide subsidized higher education to everyone including well-off students who would not require any subsidies. Suspicion has been voiced at the same time, calling into question the efficiency and effectiveness of such theory. Critics of the high tuition high aid model point to a range of issues such as the challenge in practical application of high aid, a political tendency that tuition costs rise faster than the amount of aids, the increasing trend to shift toward a merit-based aid, and insufficient information about available aids provided to low-income families (Corey, 2005; Griswold & Marine, 1996; Heller, 1997; Johnstone, 1993).

Vietnam is not an exception in this trend of the high tuition, high aid model. It has implemented targeted financial assistance policies while pursuing the policy of cost-sharing. In order to alleviate the financial burdens of higher education for poor families, the government has put in place three targeted financial assistance policies; namely tuition exemption, scholarships, and student loans. The sub-sections below takes a look at each of those targeted financial assistance policies.

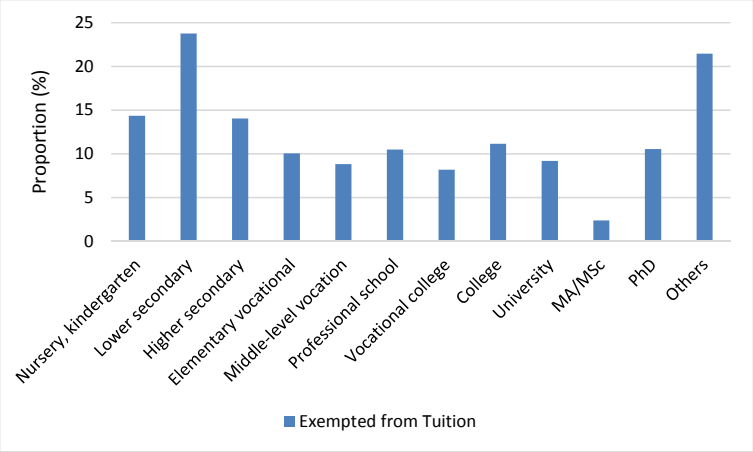
### 2.6.1. Tuition Exemption

The government of Vietnam has issued Decision 70/1998/QD-TTg and Decree 49/2010/ND-CP on policies of fully or partially exempting students belonging to disadvantaged families from the obligation of tuition and other fees payments. The exemption policy is applicable only for students in public schools, and is not applicable for students in non-public schools. Students in higher education who are eligible for the tuition exemption are (1) students whose parents are residing in the high

mountainous areas, remote areas, or remote islands; (2) students with disabilities; (3) students studying at teacher training institutes; (4) students whose families are officially classified as poor families or have 150% of the income level of the official poor family; and (5) students whose parents or relatives were part of a major revolution or are war invalids (Socialist Republic of Vietnam, 1998, 2010).

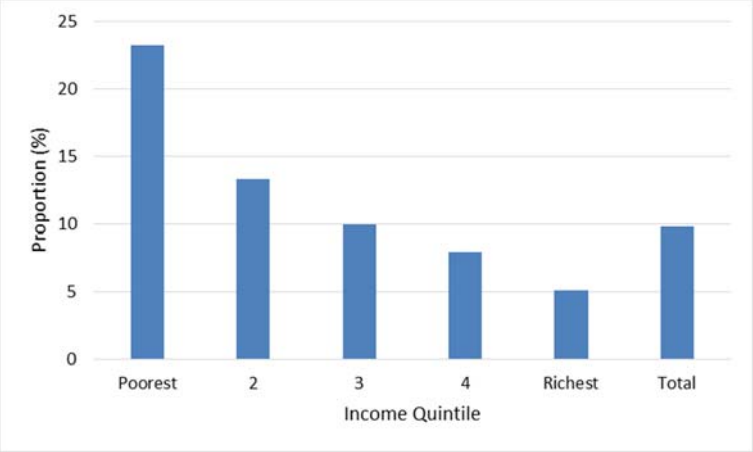
Tuition exemption is one of the most prevalent forms of financial assistance in Vietnam, and the criteria for eligibility are uniform across education levels. Figure 2-10 below shows the proportion of students who are exempted fully or partially from tuition fee and school contribution fees. Tuition exemption is most generously granted in lower secondary education. More or less 10% of students in colleges and universities seem to be granted the exemption. In principle, as stipulated in the policy, tuition exemption is awarded to lower income students. Figure 2-11 shows the proportion of college and university students who are exempted from tuition fees by income quintile. Clearly students in the lower income groups are much more likely to benefit from tuition exemption. However, at the same time, it is noticeable that there is always some portion of richer students who are still exempted from tuition fees. This is probably due to the eligibility clause for children of war invalids or fallen soldiers.

**Figure 2-10 Proportion of Students Exempted from Tuition by Education Level**




Source: Calculated by Author based on VHLSS 2010, including all currently enrolled students regardless of age

**Figure 2-11 College and University Students Exempted from Tuition by Income**




Source: Calculated by Author based on VHLSS 2010, including all college and university students regardless of age

### 2.6.2. Scholarship and Social Assistance

The policies for scholarship awards have been issued in a somewhat redundant and confusing fashion, reflecting the rather laissez-faire situation where scholarships of various forms are actually being awarded by both public and private institutions for different objectives. Some private enterprises offer scholarships for students as part of community

engagement, and provincial governments have some assistance programs to provide financial aids to students from their provinces. It should be noted, therefore, that it is practically not possible to group all of the existing scholarship programs in higher education under one umbrella.

It is also important to distinguish between two disciplines of the targeting systems for scholarships that cater to different needs of education. If scholarships target students from disadvantaged background or poor families, they are often referred to as need-based scholarships. If scholarships are granted to students who demonstrated excellent academic results, they are often referred to as merit-based scholarships. Many other types of scholarships actually fall in between, having a mixture of both characteristics. Need-based scholarships are sometimes awarded to poor, high-performing students, and merit-based scholarships sometimes cap family income of eligible students.

At the central level, the government of Vietnam introduced a scholarship policy in 1997 for students studying at public education institutions by issuing Decision 1121/1997/QD-TTg. The Decision 1121 has been modified a few times since then by subsequent Decisions (Decision 194/2001/QD-TTg and 82/2006/QD-TTg) which were issued mainly to raise the unit amount of scholarships to keep up with the inflation and the raise in the official minimum wage. The scholarship program under the Decision 1121 consists of two parts: one for academic encouragement (merit-based) and the other for social assistance (need-based). The scholarship for academic encouragement is provided to students who demonstrate stable and excellent academic performance. The scholarship for social assistance is provided to students who are ethnic minorities in the highlands, orphans, disabled, or facing severe economic

difficulties. The amount of grants are decided based on the official minimum wage level, and have been revised several times. The latest rates for academic scholarships as of 2012 are set at VND 280,000 (about USD 14 at the current exchange rate) per month for 11 months per year (Decision 82/2006/QD-TTg), and the latest rates for social assistance scholarships are set at VND 140,000 (about USD 7) per month for 12 months per year (Decision 194/2001/QĐ-TTg).

More recently, the MOET issued another policy (Decision 44/2007/QD-BGDDT) on regulations of scholarships to encourage student learning at secondary school and higher education institutions. This policy mandates that 15% of tuition fees of public schools is used for the scholarships to encourage student learning. Students who demonstrated excellent academic performance are eligible for a scholarship equal to or above the ceiling amount of tuition fee charges. Students who are benefiting from scholarships under Decision 1121 can still be eligible for the abovementioned scholarship if they meet the criteria. This scholarship under Decision 44 appears to be primarily merit-based.

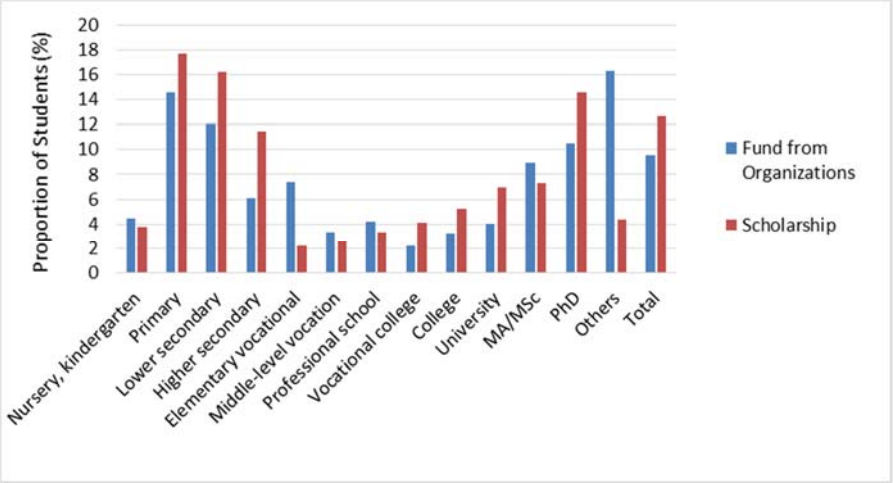
At provincial, district, and commune levels, there are various other governmental and non-governmental grant programs for students especially for students in rural areas and ethnic minorities. Private entities such as NGOs, private firms, and international agencies are frequently seen to provide grants for students according to their own priorities. The MOET issued Circular 35/2011/TT-BGDDT in 2011 which stipulates overall policy frameworks and some procedural guidelines to which private donors are expected to adhere when providing grant in cash or in kind to students in public schools. Circular 35 does not dictate the selection criteria or eligibility priorities for private grants. Therefore,

those private grant programs may not necessarily be pro-poor oriented.

Overall, except for the social assistance scholarship under Decision 1121, none of the scholarship policies at the central level is explicitly need-based. It is hard to know what other need-based scholarships are like as actual implementation of scholarships is managed by each locality under different sets of rules and criteria.

The Vietnamese household survey data distinguish two types of scholarships: One is funds from non-governmental organizations which provide assistances for education, and the other type is scholarships from governmental sources and education institutions. However, no distinction is made in terms of the target. Scholarships are widely used in Vietnam to promote student enrollment and retention and to provide learning incentives. Figure 2-12 below shows the proportion of students who have received funds from organizations or scholarships from the government in the past 12 months. Scholarships are more widely in use at lower levels of education. About 12-16% of students are receiving support fund or scholarship at the lower secondary education level. The ratio goes down to about 4-6% at the college and university levels.

**Figure 2-12 Proportion of Students Receiving Funds from Organizations and Scholarships by Education Level in the Past 12 Months**




Source: Calculated by Author based on VHLSS 2010, including all current students regardless of age

In terms of the amounts of scholarships, the average annual amount of funds from organization and scholarships among college and university student beneficiaries was about VND 2,600,000 based on the calculation using the household survey data (VHLSS 2010). However, the distribution is highly positively skewed with median value being about VND 1,400,000, indicating the majority of scholarship beneficiaries in colleges and universities receive much smaller amounts than the average. In comparison with other forms of financial assistances (i.e. tuition exemption and student loans), scholarships appear to be the least attractive for the majority of college and university students in terms of the size of monetary benefits.

### 2.6.3. Student Loan

Student loan schemes have been introduced in a number of Asian countries as a means to diversify actors of cost-sharing to finance growing higher

education systems. Student loans allow a portion of the cost of education to be borne by students themselves by deferring bearing of the cost to certain periods in future when the students are expected to reap the benefits of their higher education (Johnstone, 2005). China, India, Indonesia, Malaysia, Thailand, Vietnam, and other Asian countries have experimented with student loan programs which met with mixed success (Asian Development Bank, 2012b). The motives behind the introduction of student loan programs in Asian countries varied. Some countries used student loan schemes primarily as a way to share the larger portion of the cost of higher education with students. Other countries introduced student loans as a policy tool to improve access to higher education among poor, disadvantaged population.

In Vietnam, a government sponsored student loan program was first started in 1994 with an aim of helping poor students to have better opportunities to study in higher education institutions. Lending operation was outsourced to the Industrial Commercial Bank (former Incombank, currently VietinBank). The program was first piloted targeting four universities in Hanoi, and then extended to cover 20 universities in 1995/96 (Ngo, 2006). The student loan program was then officially approved by the government in 1997, and the Prime Minister issued a Decision 51/1998/QD-TTg promulgating a policy for setting up a credit fund for student studying at post-secondary education institutions. The maximum amount of loan that students were allowed to take out was VND 1.2 million (approximately USD 98 at the exchange rate in 1997[4]) per academic year. Loans were expected to be repaid within 15 years after graduation. Borrowers were required to submit the name of co-signatory

[4] Interbank exchange rate as of 1997/12/1 USD 1 = 12,289

(parents or sponsor) who can take responsibility in the event of default. They were also required to attach an approval letter from the local People's Committee who were supposed to support the bank for identification and collection of payments. The interest rate was kept significantly lower than the market rate (about 50% of the market rate). However, this early experiment with student loans was not very successful. One of the difficulties emerged from the earlier experience of student loans was that the student loan was considerably limited compared to numerous potential borrowers (Ngo, 2006; University at Buffalo, 2009).

In 2007, the government fundamentally reformed the student loan program by issuing a new policy on credit to disadvantaged students (Decision No. 157/2007/QD-TTg by the Prime Minister) which replaced the aforementioned Decision 51/1998/QD-TTg. The MOET coordinated with the Bank for Social Policies (VBSP), which was established in 2002 under the Decision 131/2002/QD-TTg as a lending agency for a variety of preferential credit schemes and is now responsible for the operation of the student loans, to establish a new loan program for students. Table 2-9 below lists the preferential loan programs currently operational under VBSP and the interest rates charged. The most concessional interest rate is being applied to the student loans.

**Table 2-9 Loan Programs and Interest Rates under VBSP**

| Loan Program | Charged Interest Rate |
|---|---|
| **Loans to the disadvantaged students** | **0.5% per month (6% per year)** |
| Loans to the poor, the job creation program owners, forest sector development project | 0.65% per month (7.8% per year) |
| Loans to the safe water supply and rural sanitation program, business and production of households living in specially disadvantaged areas and communes, merchant doing business in mountainous areas, small and medium size enterprises | 0.9% per month (10.8% per yea) (market rate) |

Source: VBSP & JERI (2011)

Under the new policy, preferential student loans are made available to disadvantaged students in universities, colleges, or vocational training schools who are from officially recognized poor households or from households whose per capita income fall under 150% of the official poverty line. Students from households which experienced financial shocks such as accidents, fire, diseases, or natural disasters while he/she is studying are also eligible to apply for the loans. The representative of the student's family is the borrower and is responsible for loan repayment. The lending rate is set at 0.5% per month (6% per year), which is considerably lower than the prevailing lending rates in the commercial market. The maximum amount of loans has also been considerably raised from the previous student loan scheme. Eligible students can take out loans up to VND 800,000 per month (later the ceiling was raised to VND 1 million per month), which is a considerable increase from the previous

ceiling of VND 1.2 million per academic year.

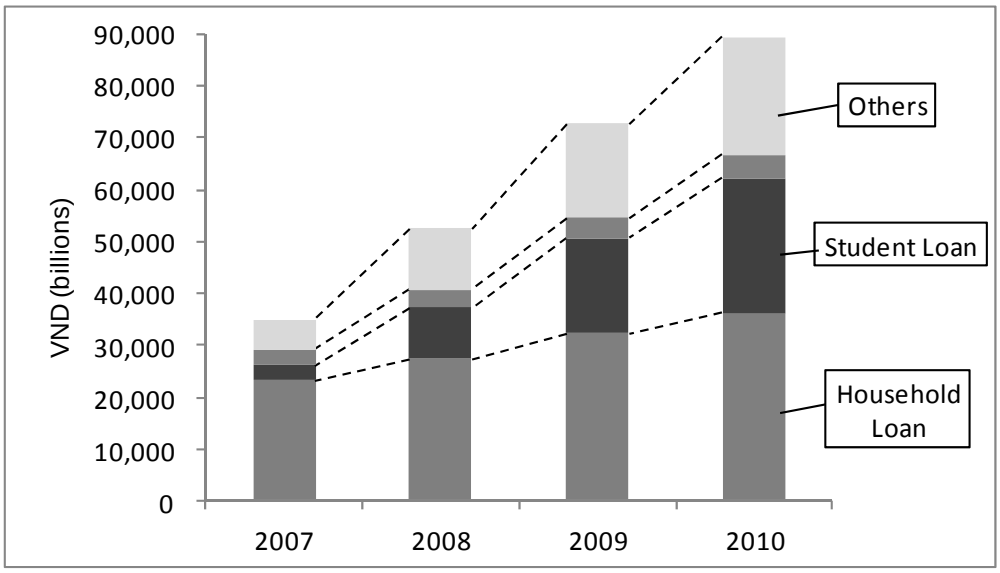
The number of students who take out the student loan along with the outstanding debt amount of the student loan have been on a steep rise. Across the country, the cumulative total number of students who benefited from the student loan since the bank's establishment has reached 2.8 million students[5]. In 2010, the disadvantaged student loan program accounted for VND 26,052 billion (29.12%) of the bank's total outstanding loans, and was the second largest component of the outstanding loan for the bank (Vietnam Bank for Social Policies, 2010). Owing to the rapid expansion of lending to students, the proportion of students who are benefiting from the student loan program has reached a substantial proportion. A report published by the MOET in 2008 quoted in Vu, Le, and Giang (2010) shows that in the 103 higher education institutions they surveyed, 28.9% of students were able to take out student loans. The same MOET report showed that about half of the beneficiary students surveyed at 77 higher education institutions thought the amount of the loan is just enough for students' daily-life necessities. The amount of the loan appears to cover a substantial portion of the students' living expense.

How quickly the student loan program was scaled up immediately after the introduction of the new policy in 2007 is evident in the composition of VBSP's outstanding loan (Figure 2-13). The outstanding loan for the student loan program accounted for only 8.03% (VND 2,807 billion) of the total outstanding loans of the bank in 2007 when the new policy was issued. From there, it expanded rapidly and increased nearly tenfold in amount only after a few years. By 2010, lending to poor students

[5] The information was extracted from the website of Vietnam Bank for Social Policies. (VBSP. (n.d.). Bank strategy targets priority for the poor. Retrieved June 3, 2012, from http://www.vbsp.org.vn/evbsp/view_detail.php?mtt=311&mamm=21.)

had come to account for 29.12% (VND 26,052 billion) of the entire outstanding loans of the bank.

**Figure 2-13 Composition of Outstanding Loans of VBSP**

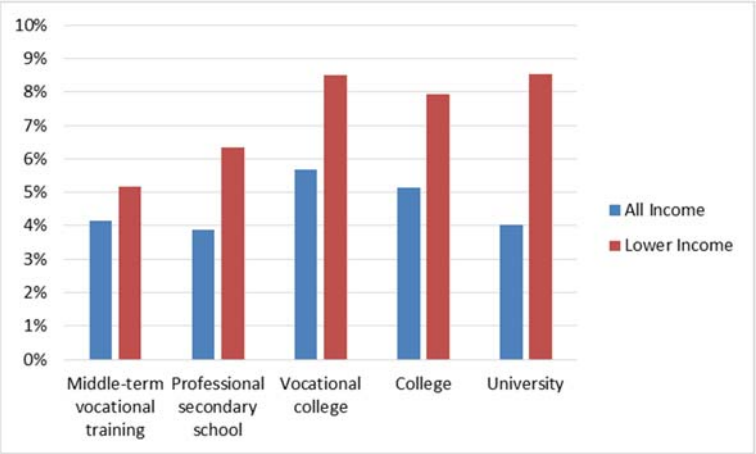



Source: VBSP Annual Report 2007, 2008, 2009, 2010

Students in universities, colleges, and vocational training institutions are eligible to apply for the student loans. Figure 2-14 below presents the ratios of students who have borrowed from VBSP on the student loan schemes for each type of institutions. The ratios of beneficiary students are around 4-5%. Since the student loan program is designed as a pro-poor assistance, the ratios of beneficiary students go up substantially when only the lower income groups (i.e., the 1st and 2nd income quartile groups) are included in the calculation. Around 8% of college and university students among the lower income groups are benefiting from student loans. Students of middle-term vocational training and professional secondary seem to be somewhat less inclined to benefit from the student loan programs. This is perhaps because the costs of

training are cheaper at those vocational institutions.

**Figure 2-14 Proportion of Student Loan Beneficiaries by Institution Type and Income**




Source: Calculated by Author based on VHLSS 2010, including all current students regardless of age

### 2.6.4. Summary on Pro-Poor Financial Assistances

For the purpose of comparison, this sub-chapter presents an overview of all these three pro-poor financial assistances focusing on key differences among them.

**Table 2-10 Overview of the Three Financial Assistances**

| | Tuition Exemption | Scholarship (Needs-based) | Student Loan |
|---|---|---|---|
| Main Criteria for Selection | - Minorities<br>- Poor<br>- Remote areas<br>- Disabled<br>- War invalids | - Minorities<br>- Poor<br>- Disabled<br>- Orphan | - Poor |
| Size of Annual Benefit(*1) | Depends on tuition costs (e.g., for social science course at university, VND 2,900,000)<br><br>Some additional gains are also expected from exemption of contributions. | VND 1,680,000 (for need-based social assistance scholarship)<br><br>VND 3,080,000 (if students are awarded merit-based academic scholarship) | VND 10,000,000 (as the upper ceiling of borrowing) |
| Overall Coverage in College/ University | About 10% | About 4-6% | About 4-5% |

Source: Created by Author based on the corresponding policy documents and coverage rates estimated from VHLSS 2010

(*1) one school year consists of 10 months for higher education.

In terms of the size of assistance benefit, the student loans program outweighs other two assistances with a wide margin, even though the upper ceiling is not equivalent to the actual amounts that beneficiaries take out. The monthly ceiling amount for student loans is set at VND 1 million, which gives an annual ceiling of VND 10 million. Tuition exemption also carries a sizable amount of benefit. If students are enrolled in a social science course at a public university the benefit from tuition exemption amounts to at least VND 2,900,000 per year at the tuition rates for the academic year 2010/11; and the benefit can be incremented by the

exemption from other contribution fees that institutions may charge. The actual amounts of tuitions exempted differ depending on courses, institution types, and academic year. The benefit from scholarships compare rather poorly with other two assistances, unless students are awarded with merit-based academic scholarship. The benefit size from need-based scholarship is calculated to be around VND 1,680,000, which is much smaller than the benefit from tuition exemption.

Lastly, one assumption should be highlighted with regard to the application process of the financial aids. Naturally, students who wish to receive financial support may submit an actual application for any of the financial assistances after gaining an acceptance to the college or university. Colleges and universities can allocate tuition exemptions only after granting acceptance to students. It is, therefore, assumed that upper secondary graduates and their families develop certain rather accurate expectations about the likelihood of the financial assistances becoming available to them, and make decisions about higher education enrollment taking account of the expected probabilities of receiving financial assistances. It is not an unrealistic assumption because the official eligibility criteria are all publicly available, and also because upper secondary students who wish to progress to higher education most likely gather information about the cost implications of higher education and the availability of financial assistances from the experiences of those from the similar social background who went to college or university. Relatives, upper secondary teachers, and local authorities are likely to provide them with such information.

# Chapter 3.

# LITERATURE REVIEW

## 3.1. Poverty Issues in Vietnam

The aim of the government's financial support for the poor is to lift the living standard and socio-economic well-being of the low-income and marginalized groups. Before discussing issues directly related to equality and financial assistances, this sub-chapter reviews literatures on the issues of poverty and social marginalization in Vietnam so as to better contextualize subsequent discussions on equality in access to higher education and the financial aids for the poor.

Vietnam Development Report 2008 published by Joint Donor Report (2007) discusses extensively the situation and progress related to poverty and social issues in the country. They found that poverty has fallen dramatically between 1993 and 2006 in both urban and rural areas and both for the ethnic majority and minorities; however, as of 2006 16% of the population remained below the poverty line, and the poverty rates are substantially higher among rural population and ethnic minorities (Table 3-1). They also found that regional differences remain wide, though narrowing rapidly, with the mountainous areas being much poorer than the lowlands (Table 3-2).

**Table 3-1 Poverty Rates in Vietnam from 1993 to 2006**

| | 1993 | 1998 | 2002 | 2004 | 2006 |
|---|---|---|---|---|---|
| Poverty Rate | 58.1 | 37.4 | 28.9 | 19.5 | 16.0 |
| Urban | 25.1 | 9.2 | 6.6 | 3.6 | 3.9 |
| Rural | 66.4 | 45.5 | 35.6 | 25.0 | 20.4 |
| Majority | 53.9 | 31.1 | 23.1 | 13.5 | 10.3 |
| Minorities | 86.4 | 75.2 | 69.3 | 60.7 | 52.3 |

Source: Joint Donor Report (2007)

**Table 3-2 Poverty Rates across Regions from 1993 to 2006**

| | 1993 | 1998 | 2002 | 2004 | 2006 |
|---|---|---|---|---|---|
| Northern Mountains | 81.5 | 64.2 | 43.9 | 35.4 | 30.2 |
| Red River Delta | 62.7 | 29.3 | 22.4 | 12.1 | 8.8 |
| North Central Coast | 74.5 | 48.1 | 43.9 | 31.9 | 29.1 |
| South Central Coast | 47.2 | 34.5 | 25.2 | 19.0 | 12.6 |
| Central Highland | 70.0 | 52.4 | 51.8 | 33.1 | 28.6 |
| Southeast | 37.0 | 12.2 | 10.6 | 5.4 | 5.8 |
| Mekong Delta | 47.1 | 36.9 | 23.4 | 15.9 | 10.3 |

Source: Joint Donor Report (2007)

To gain more in-depth and contextualized understandings about the reality of the poor in Vietnam especially from the viewpoints of local people, Poverty Task Force conducted a series of field studies in different provinces in 2003[6] using the Participatory Poverty Assessment (PPA) methods. According to the reports from these field studies, the general agreement among local people interviewed is that in the past five years the standard of living has improved markedly and the number of poor families have declined. Many households have escaped poverty combining farming with wage employment (Poverty Task Force, 2005). Increased non-farm income has played an important role in reducing poverty

[6] The Participatory Poverty Assessment studies were conducted in the following provinces: Ha Tay and Hai Duong provinces in Red River Delta region; Ninh Thuan province in South Central Coastal region; and Ha Giang province in Northern Mountainous region.

(Poverty Task Force, 2003a). However, the trend of improvement is uneven within the individual communities, and there are households that have benefited well and those that have not managed to improve (Poverty Task Force, 2003b, 2003c). Rural participants of PPA sessions in the Red River Delta region characterized better-off families and poor families in their communities; better-offs are typically those who own more productive assets like buffalos and capital to access new technologies, have children finish upper secondary education or possibly enter higher education, and have networks outside of their provinces, whereas poor families are typically those who do not own much productive assets or capital, have children complete only lower secondary education, and have social networks limited within family clan and village boundaries (Poverty Task Force, 2003a, 2003b). Most families should fall somewhere in this continuum, and sending children to higher education seems to be deemed as a sign of success for rural families even in the richest region such as Red River Delta.

Concerns regarding growing inequality are expressed repeatedly by PPA participants in Red River Delta and South Central Coast regions (Poverty Task Force, 2003a, 2003b). Poverty Task Force argues that the difference between households that are able to take advantage of economic opportunities and those that are not is leading to rising inequality; and that measures to raise "assets" of the poor such as education, health care, and access to credit remain important (Poverty Task Force, 2005). The PPA studies also revealed that the need for educated labor from local industrial enterprises and export companies is driving education demand (Poverty Task Force, 2005).

## 3.2. Private Economic Returns to Education in Vietnam

As discussed in the previous chapter, labor market in Vietnam has undergone fundamental structural shift since the Doi Moi reform boosting the importance of knowledge and skills. It is widely believed that demands for educated workers have grown, and so have the returns to education. This sub-chapter briefly reviews some of the literature on returns to education in Vietnam in order to better grasp reasons behind the growing demand for higher education among Vietnamese youths.

As one of the earliest studies on returns to education in the post Doi Moi Vietnam, Gallup (2002) examined the labor market in Vietnam in the 1990s. He showed average real wages grew markedly between 1993 and 1998, and reported a substantial increase in the hours worked and a gradual increase in the share of the labor force in wage employment are also reported. However, his work also shows that the rate of returns to formal education was very low in Vietnam in the 1990s, increasing marginally from 2% in 1993 to 4-5% in 1998. It seems that it took a long while before the economic reform started taking effect to raise returns to education in Vietnam.

One of the most recent studies on returns to education in Vietnam, Doan and Gibson (2010), reported the rate of returns to education in 2008 to be about 10%, which is considerably higher than those in the 1990s. They argue that the rapid rise in the rates of returns to education has likely resulted from structural changes in the economy that generated many technical-skilled jobs in Vietnam as the country experienced further market opening and integration into the global economy. Doan (2011) concentrates his analysis on returns to higher education and estimates the

rate of returns to the four-year university education in 2008 in Vietnam to be about 17% per a year of schooling at universities, which is more or less on par with the average of Asian countries which is about 18% (Doan, 2011). He also argues that the rate of returns to university education in 1998 was much lower than it was in 2008, and also that the current labor market in Vietnam rewards higher-skilled workers.

Other scholars generally concur with this assessment about structural shifts in the Vietnamese labor market favoring educated workers and associated rise in the rate of returns to education. Liu (2006) shows that earnings of workers with tertiary education have significantly increased between 1992 and 1998. He highlights the role of demand-side factors in explaining the differences in earnings between workers with different education attainment, arguing that the wage structure in Vietnam has shifted during its transition period in such a way that it favors better-educated people. Pham & Reilly (2007) reports considerable improvements in the females' relative position in the wage earnings as well as a sharp increase in returns to the higher levels of formal education. Oostendorp & Quang (2012), while agreeing with other scholars on the large increases in the returns to education between 1998 and 2006 in Vietnam, caution about possible overestimations in the standard Mincerian type returns to schooling because the observed major shifts in employment patterns across non-tradable and tradable sectors affect the actual returns to education, especially for the low skill workers.

All in all, the general agreement is that the rate of returns to education in Vietnam has increased substantially for all education levels in particular for the higher levels of education through the 1990s and 2000s, thanks to the economic reforms and subsequent fundamental

changes in the structure of economy and labor market in Vietnam.

### 3.3. Defining Equality

To set the stage for the discussion of equality in access to higher education, this sub-chapter attempts to provide an overview of debates pertaining to some of the basic concepts about educational inequality.

Since the study concentrates on issues of the equality in access to education, a conceptual distinction should be drawn between the two most relevant terminologies, *equity* and *equality*. While the definitions of equity seem to be quite diverse, the term equality appears to be easier to define and operationalize. Jacob and Holsinger (2008) define equality as "the state of being equal in terms of quantity, rank, status, value, or degree" (p. 4). Most scholars seem to be in agreement with this definition. Bronfenbrenner (1973) said the equality of distribution of wealth is basically objective, and in principle factual quantitative information. In accordance with these definitions, equality in the context of educational accessibility, a key theme of the study, can be measured as the distribution of enrollment relative to the distribution of socio-economic background of youths in the age group of higher education. If enrollment in higher education institutions is evenly distributed across different socio-economic groups such as gender, income, or ethnic groups, it would be an evidence of equal accessibility to higher education.

Equity, on the other hand, is a more difficult concept to define. Equity is subjective and, in essence, a matter of ethical judgment (Bronfenbrenner, 1973), and takes account of the social justice ramification in relation to fairness, justness, and impartiality of

distributions (Jacob & Holsinger, 2008). The agreement seems to be that equity involves ethics and the concept of fairness and justness. What constitute being ethical and fair, however, evolves overtime and is different from one culture to another and from one area of expertise to another. The World Development Report (WDR) 2006, for instance, defines the term equity with seemingly strong influence of the contemporary Western values as equal opportunity and avoidance of absolute deprivation (World Bank, 2006). Equal opportunity refers to the condition where success or failures of individuals are determined primarily by ones' efforts and talents, indifferent to their background or through the predetermined circumstances they were born into.

Equity and equality are not often interchangeable. A majority of equity-oriented policies such as the affirmative action in the United States or the financial assistances in Vietnam give *un*equal benefits to different groups for the sake of giving them equal opportunities. In the context of the study, it can be summarized as follows. The admission process to higher education institutions is more or less fair and transparent, giving equal chance of admission to anyone with the same examination marks. However, the outcome of admission, which is enrollment, is not equally distributed across socio-economic groups because of the unequal distribution of resources. This unequal accessibility raises a concern about social equity, and prompted the government to introduce equity-oriented assistance policies to promote more equal access to higher education.

WDR 2006 distinguished three types of inequality, namely economic inequality, sociocultural inequality, and political inequality; and also emphasized inequality in the capacity of shaping institutions to represent and support socio-economic and political interests of the groups.

In many countries, various institutions are organized in order to influence the public decision-making processes for the benefit of their interest groups. These institutions are never born from thin air. They are usually shaped by groups with particular interests for the explicit or implicit purpose of protecting the vested interests or advancing particular causes. People with inferior economic, social, or political status tend to be weaker in the capacity of shaping those institutions to serve their interests.

In this line of argument, WDR 2006 introduces an inspiring concept of *inequality trap*, which can be thought of as a concept akin to what is known as *poverty trap*[7]; to capture mutually reinforcing nature of inequalities. Inequalities rarely exist in isolation with inequalities in other areas. For instance, people who are in inferior status in terms of income levels are often from socially disadvantaged groups, and are also poorly represented in the political arena to protect their rights and interests. The weak political representation in turn reduces the chance of those people claiming a fair share of productive resources, which leads to further economic marginalization which then further deprive them of political power. The concept of inequality trap captures such vicious cycles where different types of inequalities interact to perpetuate and reinforce the inequality in the society.

In the context of the study, the concept of inequality trap is particularly relevant. Inequality in the higher education level are easily exacerbated by socio-economic inequalities because the chances of access to higher education is often more strongly shaped by the students' family

[7] Poverty trap in the context of developing countries can be defined as a self-perpetuating condition where an economy or individuals, caught in a vicious cycle, suffer from persistent underdevelopment. An injection of a sizeable amount of capital is thought to be needed in order to escape from the poverty trap (Sachs, 2006).

background than it is the case for primary and secondary education. At the same time, an attainment of higher education heavily impacts the life-time earnings of the student. Disadvantaged youths who fail to attain higher education degrees face inferior job prospects and lower expected income levels, reinforcing their disadvantaged socio-economic status. On the positive side, however, obtaining higher education degrees can present excellent opportunities for able youths from disadvantaged groups to break out of the vicious cycle of inequality trap and realize upward social mobility for themselves and for their communities. In this regard, the accessibility to higher education plays an important part in defining the grip of inequality trap in a society.

### 3.4. Determinants of Access to Higher Education

Most of the countries, industrialized and developing countries alike, have expanded their higher education systems in the past few decades. More and more countries are experiencing a process of transformation from a restrictive elite education to a mass education system at the higher education level. A question to be asked in the light of educational equality is whether and how the expansion of higher education system improves the equality of educational opportunities. Simply put, increasing the admission capacity of higher education institutions beyond the level traditionally reserved for privileged students is likely to increase the number of seats available to students from traditionally underrepresented groups, who were denied access due to lack of available seats. It is, however, not guaranteed that the expansion of higher education systems improves educational equality, and even if it does, some questions still

remain as to what extent and how higher education expansion leads to improved equality, and what factors are contributing to persistent inequalities of higher education opportunities in the expanded higher education system.

One of the key underlying assumptions for the analysis of factors affecting decisions to enroll in higher education is that individuals will choose to pursue further education if the present value of the expected additional private benefits from the investment in further education exceeds the present value of the direct and opportunity costs associated with making that investment (Becker & Tomes, 1994). The private benefits are not limited to economic gains in the form of increased income level and job stability but also include other non-economic benefits that one can enjoy such as joy of studying, higher social status, improved health, a better chance of finding a spouse, and so forth. This assumption is largely based on the human capital theory developed by Becker (1962), Mincer (1958), Shultz (1961) and others. Education is seen as a form of investment to improve his/her productivity in future employment. The theory was later expanded to take account of the existence of capital constraints and imperfect access to capital (Becker & Tomes, 1994). Inability to obtain credits prevents them from making optimal investment in education even when expected private benefits from the investment outweigh its costs. Literature about financial constraints on higher education enrollment will be reviewed in more detail in subsequent chapter.

Apart from return-on-investment considerations, individual and family background factors have also been found to have strong impacts on the likelihood of enrolling in higher education institutions. Family income levels and parental education levels are almost always found to be strongly

correlated with the likelihood of college and university enrollment in both developed and developing countries alike (Psacharopoulos & Soumelis, 1979; Kodde & Ritzen, 1988; Burnhill, Garner, & Mcpherson, 1990; Jimenez & Salas-Velasco, 2000; Nguyen & Taylor, 2003; Finnie, Laporte, & Lascelles, 2004; Ogawa & Iimura, 2010).

In rather rare cases when test score data is available, students' academic performance during secondary education is often found to be very strongly positively affecting the probability of attending higher education institutions (Psacharopoulos & Soumelis, 1979; Kodde & Ritzen, 1988; Jimenez & Salas-Velasco, 2000; Nguyen & Taylor, 2003; Buckner, 2013). In many countries, mounting pressure to obtain better scores at national examinations or at university matriculation examinations push families of prospective students to choose higher-quality basic education schools and to invest heavily in acquiring additional private tutoring (Dang, 2007; Buckner, 2013), which then creates gaps in academic skills and in the probability of access to higher education between different income groups (Tanaka, 2011). In Vietnam, like in many other countries, the higher education system requires students to perform well in the national examination in order to qualify for the application to higher education institutions. Academic requirements for university enrollment are generally higher than those for college enrollment in Vietnam. Therefore, the students' academic performance is expected to exert a strong influence over students' decision about higher education enrollment and the selection of institutions. Education production function studies in Vietnam have found strong correlations between students' academic performance and parents' levels of education and family income per capita (World Bank, 2004; Glewwe, Chen, & Katare, 2012).

Regional characteristics such as proximity to higher education institutions are often identified to be significant determinants of higher education enrollment. Arai (1989), Nguyen and Taylor (2003), and Finnie, Laporte, & Lascelles (2004) also showed that the degree of regional influence differs from one region to another and between genders.

Other scholars have also qualitatively investigated how the differences in perceived risks and risk aversive-ness between different groups impact the cost-benefit perception and the selection of higher education institutions and courses. Private benefits that are taken into consideration have to be discounted against associated risks and adjusted by risk aversive attitudes, which may well be influenced significantly by students' background factors. Students from ethnically minority groups may predict higher likelihoods of not being able to find formal employment or of finding only low-paid employment after graduation, compared to students from the dominant ethnic group. Some scholars argue that poor rural students and their parents tend to choose financially more affordable but less prestigious institutions out of financial considerations, or sometimes choose not to enroll perceiving higher education as very risky investments (Chankseliani, 2013; Thomsen, Munk, Eiberg-Madsen, & Hansen, 2013).

Furthermore, the decision about enrolling in higher education institutions involves more than the choice of whether or not to be enrolled. Psacharopoulos and Soumelis (1979) introduced three stages of decision-making for higher education enrollment. The first stage is called a *vertical decision* which refers to whether he/she plans to pursue higher education. The second stage is named a *horizontal decision* which is whether to pursue university or non-university education, and finally the third stage,

*the second order horizontal decision*, which is decisions on whether to seek entry to one of prestigious faculties such as medicine, engineering, or natural science. In the case of Vietnam, one has to select a university or a college to enroll in, which can be classified as a horizontal decision. This selection of institution is also considered to be affected by the set of demand-side and supply-side factors. The study is interested in examining the factors associated with this horizontal decision to see any differences in the determinants of access between university enrollment and college enrollment.

Jackson (1978) categorized students in three groups in relation to their attitudes toward progressing to higher education. Type 1 students are those who never seriously thought about NOT going to higher education institutions as they grew up in families that view attaining higher education as a natural course of action for their children. Type 2 students are on the border, and may apply to a higher education institution or two if the expected benefits outweigh associated costs and risks. Type 3 students are those who do not seriously consider going to college or university. In Vietnam the attitude of students towards higher education enrollment can differ depending on their family background. For instance, students with both parents having a higher education degree may feel it natural for them to go to college or university. Alternatively, if they have parents with a lower or upper secondary certificate, they are probably more likely to be on the border.

### 3.5. Determinants of Access to Higher Education in Vietnam

In the case of Vietnam, in addition to the aforementioned factors,

household income, parental education, and regional characteristics such as ethnicity are known to play an important part in deciding the likelihood of higher education enrollment. As briefly discussed in Section 2.5, Vietnam has 54 officially recognized ethnic groups; and among them, Kinh is considered to be major ethnic group which constitutes approximately 86% of the total population (Dang, 2010). Vu et al. (2012) found ethnic minorities are significantly less likely to attend college and university after controlled for other family background factors. Ethnic minorities are often significantly more prone to low income, insufficient access to physical infrastructure, and lack of access to credit for their investments (Baulch, Chuyen, Haughton, & Haughton, 2007). However, ethnic minorities are also diverse groups with considerable heterogeneity (Joint Donor Report, 2007) and cannot always be treated as a single group. Based on interviews at four major universities, Ito (2011) pointed out that there are ethnic minority groups that are historically more assimilated to the majority Kinh than other minorities, and those relatively assimilated groups such as Tay, Muong, or Nung have relative advantages over other 'remote' groups such as Mong or Khmer in gaining access to higher education. Ethnic minority university students are dominated by those 'assimilated' ethnic minority groups (Ito, 2011). Her study, however, does not capture the extent to which the gaps in access between the assimilated and remote ethnic minorities are attributable to ethnicity per se after adjusting for differences in other important family background factors.

Gender plays different roles for different societies in determining access to education. For Vietnamese society, Vu et al. (2012) found that, with other factors being equal, being females is associated with higher probability of enrolling in higher education. Traditionally, females have

been viewed as productive workforce of the society in Vietnam. Labor participation rates of women in the country, 73% in 2011[8], are higher than most of the East Asian countries. Because of this extensive female labor participation, it makes sense that female students have as strong an incentive to have higher education qualifications and estimate as high a rate of return on higher education investment as their male counterparts. Females are also known to have higher academic achievement in basic education by the measure of standard test scores in Vietnam (World Bank, 2004). Higher academic aptitude among female students may result in a stronger desire for higher education attainment. The influence of gender in terms of selection of types of higher education institutions or courses has not been well studied.

In terms of the effect of academic ability of students, Goyette (2012) has found using the household survey data that students who have ever repeated a grade are less likely to attend public higher education institutions. This finding is somewhat constrained as the experience of ever having to repeat classes is a remote proxy of one's academic ability as most students do not repeat a class throughout his or her academic life in basic education. This lack of academic performance information is one of the limitations of educational data in the Vietnamese household survey data. However, judging from the fact that university entrance, for public universities in particular, is highly competitive in Vietnam, it is reasonable to assume that student academic performances are positively correlated with the probability of university enrollment. On the other hand, effects of academic performance on college enrollment may not be so clear.

With regard to regional variation, Vu et al. (2010) showed that

[8] According to the World Bank. *Gender Statistics*. Retrieve September, 2013

between the eight regions in Vietnam, young people in the North East region are less likely to enroll in higher education than those in the Red River Delta region while young people in the South Central Coast regions are more likely to do so. This is probably in part because the distribution of higher education institutions, especially universities, has traditionally been geographically uneven, favoring provinces with larger cities (MOET, 2009b). Urban residence was found to be only marginally significant, and residence in the two major cities, Hanoi and HCMC, did not show strong impacts once household income and parental education factors were controlled for (Vu et al., 2010; Goyette, 2012).

As mentioned in Section 1.5, one of the limitations of these studies on the determinants of higher education enrollment in Vietnam is that they do not distinguish between college enrollment and university enrollment.

### 3.6. Financial Constraints and Higher Education Enrollment

In many parts of the world, credit markets for higher education are likely to be imperfect, causing financial constraints for many less affluent families and making their investment in education less optimal (Becker, 1994). Financial constraints in question here are of short-term, and often referred to as liquidity constraints or borrowing constraints. These terms are not strictly differentiated in the literatures and often used interchangeably. This study will also refer them interchangeably as financial constraints or borrowing constraints.

The argument above is intuitively convincing, and it is in line with the general public's and probably policy makers' perceptions that poor students often have to give up higher education because of his or her

inability to pay or borrow money for education costs. However, empirical evidences available so far are still inconclusive. The previous studies on the influence of financial constraints on higher education enrollment showed mixed results and have been divided over whether families' financial constraint is significantly affecting higher education enrollment or not (Cameron & Heckman, 2001; Keane & Wolpin, 2001; Cameron & Taber, 2004; Kane, 2006; Belley & Lochner, 2007; Stinebrickner & Stinebrickner, 2007; Attanasio & Kaufmann, 2009; Lochner & Monge-Naranjo, 2010; Mayer, 2010; Gurgand, Lorenceau, & Mélonio, 2011).

Questions about the existence of financial constraints and how they affect students' decisions about higher education enrollment are of great importance especially because a variety of public interventions such as needs-based scholarships and subsidized student loans are being implemented with an underlying assumption of financial constraints. One of the reasons why the debates have been inconclusive is that financial constraints are intrinsically not directly measurable (Kane, 2006). Although family income levels certainly serve as a good proxy of how much financial constraints one has to face, simply interpreting the effects of family income on enrollment probabilities as a measurement of financial constraints is not feasible. As it is well known, family income strongly affects children's academic development in the long term, which also strongly affects the probability of successful acceptance at higher education institutions. Financial constraints, on the other hand, are of short-term nature and primarily about inability to pay for entrance fees, tuition costs, and other associated direct costs. For this reason, scholars have to rely on various sorts of indirect measurement methods to estimate the influence of financial constraints.

Literatures about financial constraints on higher education attendance have been mostly concentrated in developed countries, notably in the United States. Cameron & Heckman (2001) and Carneiro & Heckman (2002) argued that the importance of short-term financial constraints is greatly exaggerated. They found that after controlling for academic performance which represents families' long-term financial conditions, the effect of family income, which represents families' short-term financial conditions, on college enrollment essentially vanish. Cameron & Taber (2004) concur with that finding. They tested the implication of borrowing constraints using four methodologies, and none of them produced an evidence to indicate the presence of borrowing constraints as an important element of schooling decisions. Keane & Wolpin (2001) argue, while finding no significant effect of borrowing constraints, that borrowing constraints have their primary effects on other schooling choices made by students such as hours of working for part-time jobs or levels of consumption while in college. Relaxing borrowing constraints, they argue, would result in reduced hours of working and higher consumption levels of students, which would arguably improve the quality of student life as well as academic experience of students.

All of the aforementioned literatures used somewhat old datasets from the National Longitudinal Surveys of Youth 1979 (NLSY 1979)[9] which targeted men and women born in the years1957-64 and attended colleges mostly in the 1980s. However, using NLSY 1997 which targeted men and women who were born in the years 1980-1084 and attended

[9] The information about NLSY was obtained from the website of the National Longitudinal Surveys at http://www.nlsinfo.org on Oct 4, 2013. The National Longitudinal Surveys are nationally representative surveys commissioned by the U.S. Bureau of Labor Statistics. The surveys follow the same sample of individuals from specific age cohorts over time.

colleges in the late 1990s and early 2000s, Belley & Lochner (2007) found a dramatic increase in the effects of family income on college attendance between NLSY 79 and NLSY 97 and sizeable family income effect for all but the highest income quartile group. They argued that borrowing constraints became more stringent over the few decades between the 1980s and 2000s possibly due to changes in college education costs (e.g., rising tuition costs) and policy environment (e.g., decline in government grant offering and government student loans).

In sum, these studies in the United States are inconclusive yet; and Kane (2006) argued, reviewing the relevant literatures, that it is difficult to find a definitive test for the existence of financial constraints and likened the debate over financial constraints to the long-standing debate over whether payoffs to education is for the additional skills acquired through education or for the signals provided by education qualifications. It should also be kept in mind that these studies are done in a country where supposedly financial market for educational investment is well developed unlike the majority of developing countries. Conclusions drawn in these studies, therefore, may well be quite different from what would be the case in developing countries where access to credit markets is more restrictive.

There are only a few studies on this topic in the context of developing countries. The work of Attanasio & Kaufmann (2009) is one such study and is unique for the fact that they utilized students' subjective assessment of returns on educational investment, deriving from the evaluation data for Oportunidades CCT project in Latin America, to estimate the levels of financial constraints. Their work likely has unique relevance to the study as they analyze the case of a developing country

where credit market is less well-developed than in developed countries. They assumed that the subjective expected returns on investment should be correlated with likelihood of college attendance for all income groups if there is no financial constraint on enrollment decisions. They found that the coefficient on expected returns is much larger and significant only for individuals whose parents have income index above the median, and also the coefficient on academic ability is larger for individuals from relatively richer families. Both of these findings are indicative of the presence and negative influence of financial constraints on enrollment decisions.

Another case of developing countries was presented in Gurgand, Lorenceau, & Melonio (2011). They examined borrowing constraints on families' decision for higher education enrollment and impact of the government sponsored student loans scheme, Eduloan, to alleviate such constraints. They concluded that in the context of South Africa it is plausible that borrowing constraints are stronger for less wealthy families for whom less financial alternatives exist because the estimated impact of the student loan is considerably larger for the lower income quartile groups.

Financial constraints may have negative impact even at lower education levels in developing countries. Jacoby (1994) investigated the effect of borrowing constraints on the incidence of grade repetition in the primary education system in Peru. In Peru, students are required to attend a given series of lessons to move up to the next grade rather than pass exams; that means grade repetition is directly linked to school attendance, and students who are put to work while in school are more likely to repeat grades. He constructed a utility maximization model that shows households which are constrained in their ability to borrow have to tie the

timing of human capital investment with parental income, while for those who can borrow against the future earnings of their children the timing of human capital investment is independent of the demographic characteristics of the household. He found that children from households with higher income and with more valuable holdings are significantly less likely to have repeated grades, and that the magnitude of the effects are larger among constrained households. These finding are in support of the case for borrowing constraints. Although this study focuses on repetitions in primary schools, it is instrumental in demonstrating the prevalence of borrowing constraints among low-income population in the developing country context.

Studies on borrowing constraints in developing countries are still very limited. Based on the three studies above, it may be plausible that financial constraints play a significant role in developing countries in shaping families' decision for whether to attend higher education institutions because credit alternatives are scarce or non-existent for less affluent families in those countries. This would justify introducing public financial support policies for low-income students such as tuition waiver and subsidized student loans that aim to alleviate financial constraints.

## 3.7. Studies on Financial Assistances in Higher Education in the United States

Empirical studies which have led the debates over the effects of financial assistances in higher education are concentrated in the United States. This sub-chapter reviews some of those empirical studies in the United States.

In the United States, the federal government introduced the Basic

Educational Opportunity Grant program in 1972 to provide direct grants to students based on their financial needs. The program was later expanded to provide three types of financial aid; namely, (1) work-study, which offers subsidy to employers who hire students, (2) grants, and (3) student loans with different repayment obligations. There were two main objectives in the financial aid program. The first is to increase equality of opportunity by providing greater access to higher education, wider choices among educational options, and greater chances of persistence in school; and the second is to ease the burden of college costs for low/middle income families (Hansen, 1983). However, since the 1990s the focus of the program has gradually shifted from grant aid to loans and from need-based aid to merit-based scholarship (Chen & Zerquera, 2011). More recently, individual colleges offer merit-based financial aid to attract more prospective students.

A number of studies have been done to examine the effects of student financial aid on enrollment decisions and persistence in school. These studies vary considerably in terms of types of financial aid of interest, methodologies of analysis, and data used. One of the earliest studies, Schwartz (1985, 1986) examined the effects of four types of financial aid – public grant, private grant, public loans, and private loans – on students' college enrollment decision. In terms of analytical methods, he applied a Tobit regression model to estimate the expected values of financial aids for each student based on their background and plugged the fitted values in a logistic regression model for the estimation of enrollment outcome. He found significant positive effect only for the public grant and did not find other types of financial aid to be significantly affecting the likelihood of enrollment. His explanations for the lack of significant

effects of other three types of financial aid are that because the private grants were awarded on merit-based, hence they most likely went to students with academic excellence who would enroll even without financial aid, and also that there are only weak instruments available for the public and private loans, which led to small variation in the estimated loan values.

Around the turn of 1980s, St. John & Noell (1989) and St. John (1990) analyzed the effects of three types of financial aids – grants, loans, and work program – on enrollment decisions of college applicants using longitudinal High School and Beyond Sophomore survey data. They found all three types of aid to have significantly positive effects on enrollment decisions of college applicants. It should be noted, however, that their analysis included only those who applied to at least one college, and hence the result does not reflect decision of those who did not even apply in the first place. More importantly, they found some heterogeneity in the effects of financial aid depending on the characteristics of the applicants. It was found that the financial aids have stronger impacts on minority students (i.e., blacks and Hispanics) than on white students, and also that low-income students were more responsive to changes in grant amounts than to changes in loan amount whereas high-income students were not responsive to changes in aid amounts.

Other more recent studies in the 2000s used institutional data from individual colleges and employed more advanced analytical methods. How to deal with endogeneity problem of financial aid has become one of the major concerns. Van der Klaauw (2002) analyzed the effect of financial aid offer on enrollment at one college, and considered an endogeneity problem in which the size of financial aid offer may be correlated with

unobservable factor(s) which also affect enrollment decision. He exploited idiosyncratic features of the awarding process of financial aid in this college and was able to apply the method of Regression Discontinuity Design to address the endogeneity problem as this college's aid allocation rules contained discontinuities. His findings confirmed the importance of financial aid as a tool to attract more students to the institutions.

Martin, Campbell & Rizzo (2007) used institutional data of applications and actual enrollment from two private colleges to examine the effect of financial aid on enrollment with an aim to improve financial aid allocation patterns to attract more students. They used a two-stage simultaneous equation model with one dichotomous and one continuous dependent variable as proposed by Amemiya (1978). They intended to solve the endogeneity problems associated with financial aid allocation because the financial aid offers may well be affected by the perceived likelihood of enrollment of applicants as colleges are more likely to provide greater aid for applicants whose prospects of enrollment are less certain. They found a strong positive effect of student loan on enrollment. They also found that at both colleges, applicants who are more likely to enroll in college receive higher amounts of aid, and this suggests that those colleges offer higher financial aid than is necessary; or in other words, their financial aid has not been allocated most efficiently.

## 3.8. Effect of Financial Aid in Higher Education in Developing Countries

Compared with the relative richness of empirical researches in the context of the United States, those which examined cases of developing countries

are considerably fewer. One of the few studies on the effects of financial aid on higher education enrollment in developing countries is the work done by Canton & Blom (2004). They examined the effects of a student loan program in Mexico called SOFES by using a national household survey data. The fact that they targeted a program in a developing country and used a nationally representative household survey data, their work is probably most akin to the purpose and approach of this study. They found a strong positive effect of student loans on the likelihood of university enrollment by an average increase of 24% points. However, in terms of the methods used, they just applied a single stage probit model with a dummy variable for the receipt of SOFES without taking in account the reverse causation and possible endogeneity problem. Furthermore, as they themselves acknowledge, SOFES loan is awarded partly merit-based (i.e., priority is given to students with higher academic skills among the eligible students) and prefers students with collateral. These characteristics are very likely to lead to overestimation of the effects of the student loan programs unless they are properly adjusted by statistical methods.

Another study in developing countries is an empirical study done by Gurgand, Lorenceau, & Melonio (2011), in which they examined the impact of government sponsored student loan program in South Africa called “Eduloan”. In South Africa, two publicly supported student loans schemes are available for prospective students in higher education. One is a program called NSFAS which is designed to provide concessional credits to poor households on the basis of a means test. Repayment of NSFAS starts only when beneficiaries are employed, and the amount of repayment is contingent upon beneficiaries’ income. NSFAS, therefore, is the main opportunity for poor students to finance their higher education. The other

program is Eduloan, which basically targets those who are not poor enough to be eligible for NSFAS but not wealthy enough to tap into commercial credit markets. Eduloan is unique in that it only targets those who already have some form of income. By analyzing customer data from Eduloan and the Ministry of Education and applying the fuzzy Regression Discontinuity Design method, they found significant positive effects of Eduloan on the likelihood of enrolling in higher education institutions. They also argue that loan impact differs across income quartiles. They found that the loan impact is about twice as large for the lowest quartile compared to the highest quartile, and is 70% larger for the lower income group if compared across the median (Gurgand et al., 2011).

The case of Eduloan exemplifies the prevalence of financial constraints in developing countries as the study demonstrates that even those who are earning income are often financially constrained if they wish to finance their higher education. One limitation of their study is that the criteria and procedures used by the loan agency to calculate the eligibility scores, which the scholars used to produce a discontinuity, are not publicly disclosed; hence there is no guarantee that the loan eligibility itself does not entail a selection bias due to unidentified eligibility factors being correlated with the probability of enrollment.

# Chapter 4.

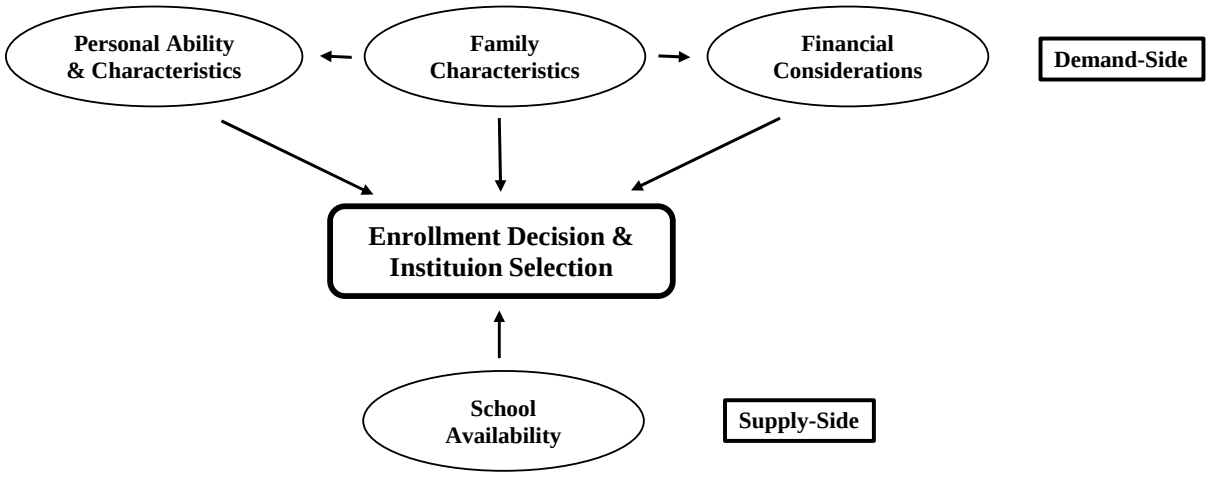
# METHOD

## 4.1. Analytical Framework

### 4.1.1. Concept Map for Determinants of Higher Education Enrollment

After completing upper secondary education, students face a series of decisions to make relating to higher education; first, they have to decide whether to attempt to enroll or not, and then to choose the type of institution to apply for. The study produces a conceptual map in Figure 4-1 to portray how demand-side and supply-side factors may affect higher education enrollment decisions of upper secondary graduates, addressing primarily the Research Question 1-1 and 1-3.

**Figure 4-1 Conceptual Map for Factors that Affect Higher Education Enrollment Decisions**




Source: Created by the author based on Arai (1989), Jimenez and Salas-Velasco (2000), Ogawa and Iimura (2010), Vu et al. (2012), and others.

The study categorizes the possible demand-side factors in three

factor groups. Personal ability and characteristics factor group would include individual-level factors such as academic aptitude, personal aspiration, gender, and ethnicity. Family characteristics factors indicate socio-economic status of students, including variables such as family income levels and parental education qualifications, which are also known to affect individual academic aptitude, personal aspiration, and short-term financial abilities. Financial consideration factor group would include factors related to financial constraints such as short-term financial abilities and availability of financial assistances, and expected returns on investment.

On the supply side, there is a factor of availability of higher education institutions. In the case of Vietnam, regions of residence and urban/rural residence are strongly correlated with the proximity to the nearest higher education institutions. Universities are still concentrated in the major cities in some provinces, while colleges are more widespread, though mostly located in urban centers.

### 4.1.2. Theoretical Model

Drawing on the analytical models presented in the work of Fuller, Manski, & Wise (1982), Belley & Lochner (2007), and Lochner & Monge-Naranjo (2010), the study defines theoretical analytical models to show the influence of financial constraints and the effects of financial assistances by applying an investment decision model based on a two-period utility maximization model. The analytical models address primarily the Research Question 1-2 on the influence of financial constraints and Research Question 2-3 on the effect of the government's financial

assistances.

**a) Analytical Model for Education Investment Decision**

Let's suppose that after graduating from upper secondary schools, individuals have to choose an optimal level of higher education that maximize his or her expected life-time utility *U*.

The life-time utility *U* consists of utilities of current period and future period. Individuals value consumption in each period, $C_1 \geq 0$ and $C_2 \geq 0$, according to a utility function $u(C)$ with a discount rate $\gamma$ for the future consumption:

$$U = u(C_1) + \gamma u(C_2)$$

The consumptions in the first and second period are defined as below:

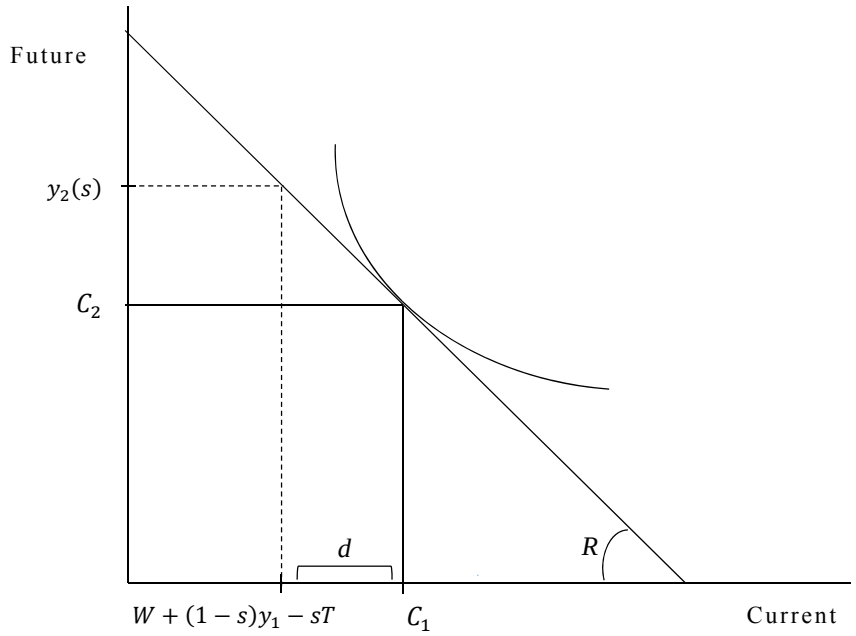
$$C_1 = W + (1 - s)y_1 - sT + d$$

$$C_2 = y_2(s) - Rd$$

Let $W \geq 0$ be family wealth given to individuals by his or her family, and $y_1 \geq 0$ reflect earnings in the first period. The actual amount of earnings that one can make in the first period depends on the amount of his or her schooling. Let *s* be the length of schooling in higher education that takes a value between 0 and 1, with 0 representing no schooling in higher education and 1 representing the length of schooling to complete university education. College education takes shorter years; therefore, it takes a value higher than 0 but lower than 1. Thus, individuals who have no higher education would have full first-period earnings of $(1 - 0)y_1 \geq 0$ while those who complete university education would have no first-period earnings, $(1 - 1)y_1 = 0$. Others who have shorter years of higher education

would have some level of first-period earnings depending on $s$, $(1-s)y_1 \geq 0$. Let $T \geq 0$ be direct cost of higher education that include tuition and other fees. If one chooses to invest in higher education (i.e., $s > 0$), he or she must pay direct cost $T$ according to the amount of his or her schooling in higher education, $sT$ . Let $d$ be the amount of borrowing that individuals make. $d$ can also take a negative value if $C_1 < W + (1-s)y_1 - sT$, representing the amount of saving in the first period. $R$ represents the interest rate that is charged or earned on the borrowing or saving $d$. Interest charges for borrowing and saving are assumed to be equal. Let $y_2(s)$ reflect earnings in the second period for someone with higher education $s$. Earnings in the second period are assumed to be increasing in the amount of higher education, $y_2'(s) \geq 0$, with diminishing returns, $y_2''(s) \leq 0$ . Let's also assume equal weights for discount rate and interest rate, $\gamma R = 1$, meaning smooth consumption across periods. The figure Figure 4-2 below graphically illustrates the set-up of this two-period consumption model for schooling investment decision.

**Figure 4-2 Two-Period Consumption Model for Schooling Investment Decision**




Source: Created by Author

Intuitively it can be said that individuals would choose to invest in higher education if the discounted marginal return in the second period exceeds the cost of education investment in the first period which include opportunity and direct cost of schooling:

$$\gamma(y_2(s) - y_2(0)) \geq s(y_1 + T)$$

More formally, under the above model setting, individuals choose the certain amount of schooling in higher education that maximizes his or her life-time utility under the budget constraint, which can be written as follows:

$$\max_{C_1, C_2, s} U = u(C_1) + \gamma u(C_2)$$

subject to $C_1 + C_2/R = W + (1-s)y_1 - sT + d + [y_2(s) - Rd]/R$

The Lagrangian from the above maximization and constraint conditions would be as follows:

$$L = u(C_1) + \gamma u(C_2) + \lambda(W + (1-s)y_1 - sT + y_2(s)/R - C_1 - C_2/R)$$

Then, the first order condition would be:

$$L_{C_1} = u'(C_1) - \lambda = 0$$
$$L_{C_2} = \gamma u'(C_2) - \lambda/R = 0$$
$$L_s = -\lambda y_1 - \lambda T + \lambda y_2'(s)/R = 0$$
$$= \lambda y_2'(s)/R = \lambda(y_1 + T)$$

The analytical solution for the optimal amount of schooling would be $y_2'(s) = R(y_1 + T)$. Assuming diminishing marginal returns to schooling, $y_2''(s) \leq 0$, the optimal amount of schooling in higher education $s^*$ can be identified at the point where marginal return of second-period earnings to schooling, $y_2'(s)$, equals an unit cost and interest charge of the opportunity cost and direct cost for the schooling, $R(y_1 + T)$; which is essentially equivalent to the explanation given as an intuitive model above. As this model suggests, under the assumption of unconstrained borrowing, the optimal level of higher education schooling is decided independent of family wealth, depending only on expected returns to the higher education investment.

**b) Analytical Model with Financial Constraints**

Now, the factor of borrowing constraints is introduced in the equation. Drawing on Sawada (2005), borrowing constraint is represented in the

following equation: $C_1 > W + (1-s)y_1 - sT$, meaning that they are in need of borrowing but face extreme borrowing constraints where there is no lender. Obviously, saving is irrelevant in this case. In such cases, the consumption in the first period can be expressed as

$$C_1 = W + (1-s)y_1 - sT$$

Now, in order to simulate the effect of borrowing constraints, let's assume that there is an individual who achieve an optimal level of higher education schooling $s^*$ within the above equation. Let's also suppose that the level of family initial wealth goes down drastically to zero perhaps because of some economic shocks to the family. Without the borrowing ability $d$, obviously the amount of schooling has to be reduced to $\bar{s} \leq s^*$ in order to satisfy the above equation as $C_1$ is by definition non-negative. In this case, the consumption in the second period automatically becomes as follows: $\bar{C}_2 = y_2(\bar{s})$, which is equal to or lower than the consumption with the optimal schooling level: $\bar{C}_2 \leq C_2^* = y_2(s^*)$. The constrained second-period consumption is equal to the optimal second-period consumption, $\bar{C}_2 = C_2^*$, only when the optimal amount of schooling is equal to zero to begin with, $s^* = 0$. Consequently, under this circumstance of complete borrowing constraint the life-time utility of constrained individuals can only become equal to or lower than the optimal life-time utility without borrowing constraints, $\bar{U} \leq U^*$; and they are equal only when the optimal amount of schooling is equal to zero.

There can be more moderate cases of borrowing constraints. Let $\bar{d}$ be the upper ceiling of borrowing that individuals can make. Then, the condition of borrowing constraint can be expressed as $C_1 > W + (1-s)y_1 - sT + \bar{d}$. The consumption in the first period is represented as

$$C_1 = W + (1 - s)y_1 - sT + \bar{d}$$

The upper ceiling does not cause any constraint as long as it satisfies the following equation:

$$C_1 - W - (1 - s)y_1 + sT \leq \bar{d}$$

As long as the above equation is satisfied with the optimal amount of schooling, the consumptions at both periods are same as they are in the model with no borrowing constraints.

Now again, suppose an individual suffers a drastic reduction of family initial wealth to near zero, then he or she would have to reduce the amount of schooling in order to satisfy the above constraining equation. However, in this case instead of pushing down $s$ to zero as in the case of complete borrowing constraints, he or she just has to reduce $s$ only to the point where the upper ceiling $\bar{d}$ is no longer constraining: $C_1 - W - (1 - \bar{s})y_1 + \bar{s}T = \bar{d}$, and take out the loan at the ceiling amount. Therefore, the amount of schooling that can be chosen in this case of moderate borrowing constraints is equal to or greater than the amount of schooling that can be chosen in the case of complete borrowing constraints.

The life-time utility with the optimal amount of schooling without borrowing constraints is always greater than or equal to the life-time utility of the same individual that can be realized with constrained schooling under borrowing constraints: $U^* \geq \bar{U}$. Under the current model, the constrained amount of schooling for one individual is always equal to or smaller than the optimal amount of schooling for the same individual, $\bar{s} \leq s^*$. The difference in the consumption in the first period between the cases of the constrained schooling and the optimal schooling can be

defined as $C_1^* - \bar{C}_1 = (\bar{s} - s^*)(y_1 + T) + (d - \bar{d})$, while that in the second period would be $C_2^* - \bar{C}_2 = (s^* - \bar{s})y_2 - R(d - \bar{d})$. The difference in the life-time utilities, $U^* - \bar{U}$, can then be expressed as a sum of these differences in the consumptions with discounts for the second-period consumption as follows: $\gamma(s^* - \bar{s})y_2 - (s^* - \bar{s})(y_1 + T)$. Given the definition of the optimal level of higher education schooling, marginal gain from higher education schooling until the optimal schooling is reached is greater than its marginal costs; which means $\gamma(s^* - \bar{s})y_2 - (s^* - \bar{s})(y_1 + T) \geq 0$. Therefore, the life-time utility with the optimal amount of schooling without borrowing constraints is always greater than or equal to the life-time utility of the same individual that can be realized with constrained schooling under borrowing constraints: $U^* \geq \bar{U}$. They are equal only when $s^* = \bar{s}$ or $s^* = 0$ .

Additionally, it is also clear in the equations for financial constraints that individuals with greater family initial wealth $W$ and/or a smaller optimal amount of schooling $s$ are less likely to be constrained for borrowing, while those with smaller family initial wealth and larger optimal amount of schooling are more likely to be constrained for borrowing.

### c) Analytical Model with Financial Assistances

Now, expanding on the analytical model with financial constraints, the mechanisms through which the three financial assistance policies in question influence decisions regarding the amount of schooling in higher education.

Let $G \geq 0$ be the amount of grant scholarship that individuals receive from the government, $E \geq 0$ be the exempted tuition and

contribution fees, and $L \geq 0$ be the ceiling amount of student loans. The exempted tuition and contribution fees cannot be larger than the total direct cost: $T \geq E \geq 0$. In relation to the equation of the first period consumption, each of the three financial assistances affects a different segment of the equation depending on their characteristics. Grant scholarship $G$ does not require repayment; in that sense it is essentially not different from family initial wealth provided to individuals, $W$. Tuition exemption $E$ directly reduces the direct cost $T$ as tuition and contribution fees are part of the direct cost. Providing access to student loans is equivalent to increasing the upper ceiling of borrowing $\bar{d}$ to the extent of the upper ceiling of student loans $L$. Effects of the three financial assistances can be expressed in the following equation deriving from the equation of the first-period consumption with financial assistances:

$$\bar{C}_1^a = (W + G) + (1 - \bar{s})y_1 - \bar{s}(T - E) + (\bar{d} + L)$$

To examine the effects of the financial assistances on the amount of schooling, let's first assume the situations where borrowing is indeed constraining and the choice of the amount of schooling remains constrained: $\bar{s} < s^*$. Moreover, because increasing the amount of schooling towards the optimal level would increase the life-time utility, individuals would only use the additional resources from the financial assistances to increase the amount of schooling and education investment, meaning that the size of the first-period consumption does not change, $\bar{C}_1^a = \bar{C}_1$.

Grant scholarship adds to family initial wealth: $\bar{C}_1^a = (W + G) + (1 - \bar{s})y_1 - \bar{s}T + \bar{d}$. In this case individuals can choose to increase the constrained amount of schooling $\bar{s}$ toward the optimal amount $s^*$, which

leads to some decrease in earnings in the first period $(1-\bar{s})y_1$ and increase in direct cost spending $\bar{s}T$; the total effect of which should be equal to the size of $G$. Let's denote new schooling level as $\bar{s}^+$. Then the effect can be expressed as

$$G = (\bar{s}^+ - \bar{s})y_1 + (\bar{s}^+ - \bar{s})T$$

Tuition exemption reduces the unit cost of direct cost: $\bar{C}_1^a = W + (1-\bar{s})y_1 - \bar{s}(T-E) + \bar{d}$. In this case individuals can increase the amount of schooling to the point where the effect of reduced unit cost is equal to the effects of decreased first-period earnings and increased amount of direct cost due to increased schooling:

$$\bar{s}^+E = (\bar{s}^+ - \bar{s})y_1 + (\bar{s}^+ - \bar{s})T$$

Student loan increases the upper ceiling of borrowing: $\bar{C}_1^a = W + (1-\bar{s})y_1 - \bar{s}T + (\bar{d} + L)$. By taking out this additional loan, individuals can increase the amount of schooling to the point where the additional borrowing amount is equal to the decreased first-period earnings and increased amount of direct cost:

$$L = (\bar{s}^+ - \bar{s})y_1 + (\bar{s}^+ - \bar{s})T$$

As is clear from the equations above for the effects of the financial assistances, in principle the mechanism of affecting the choice of the amount of schooling is same for all the three financial assistances as long as the amount of schooling remains constrained financially.

In case individuals are not constrained for borrowing when choosing the amount of schooling in higher education, the optimal level of schooling is decided by the equation $y_2'(s) = R(y_1 + T)$, which is

independent from family initial wealth and borrowing. In this case, only tuition exemption may have its effect on the choice of the amount of schooling. Tuition exemption pushes down the unit cost of direct cost and the marginal cost of schooling: $R(y_1 + T) \geq R(y_1 + T - E)$, which allows individuals to increase the optimal amount of schooling in higher education. This phenomenon is intuitively easy to understand. When higher education is offered free-of-charge for users, the demand for higher education would grow substantially larger, and the incentive to study long years would become stronger.

Other two financial assistances are not expected to have any effect on the choice of the amount of schooling in higher education in the absence of borrowing constraint. The effect of grant scholarship would be primarily on the first-term consumption and on the amount of borrowing or saving $d$. Individuals with scholarship would simply spend more for non-education consumption, or borrow less or save more to increase the consumption in the second period. Student loan should have no effect neither on the amount of schooling nor on consumption level in the absence of borrowing constraint. If the interest rate on borrowing for student loan is lower than that for other borrowing opportunities, then individuals may replace borrowing from other financing institutions with borrowing from student loan, which would increase the consumption in the second period by the amount of the saved interest charges.

## 4.2. Hypothesis

The study sets out the following hypothesis corresponding to each of the six sub-research questions. For the research question 1 and its three sub-

research questions, the following three hypotheses are given.

Hypothesis 1-1: Access to higher education in Vietnam is influenced by ethnicity, parental education, family income, and regional differences.

Hypothesis 1-2: Financial constraint of education costs on family income is hindering access to higher education among lower income groups.

Hypothesis 1-3: Access to college is less influenced by family background, regional differences, and financial constraint compared to that to university.

Hypothesis 1-1 through 1-3 are mostly concerned with research interests about factors that influence young people's and their families' decisions for enrolling in colleges and universities.

As mentioned in the hypothesis 1-1, the study expects to find individual, family background, and geographical factors including ethnicity, parental education, family income, rural residency, and regions to continue to be significant in determining the likelihood of higher education enrollment. Relevant studies in Vietnam such as Vu et al. (2010) and Vu et al. (2012) have found these factors to be significantly affecting youths' chances of attending higher education institutions.

A particular interest of the study in relation to the effectiveness of financial assistances is the existence and extent of financial constraints (Hypothesis 1-2). As demonstrated in other empirical studies on financial constraints, it has never been a straightforward task to establish quantitatively the existence of financial constraints for poor people despite the prevalence of anecdotal qualitative evidences. The study

expects to see some evidence which suggests the existence of financial constraints especially for families in lower income groups as the World Bank (2008) raises a strong concern about the disparity in higher education enrollment rates across income groups in Vietnam.

Hypothesis 1-3 is about expectations related to how determining factors differently affect the option of attending colleges and universities. Both direct costs and opportunity costs are usually higher, sometimes substantially so, for university education compared to those for attending college. In addition, universities are often located physically farther away from students' residence (MOET, 2009b), and academic requirements for granting admission in universities are usually more demanding than those for colleges. Although previous studies did not examine college and university enrollment separately, extrapolating from the fact that colleges have become more widely available in provinces which did not have any college before (MOET, 2009b), the study expects considerable variations in the effects of determining factors between the alternatives of college and university enrollment. It is expected that the differences are found particularly in the coefficients for family background factors, parental education and family income, and regional factors. Parental education and family wealth have strong effects on students' academic readiness for higher education. Youth who live in rural areas and in regions where universities are fewer are less advantageous in selecting higher education institutions to enroll. The degree of financial constraints is also expected to be more severe for university enrollment reflecting higher tuition fees and the concentration of universities in the major cities.

For the research question 2 and its three sub-research questions, three hypotheses are proposed as listed below.

Hypothesis 2-1: Targeted financial assistances are reaching students from low income groups.

Hypothesis 2-2: Financial assistances affect the level of expenditure in education of beneficiary students. Student loans and grants increase the level of total educational spending, while tuition waivers increase the level of non-tuition educational spending, but may reduce the level of total educational spending.

Hypothesis 2-3: The receipts of targeted financial assistances improve the chance of enrolling in higher education especially among low-income groups who are more responsive to financial assistance.

Hypothesis 2-1 expects that financial assistances are actually reaching poor students who are the intended target beneficiary of the particular financial aids. Vu et al. (2010) reports that a survey commissioned by the MOET has found a substantial proportion (28.9%) of students in 103 institutions surveyed managed to receive student loans. There has been few studies that analyzed the distributions of the education aids in Vietnam. However, the policy documents for the government aids are explicit about the government's intention of targeting low-income groups. The study expects that implementing authorities duly follow the official criteria and procedures. Targeted assistance programs can suffer efficiency losses, sometimes amounting to a substantial proportion, through leakage problems or inclusion errors, which frequently occur when targeted programs fail to accurately exclude non-targeted population from their beneficiary groups. For instance, scholarships are sometimes granted to non-poor students with sufficient financial resources, for whom

scholarships do not have any impact. Only after being properly awarded to intended target groups can the targeted assistance programs have any intended influence. The study expect to find that the targeted assistance programs in Vietnam for higher education are reaching the intended target groups, and that it is the starting point for the evaluation of the effects of targeted financial assistance programs.

Hypothesis 2-2 predicts that the levels of educational expenditures of enrolled students are affected by the receipts of financial assistances. If financial assistances are to make impacts on the expected utilities of students from schooling, educational expenditures should somehow be affected by the receipt of financial assistances. An assumption is needed that students are financially constrained. In the absence of financial constraints, according to the analytical model, student loans are just to replace borrowed funds, grant scholarships are to increase the initial wealth and reduce the need for borrowed funds, and tuition waivers are to reduce total educational spending and increase non-tuition expenditure only marginally. Under the assumption of borrowing constraints, according to the analytical model, poor able students increase the level of total educational expenditure should student loans be made available to them. So do grant scholarships. Tuition waiver would increase non-tuition education expenditure, and may reduce the total education expenditure due to the reduced spending on tuition. However, financial assistances work to increase educational expenditure only to the extent of the gap between optimal consumption and constrained consumption, and do not necessarily increase educational spending at the same rate as the amount of additional financial assistance made available to them. In summary, the study expects the financial assistances would increase educational expenditure of the

beneficiary students if they are awarded to the poor financially constrained youth.

Hypothesis 2-3 predict that youth who benefit from the targeted financial assistances have, with all other factors being equal, higher chances of enrolling in higher education institutions compared to youth who do not benefit from such assistances. Given the assumption of poor students being constrained for borrowing, the analytical model predicts that (a) additional resources provided through grant scholarship will raise the consumption level to the optimal level in the first period, (b) tuition waiver will increase the utility level of the first period through increased consumption, and (c) student loans will raise the borrowing limit and hence, increase the consumption level to the optimal level. All of the three targeted financial assistance programs, therefore, are expected to raise the life-time utility of higher education alternatives and have positive impact on the likelihood of them actually enrolling in higher education institutions.

### 4.3. Regression Models

The study applies different regression models for each research question. To examine the determinants of the likelihood of higher education enrollment in order to answer the research question 1, a multinomial logistic regression model is applied. To examine the effects of the targeted financial assistance programs in order to answer the research question 2, the study needs to apply an instrumental variable (IV) approach. This section describes the regression models used in the study.

### 4.3.1. Multinomial Logistic Regression Model

Most of the previous literatures that examined access issues in the Vietnamese higher education applied a simple logistic regression which treats the outcome variable in a binary form, $i$ = {0,1} (Vu et al., 2010; Vu et al., 2012). Goyette (2012) distinguished between public and non-public institutions, but not between colleges and universities. This binomial outcome approach may be justifiable in the previous decade when access to higher education was still a privilege of the few. However, now that the growth in the past decade has brought the country to the era of mass higher education, a greater number of students from diversified background are enrolled in colleges and universities. This makes it necessary to distinguish between the enrollment in college and university in order to capture the differences between college and university enrollment in terms of the effects of the determining factors.

To account for these multiplicity of choices, the study relies on a multinomial logistic regression model. The study defines the multinomial logistic regression according to Borooah (2001)'s work. Let's assume that there is a choice set with $M$ alternatives ( $j$ = 1,...,$M$), and the utility that the $i$-th person ($i$ = 1, ..., $N$) receives from taking $j$-th alternative is denoted as $U_{ij}$ . Also suppose that the utility is a liner function of $R$ factors. Then, the utility function can be described as below:

$$U_{ij} = \sum_{r=1}^{R} \beta_{jr} X_{ir} + \varepsilon_{ij} = Z_{ij} + \varepsilon_{ij}$$

where $X_{ir}$ is $r$-th factor of the $i$-th individual ($r$ = 1, ..., $R$), and $\beta_{jr}$ represents the coefficient for $r$-th factor for $j$-th alternative. $\varepsilon_{ij}$ is an error

term to capture possible influences from other factors left out of the equation and/or any effects of inaccurate measurements.

Then it is assumed that an individual will choose the option = $m$ if and only if this option offers the highest level of utility among all the available choices.

$$\Pr(Y_i = m) = \Pr\left(U_{im} > U_{ij}\right) \text{ for all } j = 1, \dots, \mathrm{M},\ j \neq m$$

$$\Rightarrow \Pr(Z_{im} + \varepsilon_{im} > Z_{ij} + \varepsilon_{ij})$$

$$\Rightarrow \Pr(\varepsilon_{ij} - \varepsilon_{im} > Z_{im} - Z_{ij}) \qquad \text{for all } j = 1, \dots, M,\ j \neq m.$$

If we assume the error terms are independently and identically distributed with Weibull distribution $F_{(\varepsilon_{ij})} = \exp\left[\exp\left(-\varepsilon_{ij}\right)\right]$, then the probability of choosing alternative $m$ can be shown as below (McFadden, 1973):

$$\Pr(Y_i = m) = \frac{\exp(Z_{im})}{\sum_{j=1}^{M} \exp(Z_{ij})}$$

As the sum of the probabilities $\Pr(Y_i = j)$ is 1, if aggregated over all the choices: $\sum_{j=1}^{M} \Pr(Y_i = j) = 1$, there are only $M - 1$ of the probabilities that can be determined independently. This problem is solved by setting the coefficient of the first choice as 0 ( $\beta_{jr} = 0,\ r = 1, \dots, R$ ). Under this setting, $Z_{i1} = 0$, and so the equation above is changed to:

$$\Pr(Y_i = 1) = \frac{1}{1 + \sum_{j=2}^{M} \exp(Z_{ij})}$$

$$\Pr(Y_i = m) = \frac{\exp(Z_{im})}{1 + \sum_{j=2}^{M} \exp(Z_{ij})} \quad m = 2, \dots, M.$$

From the two equations above, the logarithm of the ratio of the probability

of choice $j = k$ to that of the choice $m$ can be defined as:

$$\log\left(\frac{\Pr(Y_i = m)}{\Pr(Y_i = k)}\right) = \sum_{r=1}^{R} (\beta_{mr} - \beta_{kr})\, X_{ir}$$

If $k = 1$, then the log of the ratio of the probability will look like below:

$$\log\left(\frac{\Pr(Y_i = m)}{\Pr(Y_i = 1)}\right) = \sum_{r=1}^{R} (\beta_{mr})\, X_{ir}$$

The natural method in multinomial logistic regressions is to express results in relative terms with the likelihood of a base outcome. The multinomial logistic regression also assumes Independence of Irrelevant Alternatives (IIA), which means adding or deleting one alternative outcome does not affect the results of other alternative outcomes. In the case of the study, IIA can be captured by hypothetically removing an alternative of either college or university from the equation. Under the IIA assumption, that should not affect the probability of choosing the alternative that did not get removed.

### 4.3.2. Instrumental Variable Approach

To examine the effects of the targeted financial assistance programs, the study needs to resolve two issues with regard to the endogeneity bias in the treatment status of the financial assistances.

The first issue is the problem of simultaneity. Impact evaluation studies often measure the treatment effects of the intervention of their interest by comparing conditional means between the treatment group and the control group via an experimental or quasi-experimental design. The

treatment status of policy interventions is normally expressed by a binary dummy variable where 1 indicates that a subject is in the treatment group and 0 means in the control group. When treatments are not assigned randomly as often is the case in social science, there are a range of statistical adjustment techniques to simulate an experimental design by statistically emulating the exogeneity of treatment, meaning everyone has an equal chance of being in the treatment group. These techniques include propensity score matching, difference-in-difference, or a hybrid of those techniques (Imbens, 2004; Ito, 2007; Blundell & Costa Dias, 2008;).

In the case of this study, however, the treatment status information has one fundamental shortfall that cannot be overcome by those techniques. The data shows whether individuals are actually receiving the financial assistances. In order to receive the financial assistances, the individual has to be enrolled first. What is ideally needed as the treatment status information is the data about whether individuals are eligible to such financial assistances regardless of their final enrollment decisions. The treatment status information for those who are not enrolled is not available even though some of them must have been eligible for financial assistances if they had chosen to enroll because the interest of the study is in knowing how the probability of enrollment is affected by the availability of financial assistances. In other words, the treatment status of the financial assistances is not fully observed when individuals are not actually enrolled in higher education institutions. Given such a limitation, it can be said that the probability of receiving the treatment is also affected by the enrollment outcome. In this sense, the treatment status information in the data suffers from endogeneity bias that can be described as simultaneity where the outcome affects the treatment status while the treatment status

affects the outcome.

Secondly, there is a good chance of selection bias in the treatment assignment because the financial assistances are by nature given to those who are less likely to enroll, and hence some factors that are not included in the dataset, unobservable variables, are perhaps taken into account when the authority select the beneficiaries of the financial assistances.

To overcome such limitations, some of the literature that examined the impact of financial aids have used two-stage simultaneous equations models (SEMs) for limited dependent variables which were developed by Mallar (1977), Amemiya (1978, 1979), Nelson (1978), and others. However, few of the recent applied econometrics studies rely on the traditional SEMs (Angrist & Pischke, 2009). Today econometric papers are more likely to use the IV approach to correct for various sorts of possible biases including simultaneity, selection bias, measurement errors, and omitted variables bias.

The study also adopts the IV approach. It employs an IV binary model $y_{1\mathrm{i}} = \{0,1\}$ with one binary endogenous variable $y_{2\mathrm{i}} = \{0,1\}$, which is the receipt of financial assistance. This IV binary model can be defined in a parametric model as below (Arendt & Holm, 2006):

$$y_{1i} = 1(y_{1i}^{*} = \alpha \mathrm{x}_{1\mathrm{i}} + \delta y_{2i} + u_{\mathrm{i}} > 0)$$

$$y_{2i} = 1(y_{2i}^{*} = \beta_1 \mathrm{x}_{1\mathrm{i}} + \beta_2 \mathrm{x}_{2i} + v_{\mathrm{i}} > 0)$$

where $1(\cdot)$ is an indicator function that takes 1 if the equation in the brackets is true, and 0 otherwise. The variables $y_{1i}^{*}$ and $y_{2i}^{*}$ are latent variables for $y_{1\mathrm{i}}$ and $y_{2\mathrm{i}}$ respectively.

However, the application of the IV approach to a regression with a binary outcome and binary endogenous variables presents a special

difficulty (Nichols, 2011). If both the outcome and endogenous regressor of interest are continuous, a normal Two-Stage Least Square (2SLS) regression gives a consistent estimator. In the case of binary outcome models with all endogenous regressors continuous, a procedure that uses maximum likelihood estimation is often applied. However, there is no procedure specifically designed for the case of a binary outcome with binary endogenous variables.

Common approaches in such cases are (1) to use linear IV regression (i.e., 2SLS) disregarding the binary structure of the outcome and endogenous variables, which is the approach advocated by Angrist & Pischke (2009) and also supported by other empirical researchers (Katz, Kling, & Liebman, 2001; Wooldridge, 2008; Nichols, 2011); and (2) to apply a maximum-likelihood bivariate probit model (Greene, 2002) based on the Seemingly Unrelated Regressions approach which allows the error terms of the two equations to correlate with each other. One critical difference between the two approaches is the type of measurement of treatment effect. The 2SLS method estimates Local Average Treatment Effect (LATE) which is about an average treatment effect for those whose treatment probabilities are affected by the instrument(s). Sometimes they are called *Compliers*. In the case of the study, Compliers are mainly those who are poor and whose eligibility is strongly affected by whether they have a poor family certificate. On the other hand, the bivariate probit approach estimates Average Treatment Effect (ATE) which is simply about an average treatment effect for everyone. The study is interested in the effects of the financial assistances on low-income youths specifically, which means that LATE is the type of treatment effect that is relevant. The study employs the 2SLS method for the analysis of the effects of the

financial assistances.

**a) Two-Stage Least Square (2SLS) Model**

The study draws on the works by Imbens & Angrist (1994), Angrist, Imbens, & Rubin (1996), Wooldrige (2001), and Angrist & Pischke (2009) for the definition and application of the 2SLS method. The basic model setup for the 2SLS method looks as follows:

$$y_{1i} = \alpha x_{1i} + \delta y_{2i} + u_i$$

$$y_{2i} = \beta_1 x_{1i} + \beta_2 x_{2i} + v_i$$

The first equation is the outcome equation or structural form which takes a vector of covariates $x_{1i}$ and an endogenous variable $y_{2i}$ as independent variables. The second equation is the reduced-form equation for the endogenous variable, and estimates the predicted values for the endogenous variable$y_{2i}$. It takes a vector of $x_{1i}$ as 'included instruments' which are the same covariates as in the first equation and a regressor(s) $x_{2i}$ as an 'excluded instrument(s)' which is unique to the reduced-form equation. The excluded instrument $x_{2i}$ has to have one important property. That is that the instrument $x_{2i}$ must be correlated with the endogenous variable $y_{2i}$ but must not affect the outcome variable $y_{1i}$ except indirectly through its effects on the endogenous variable $y_{2i}$. In other words, the instrument $x_{2i}$ should not be correlated with the error term of the first equation $u_i$ conditional on $x_{1i}$. This condition of the excluded instrument variable is called the *exclusion restriction*, and can be written as $(u_i, x_{2i}) = 0$ . Given this exclusion restriction, the parameter of interest $\delta$ can be calculated as below:

$$\delta = {Cov(y_{1i}, z_i)}\Big/{Cov(y_{2i}, z_i)} \quad \text{, where } z_i = \mathrm{x}_{1i} + \mathrm{x}_{2i}$$

## 4.4. Equation Specifications

### 4.4.1. Multinomial Logistic Regression

First, the study defines variables for the multinomial logistic regression. Defining dependent variable $Y_i$, the study define three outcome alternatives as below:

- $Y_i$= 0, if the individual is not enrolled in college or university.
- $Y_i$= 1, if the individual is enrolled or was enrolled in any college.
- $Y_i$= 2, if the individual is enrolled or was enrolled in any university.

Then, the independent variables,$X_i$, are defined as follows, and Table 4-1 describes each variable in some more detail.

$$\begin{aligned} Y_{ij}^{*} = \alpha_j &+ \beta_{1j} \cdot Gender_i + \beta_{2j} \cdot Ethnicity_i + \beta_{3j} \cdot Wealth_i + \beta_{4j} \cdot Income_i \\ &+ \beta_{5j} \cdot FaEdu_i + \beta_{6j} \cdot MoEdu_i + \beta_{7j} \cdot Rural_i + \beta_{8j} \cdot Cities_i \\ &+ \beta_{9j} \cdot Region_i + \varepsilon_j \end{aligned}$$

**Table 4-1 List of Covariates for the Estimation of the Probabilities of Higher Education Enrollment**

| Variables | Definition |
|---|---|
| Individual Characteristics | |
| *Gender* | Gender of the individual: 0 for male; 1 for female. |
| *Ethnicity* | If the individual is ethnic minority or not: 0 for Kinh and Chinese; 1 for ethnic minorities. |
| Family Background | |
| *Wealth* | Family Wealth Index of the family of the individual which is created using principal component analysis based on possessions of the household. This wealth index is intended to represent a long-term financial condition of the households. |

| | |
|---|---|
| *Income* | The log value of household monthly income per capita of the individual. This, as oppose to family wealth index, is intended to represent a short-term financial condition of the households. |
| *FaEdu*, *MoEdu* | Education qualification of father / mother of the individual. Takes 1 for no schooling or only primary education qualification, 2 for lower secondary qualification, 3 for upper secondary qualification, and 4 for college, university or higher qualification |
| Regional Difference | |
| *Rural* | Rural residence of the family of the individual: 0 for urban residents; 1 for rural residents |
| *Cities* | Residence in the major city: 1 if the household is residing in urban areas of either Hanoi or HCMC; 0 otherwise. |
| *Regions* | Region of the residence of the family of the individual. There are six regions of Vietnam. Takes 1 if the household resides in Red River Delta region, 2 for Midlands and Northern Mountainous Areas region, 3 for Northern and Coastal Central region, 4 for Central Highlands region, 5 for Southeastern Area region, and 6 for Mekong Delta. |

In an attempt to tease out the elements of financial constraints, the study distinguishes between long-term financial ability, represented in the variable *Wealth*, and short-term financial ability, represented in the variable *Income*, of the household. These distinctions are drawn from the work of Cameron & Heckman (2001) and Carneiro & Heckman (2002) who argued that long-term family financial abilities are more important than short-term financial abilities as long-term financial abilities often strongly impact students' academic abilities and readiness for higher education. Drawing on Filmer & Pritchett (2001) and Vu, Tran, & Le (2011), family wealth index is created using the principal component analysis as a proxy for long-term family financial abilities, assuming it is correlated with students' academic development throughout his or her primary and secondary education. Filmer & Pritchett (2001) used a family asset index within the context of analyzing relationship between families' economic status and schooling outcomes. Vu, Tran, & Le (2011) validated

the use of asset index as a proxy for economic status in Vietnamese context using household characteristics and durable asset ownership data from the household survey data. Indexes calculated using principal component analysis have been a popular tool among social researchers for various purposes, including the analysis of inequalities in education outcomes (Filmer & Scott, 2008). In this set-up, the coefficient of the short-term financial ability variable, *Income*, is interpreted as presenting the short-term financial constraints on higher education enrollment.

Regional differences, (represented in variable *Rural*, *Cities*, and *Region*) are interpreted mainly as representing regional differences in the supply of higher education institutions. Urban areas are almost always a favored place to establish colleges and universities. Large cities such as Hanoi and HCMC have significantly higher concentrations of higher education institutions compared to other urban areas of the country. The number of higher education institutions varies considerably among the six regions.

### 4.4.2. Education Expenditure Estimation

The study estimates the impact of financial assistances on higher education expenditure using the education expenditure data of those who are enrolled in either public universities or public colleges. A standard Ordinary Least Squares (OLS) regression is executed to produce estimates. The levels of education expenditure are expected to correlate with the types of institution (i.e., college or university) and family income. Regional differences also affect the cost of education as the cost of living and transportation can significantly vary across regions. Needless to say,

the financial assistances are expected to impact households' higher education expenditure. The relation is illustrated as below:

$$Expenditure_i = \alpha + \beta_1 \cdot Income_i + \beta_2 \cdot InstitutionType_i + \beta_3 \cdot Rural_i + \beta_4 \cdot Region_i + \beta_5 \cdot Assistance_i + \varepsilon_i$$

The variable $Expenditure_i$ includes educational expenditures that the household spent for individual $i$ over the past 12 months on tuition fees, charges, contribution to school, parent fund, uniforms, textbook and reference books, stationary, private tutoring, and other educational expenditures such as traveling and accommodation costs.

### 4.4.3. Instrumental Variable Approach: 2SLS

Finally, the study defines the equation specification for the IV approach, 2SLS, for estimating the effect of the targeted financial assistances. First, the dependent variable of the structural form equation is now coded in a binary form instead of three-way outcomes in the multinomial logistic model.

- $Y_{1i}$= 0, if the individual is not enrolled in college or university.
- $Y_{1i}$= 1, if the individual is enrolled or was enrolled in any college or university.

The dependent variable $Y_{1i}$ takes 1 if the latent value $Y_{1i}^*$ is larger than 0: $Y_{1i} = 1$ if $Y_{1i}^* > 0$, 0 otherwise. The latent value $Y_{1i}^*$ is determined by the following formula which takes the same covariates as the multinomial logistic regression model plus the financial assistance variable $Y_{2i}$.

$$Y_{1i}^{*} = \alpha_1 + \beta_1 \cdot Gender_i + \beta_2 \cdot Ethnicity_i + \beta_3 \cdot Wealth_i + \beta_4 \cdot Income_i + \beta_5 \cdot FaEdu_i + \beta_6 \cdot MoEdu_i + \beta_7 \cdot Rural_i + \beta_8 \cdot Cities_i + \beta_9 \cdot Region_i + \beta_{10} \cdot Y_{2i} + u_i$$

The dependent variable of the reduced form equation is coded in a binary form.

- $Y_{2i}$= 0, if the individual does not receive a financial assistance.
- $Y_{2i}$= 1, if the individual receives at least one financial assistance.

The dependent variable $Y_{2i}$ takes 1 if the latent value $Y_{2i}^{*}$ is larger than 0: $Y_{2i} = 1$ if $Y_{2i}^{*} > 0$, 0 otherwise. The latent value $Y_{2i}^{*}$ is determined by the following formula which takes, by the definition of the IV model set-up, the same covariates as the structural form equation plus the excluded instrument $X_{2i}$.

$$Y_{2i}^{*} = \alpha_2 + \pi_1 \cdot Gender_i + \pi_2 \cdot Ethnicity_i + \pi_3 \cdot Wealth_i + \pi_4 \cdot Income_i + \pi_5 \cdot FaEdu_i + \pi_6 \cdot MoEdu_i + \pi_7 \cdot Rural_i + \pi_8 \cdot Cities_i + \pi_9 \cdot Region_i + \pi_{10} \cdot X_{2i} + v_i$$

Defining the excluded instrument, $X_{2i}$, which is a variable that is correlated with the likelihood of benefiting from financial assistances, the study uses the status of official poor family certification, $Poor_i$, as a single excluded instrument variable. To be more specific, $Poor_i = 1$ if the household of the individual has been officially certified as poor family at least for one year during the past five years (i.e., 2006 – 2010), and 0 if otherwise.

### a) Validity of Poor Family Certificate as an Excluded Instrument

Given the crucial importance of excluded instruments in the IV approach, detailed explanation about poor family certificate is in order. The allocation of poor household certificate is changed every year, and sometimes households gain or lose poor household certificate depending on the economic status of the household. The criteria of granting a poor household certificate is based on the income criteria specified in the government's relevant policy documents that define the poverty line. Once households are certified officially as poor household, they become eligible to various sorts of pro-poor policies, including scholarship, tuition exemption, and student loans. Individual households do not normally have any power to affect the decisions regarding the assignment of poor family certificate; therefore, the assignment of poor family certificate is basically exogenous from the viewpoint of the households. Because not all the families who are poor are certified as poor family due to limited quota of poor family certificates allowed for each local authority (Poverty Task Force, 2005), it is expected that this poor family certificate system creates a discontinuity in the probability of treatment among poor households which have more or less similar financial capacities. The poor household certificate system does not operate with any direct considerations about schooling of the children. Neither do admission policies of higher education institutions give any affirmative action type preference based on the poor household certificate. Therefore, from the perspective of higher education institutions, the allocation of poor family certificate is exogenous. These characteristics of the poor family certificate satisfy the exclusion restriction that an instrumental variable has to satisfy.

One caution may be needed in regard to one possible violation of

the excluded restriction. Although the poor family certificate is awarded with no regard to educational attainment of the children, there is some possibility that the authority select more disadvantaged families taking account of non-income characteristics that are unobservable to the researcher, but possibly negatively affecting the chance of higher education enrollment. For instance, perhaps a family gets certified as poor for their father becoming ill. In such cases, poor family certificate may negatively affect higher education enrollment, while positively affecting the treatment probabilities. This kind of violation of exclusion restriction would cause some underestimation of the effect of the treatment.

## 4.5. Data

This chapter describes the characteristics of the dataset used in the study, and provides an overview of the sub-sample and methods of data processing used in the analysis of the study. Then, it discusses the contents of the sub-sample in the summary statistics.

### 4.5.1. Household Survey in Vietnam and Sub-Sample for the Study

Quantitative inference is the main analytic approach of the study. The study relies on the nationally representative household survey called Vietnamese Household Living Standard Survey (VHLSS). The VHLSS is an on-going national household survey started in 2002 and has been conducted every two years by the General Statistics Office (GSO) of the government of Vietnam. The VHLSS data that the study utilizes is the 2010 version, VHLSS 2010.

VHLSS collects a wide range of socio-economic data to

systematically monitor the living standards of different population groups in Vietnam. The information collected from each household and each member of the household include (1) basic demographic information, (2) education, (3) health and health care, (4) employment and income, (5) housing, electricity, water and sanitation, (6) poverty reduction, and (7) participation in poverty reduction programs (GSO, 2010b). The VHLSS series have provided researchers throughout the world with reliable evidence bases, and have been utilized in a number of social studies in Vietnam.

The sample size of the VHLSS as a whole is 69,360 households in 3,133 communes and wards which are sampled to be nationally representative. The data for the VHLSS 2010 were collected from the second quarter of 2010 to the first quarter of 2011 through face-to-face interviews with household heads (GSO, 2010b).

The VHLSS datasets are made available to the public for the purpose of researches. The dataset for the study was obtained through an application to and an approval of the GSO in 2011.

The study will focus on individuals with upper secondary qualification who are in the age group between 18 and 22 years which is the official age range for undergraduate university education enrollment. A sub-sample of 9,217 individuals who meet these criteria was obtained from the 185,696 individuals in the entire sample of VHLSS 2010. Among this sub-sample, a total of 7,778 observations which do not have missing values for important variables were used in the analysis.

### 4.5.2. Some Notes on Data Processing

This section discusses some of the data re-organization methods that were used when processing the dataset. First, the relationship information needed to be generated. As VHLSS 2010 indicates relationships within a household only in relation to its household head, and does not indicate who the father and mother is for a particular individual in the household, the study made a few assumptions to decide who the father and mother is for the individuals in the sub-sample so that the individuals of interest can have complete information about their parents.

If an individual is a 'child' to the household head, which is the majority of the case, the 'household head' and 'wife/husband' of the head is used as father and mother. If an individual is a 'household head' or 'wife/husband' of the household head, the 'father' and 'mother' of the household were used as parents. If an individual is a 'grandchild', then a male 'child' and female 'child' of the household were used as father and mother. If an individual is categorized as 'other' and the head is older than 36, then the 'household head' and 'wife/husband' are used as father and mother assuming he/she is a child of relatives living in the same household. If an individual is 'other' and the head is younger than 36, then a 'father' and 'mother' were used as father and mother assuming he/she is a brother/sister to the head.

This data process was necessary since many of the households in Vietnam, especially in rural areas, extended family is still the norm where three generations and members of relatives often live together, and the relationship indicator in the original dataset is recorded accordingly. Using the educational data of household heads and their spouses under

such social settings may well lead to misrepresentation of parental information. Intergenerational educational gaps are expected to be large in Vietnam due to the intermittent war periods and economic demise in the past generations. Case in point is that if grandparents are the household heads, their education background are likely to be considerably inferior compared to their children who are the parents of the youths.

After assigning a father and mother to each individual in the sub-sample, it was found that 1,439 of them were missing either the father data or the mother data, or both. After these were excluded from the sub-sample, 7,778 observations remained.

Another data processing needed was to assign the indicator for the receipt of student loans. Unlike the indicator for the receipt of tuition exemption and scholarships, VHLSS 2010 does not have a direct indicator to show if the household receives a student loan. Instead, the VHLSS 2010 dataset has data that contains information about preferential loans that households have received in the past 12 months, including the amount of outstanding loan, interest charged on the loan, and the provider of the loan. As discussed in Section 2.6, the provider of the student loans is VBSP, and the interest charge for the student loan programs is set by the government regulation at 0.5% per month or 6% per year. There are no other preferential loan programs under VBSP which match these conditions. The study, therefore, created a treatment indicator of the student loans using these information, assuming individuals whose families have borrowed loans from VBSP with an interest charge of 0.5% per month in the past 12 months are the beneficiary of the student loan programs.

## 4.6. Summary Statistics

This sub-chapter presents the summary statistics of the key variables in the sub-sample dataset that the study utilizes in the analysis. As mentioned above, the sub-sample for the study includes only the individuals with upper secondary qualification or higher who fall into the age cohort of 18-22 years.

### 4.6.1. Dependent Variable

Table 4-2 below presents how values of the enrollment outcome variable are distributed for the binary and three-way outcome alternatives. Among the 7,778 young individuals in the sub-sample, 45.55 % of them (3,543 individuals) are not enrolled in higher education institutions. 24.02 % of them (1,868 individuals) are enrolled in colleges, and 30.43 % of them (2,367 individuals) are enrolled in universities.

**Table 4-2 Summary of Dependent Variable**

| **Outcome Alternatives** | Values | Obs. | % |
|---|---|---|---|
| **Two-Way Model** | | | |
| Not enrolled in higher education | 0 | 3,543 | 45.5 |
| Enrolled in higher education | 1 | 4,235 | 54.5 |
| | | 7,778 | 100.0 |
| **Three-Way Model** | | | |
| Not enrolled in higher education | 0 | 3,543 | 45.6 |
| Enrolled in college | 1 | 1,868 | 24.0 |
| Enrolled in university | 2 | 2,367 | 30.4 |
| | | 7,778 | 100.00 |

Source: Calculated by Author based on VHLSS2010

### 4.6.2. Independent Variables

This sub-section presents an overview of the distribution of independent

variables used in the study. Table 4-3 presents overall summary statistics of the independent variables both for a sample of all the observations in the age group and the sub-sample of upper secondary graduates used in the study.

Among the individuals in the sub-sample of upper secondary graduates, females account for 53%, which is higher than the female proportion of the general population[10]. Females are more likely to progress through the upper secondary education. Ethnic minorities, on the other hand, account for only 11% of the sub-sample individuals, which is lower than the ratio of ethnic minorities in the general population. This is indicative of lower completion rates at the basic education level among ethnic minority youth. The average monthly family income per capita is calculated to be VND 1,481,000. For parents' generations, unlike today's young generation, education qualifications are generally low, not least because of the prolonged wars with the Western powers. Only about 30% of fathers and 25% of mothers of the individuals in the sub-sample have upper secondary qualification or higher. Rural population accounts for about 67% of the entire sub-sample.

[10] According to the 2009 Vietnam Population and Housing Census, female accounts for 50% of the population group of 18-24 years of age. Ethnic minorities account for 13.3% of the entire population.

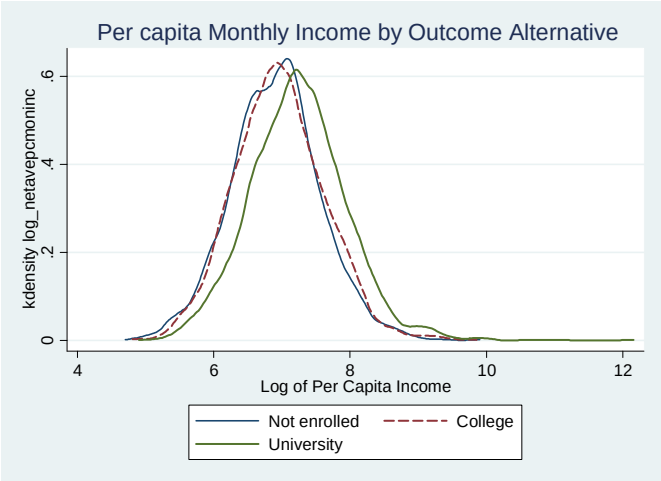
**Table 4-3 Overall Summary Statistics of Independent Variables**

| Variables | All sample in the age-group (18-22 years) | Sub-sample of upper secondary graduates in the age-group (18-22 years) |
|---|---|---|
| **Personal characteristics** | | |
| Gender (Female = 1) | .48 | .53 |
| Ethnic Minorities | .20 | .11 |
| **Family background** | | |
| *Father's Education Qualification* | | |
| No Schooling or Primary Only | .47 | .28 |
| Lower Secondary | .33 | .41 |
| Upper Secondary | .15 | .23 |
| Higher Education | .05 | .08 |
| *Mother's Education Qualification* | | |
| No Schooling or Primary Only | .55 | .37 |
| Lower Secondary | .30 | .39 |
| Upper Secondary | .12 | .19 |
| Higher Education | .03 | .06 |
| Monthly family income per capita | 1,262 | 1,481 |
| *Income Quartile* | | |
| Poorest | .27 | .19 |
| Second | .28 | .27 |
| Third | .27 | .31 |
| Richest | .18 | .24 |
| **Regional Characteristics** | | |
| Urban-Rural (Rural = 1) | .75 | .67 |
| Cities (Hanoi/HCMC) | .03 | .05 |
| *Region* | | |
| Red River Delta | .20 | .28 |
| Midlands and Northern Mountain | .21 | .17 |
| Northern and Central Coast | .24 | .27 |
| Central Highlands | .08 | .07 |
| Southeastern | .10 | .09 |
| Mekong Delta | .18 | .12 |
| Observations | 14,039 | 7,778 |

Source: Calculated by Author based on VHLSS2010

Figure 4-2 below illustrates the distribution of monthly family income per capita by the three-way outcome alternatives. In general, individuals who are enrolled in universities are endowed with higher monthly family income per capita, while college enrollees have more or less similar distribution with those who are not enrolled.

**Figure 4-3 Distribution of Family Income by Outcome Alternative**




Source: Created by Author based on VHLSS 2010

Additionally, Table 4-8 below summarizes the distribution on the outcome distribution for different income quintile groups. As clearly shown, the ratios of those who are enrolled in higher education institutions are significantly higher among the richer groups. Disparities in enrollment rates across income groups are substantial. The selection of institutions seems to be strongly affected by the income level. Poorer groups seem to be more inclined to be enrolled in colleges rather than universities, whereas richer groups appear to prefer enrolling in universities.

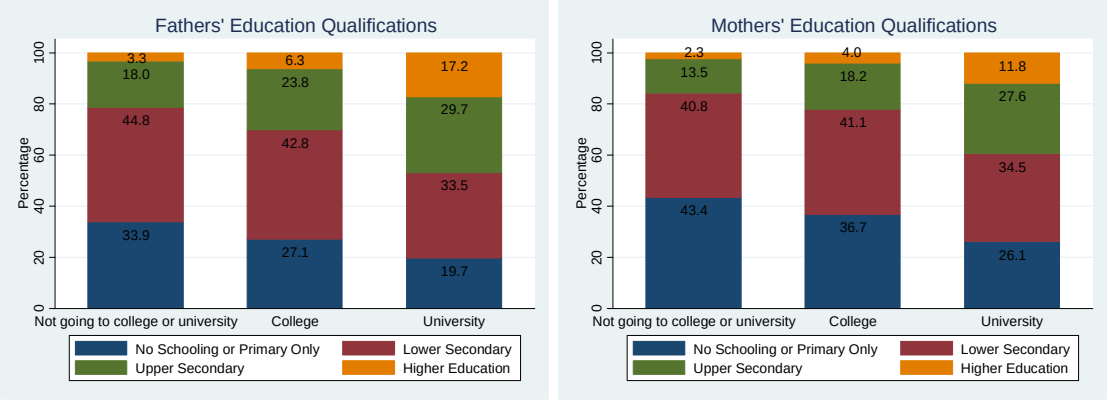
**Table 4-4 Proportions of Enrolled Individuals by Income Quartile**

| | Income Quartile | | | |
|---|---|---|---|---|
| | Poorest | 2 | 3 | Richest |
| **Two-way Outcome** | | | | |
| Not Enrolled | 54.6% | 49.8% | 45.3% | 34.3% |
| Enrolled in higher education | 45.4% | 50.2% | 54.7% | 65.7% |
| **Three-way Outcome** | | | | |
| Enrolled in college | 27.1% | 25.8% | 22.7% | 21.4% |
| Enrolled in university | 18.3% | 24.4% | 32.0% | 44.3% |
| Column Total (Observation) | 1,444 | 2,067 | 2,373 | 1,894 |

Source: Created by Author based on VHLSS 2010

Illustrated below in Figure 4-4 is parents' educational background by the three-way outcome alternatives. There are clear differences across the outcome alternatives. Parents, especially fathers, of those who are enrolled either in college or university tend to have higher qualifications of education compared to parents of non-enrolled youth. Parents of university students in particular have higher qualifications.

**Figure 4-4 Parental Education Background by Outcome Alternatives**




Source: Created by Author based on VHLSS 2010

The variable of interest for the study is whether the individual receives financial assistances or not. Table 4-5 below shows the proportion of individuals which receives financial assistances. Table 4-6 captures the distribution of the three types of financial assistances among the enrolled students by income groups.

**Table 4-5 Ratio of Beneficiaries of Financial Assistances**

| | Ave. | Not Enrolled | College | Univ. |
|---|---|---|---|---|
| Tuition Exemption | 7.4% | 4.7% | 9.3% | 9.7% |
| Scholarship | 7.0% | 4.4% | 6.7% | 11.2% |
| Student Loan | 3.8% | 2.8% | 4.9% | 4.5% |

Source: Calculated by Author based on VHLSS2010

**Table 4-6 Ratio of Beneficiaries of Financial Assistances among Enrolled Students by Income Group**

| | Income Quartile | | | | |
|---|---|---|---|---|---|
| | Poorest | 2 | 3 | Richest | Ave. |
| Tuition Exemption | 17.8% | 9.7% | 8.9% | 5.5% | 9.5% |
| Scholarship | 9.9% | 8.8% | 9.7% | 8.7% | 9.2% |
| Ave. Scholarship Size (in VND '000) | 1,322 | 2,337 | 2,376 | 2,378 | 2,192 |
| Student loans | 8.2% | 6.7% | 4.2% | 1.7% | 4.7% |
| Column Total (Observation) | 656 | 1,037 | 1,297 | 1,245 | |

Source: Calculated by Author based on VHLSS 2010

Tuition exemption and scholarships are made available to higher proportions of students than student loans. The student loan program is relatively new compared to other two programs. Scholarships appear to be more widely available for university students than for college students. Some of those who are categorized as Not Enrolled are indicated to receive the financial assistances. It is because they are actually studying at

vocational training centers of various kinds, which are outside of the scope of this study.

The study looks into the effects of the financial assistances on higher education expenditure. To give an idea how higher education expenditure vary, Table 4-7 and Table 4-8 below summarize the average total of higher education expenditures for public colleges and public universities by region and by income quartile group. As we can see, the higher education expenditure differs widely between the regions and income groups.

**Table 4-7 Average Annual Total Higher Education Expenditure by Region**

| Region | Public College | Public Universities |
|---|---|---|
| Red River Delta | 6,615 | 7,201 |
| Midlands and Northern Mountainous | 5,574 | 8,133 |
| Northern and Coastal Central Region | 6,355 | 8,436 |
| Central Highlands | 6,426 | 8,968 |
| Southeastern Area | 6,715 | 8,190 |
| Mekong Delta | 7,446 | 8,592 |

Source: Calculated by author based on VHLSS 2010

Note: the figures are shown in VND '000.

**Table 4-8 Average Annual Total Higher Education Expenditure by Income Quartile**

| Quintile | Public College | Public University |
|---|---|---|
| Poorest | 6,542 | 7,812 |
| 2 | 5,697 | 7,283 |
| 3 | 6,630 | 8,254 |
| Richest | 7,000 | 8,354 |

Source: Calculated by author based on VHLSS 2010

Note: the figures are shown in VND '000.

### 4.6.3. Some Notes on the Selection into the Sub-sample

As briefly shown in Table 4-3, there are some distinctive differences between the sample of all the observations in the age group of 18 to 22 years and the sub-sample of upper secondary graduates in the same age group. The study uses only the sub-sample of upper secondary graduates to focus its analysis on higher education enrollment decisions. Nevertheless, it is worthwhile to discuss how these two samples differ in terms of distributions of some of the key variables so as to be aware of underlying features of the sub-sample that may be relevant when interpreting the results.

Comparing the two samples (Table 4-3), females seem to be overrepresented in the sub-sample of upper secondary graduates, indicating that females are more likely to successfully complete the upper secondary schooling. More importantly, various background factors appear to affect the likelihood of being in the sub-sample in favor of ethnic majority, better educated, and wealthy. Ethnic minorities are severely underrepresented in the sub-sample. They represent 20% of all the observations in the age group, but only 11% of the sub-sample of upper secondary graduates. Same goes for those with parents with no or only primary education. Those with fathers or mothers with primary education or less represent 47% and 55% of all the observation in the age group, respectively; but the ratios in the sub-sample of upper secondary graduates go down to 28% and 37%, respectively. Youths from the poorest income quartile group appear to be underrepresented in the sub-sample of upper secondary graduates, while those from the richest group represent a higher proportion among upper secondary graduates.

In sum, it is clear from these comparisons that the sub-sample used in the study is not representative of all the population in the age group of interest. It is biased in favor of those from the ethnic majority, and more affluent and better educated families, leaving out the poorest and least educated families.

# Chapter 5.
# RESULTS

## 5.1. Effects of Individual, Family, and Regional Factors on Likelihood of Higher Education Enrollment

### 5.1.1. Family Wealth Index

Prior to the estimation of the effects of determinants, a family wealth index, a variable representing long-term family financial status, is calculated for each of the household in the dataset by using the Principal Component Analysis (PCA) method. The PCA method is a mathematical technique for finding orthogonal linear components from possibly correlating variables that explain the common information or correlations most successfully (Filmer & Pritchett, 2001). The study applies the PCA method to compute the family wealth index based on households' asset ownership. Referring to the asset selection by Vu, Tran, & Le (2011) and the asset and housing information available in VHLSS 2010, a total of 21 household assets for urban households and a total of 18 assets for rural households are selected to be included in the PCA estimation. Differences in the life-style and housing characteristics between urban and rural areas needed to be taken into account in the selection of household assets. The household asset variables used in the PCA estimation are listed in Table 5-1 below.

**Table 5-1 Household Asset Variables Used in PCA for Family Wealth Index**

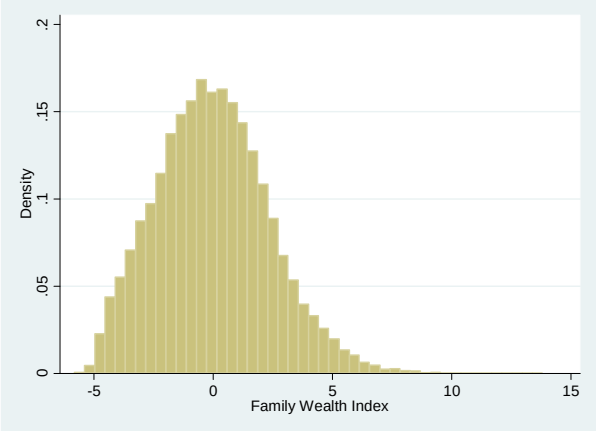
| Asset Variables for Urban Families | Asset Variables for Rural Families |
|---|---|
| Motorbike | Motorbike |
| Landline telephone | Bicycle |
| Mobile telephone | Pumping machine |
| Video player, DVD player | Mobile telephone |
| Color TV | Video player, DVD player |
| Computer | Color TV |
| Camera, Video camera | Computer |
| Refrigerator | Refrigerator |
| Air conditioner | Washing machine, drying machine |
| Washing machine, drying machine | Electric fan |
| Electric fan | Water heater |
| Water heater | Gas cooker, magnetic cooker |
| Gas cooker, magnetic cooker | Electric cooker, electric rice cooker |
| Electric cooker, electric rice cooker | Cupboard, cabinet, wardrobe |
| Cupboard, cabinet, wardrobe | Desk, chair, long bench, dressing table |
| Desk, chair, long bench, dressing table | Total residential area ($m^2$) |
| Vacuum cleaner, dehumidifier | Estimated value of accommodation (log) |
| Microwave oven, baking oven | Type of toilet |
| Juice extractor, citrus juicer | |
| Total residential area ($m^2$) | |
| Estimated value of accommodation (log) | |

Source: Created by Author

The first component is used to construct PCA scores (i.e., family wealth index) for each household. The first component for urban families and rural families both accounts for about 30% of the total variance for each respective group. The chart below in Figure 5-1 illustrates the distribution of the estimated family wealth index. To see the relationship between the family wealth index and family income, families are grouped into the family wealth index quartile groups, and cross-tabulated with the

quartile group of family income per capita. As shown in Figure 5-2, the estimated family wealth index is largely in agreement with the level of family income per capita, though not perfectly consistent. This result would show the validity of the estimated family wealth index, and at the same time indicate some deviations between family income per capita as short-term financial status and the family wealth index as the long-term representation of family economic condition.

**Figure 5-1 Distribution of Family Wealth Index**




Source: Created by Author based on VHLSS 2010

**Figure 5-2 Correlation between Family Wealth Index and Family Income Per Capita**


Source: Created by Author based on VHLSS 2010

### 5.1.2. Effects of Individual, Family, and Geographical Factors on Higher Education Enrollment

This sub-section examines how the likelihoods of college and university enrollments are affected by individual characteristics, family background, and geographical factors. First, all the covariates are reviewed in turn, then the variables related to financial constraints are discussed in more detail.

The results of the logistic regression and multinomial logistic regression model are presented in Table 5-2 and Table 5-3. The logistic regression fits a model with a binary enrollment outcome (i.e., enrolled or not enrolled), whereas the multinomial logistic regression fits a model with three enrollment alternatives (i.e., enrolled in university, enrolled in college, and not enrolled). Both regressions are executed in two models that are different only in the way explanatory variables related to families' financial conditions are incorporated. Model 1 is simpler, including only the variable of family income per capita - the common measurement of family financial status - in the form of quartiles, while Model 2 additionally includes the family wealth index created by the study which is intended to capture the long-term financial conditions of the families in order to tease out the influence of short-term financial constraints.

## Table 5-2 Estimation Result: Logistic Regression Model

| | Model (1) | | Model (2) | |
|---|---|---|---|---|
| Base outcome: Not enrolled (Y=0) | Enrolled (Y=1) | | Enrolled (Y=1) | |
| | Coeff. | AME*1 | Coeff. | AME |
| **Short-term family financial condition** | | | | |
| *Quartile of Family Income per Capita | | | | |
| 2 | 0.059 | 0.013 | -0.004 | -0.001 |
| 3 | 0.015 | 0.003 | -0.104 | -0.023 |
| Highest quartile | 0.200** | 0.045** | 0.023 | 0.005 |
| **Long-term family financial condition** | | | | |
| *Quartile of Family Wealth Index | | | | |
| 2 | | | 0.120 | 0.027 |
| 3 | | | 0.287*** | 0.065*** |
| Highest quartile | | | 0.417*** | 0.095*** |
| **Personal characteristics** | | | | |
| Female | 0.221*** | 0.050*** | 0.210*** | 0.047*** |
| Ethnic minority | -0.662*** | -0.151*** | -0.586*** | -0.134*** |
| **Family background** | | | | |
| Father's Education | | | | |
| Lower secondary | 0.082 | 0.019 | 0.062 | 0.015 |
| Upper secondary | 0.447*** | 0.104*** | 0.406*** | 0.094*** |
| College or university | 1.087*** | 0.237*** | 1.024*** | 0.223*** |
| Mother's Education | | | | |
| Lower secondary | 0.144** | 0.034** | 0.135** | 0.031** |
| Upper secondary | 0.561*** | 0.128*** | 0.531*** | 0.121*** |
| College or University | 0.976*** | 0.214*** | 0.932*** | 0.205*** |
| **Geographical Characteristics** | | | | |
| Rural | -0.133** | -0.030** | -0.265*** | -0.060*** |
| Living in Major Cities | -0.211 | -0.048 | -0.268** | -0.060** |
| *Region (base: Red River Delta)* | | | | |
| Midlands and Northern Mountain | -0.458*** | -0.105*** | -0.442*** | -0.101*** |
| Northern and Central Coast | 0.118* | 0.027* | 0.129* | 0.029* |
| Central Highlands | 0.300*** | 0.068*** | 0.293*** | 0.066*** |
| Southeastern | 0.352*** | 0.079*** | 0.352*** | 0.079*** |
| Mekong Delta | -0.063 | -0.014 | -0.038 | -0.009 |
| Constant | -0.252** | | -0.312** | |
| Number of observation | | 7778 | | 7776 |
| LR chi2 | | 767.04 | | 791.17 |
| Prob > chi2 | | <0.001 | | <0.001 |
| Pseudo R2 | | 0.0715 | | 0.0738 |
| Log likelihood | | -4976.9528 | | -4963.4941 |

Source: estimated by Author based on VHLSS2010

(*1) AME: Average Marginal Effect

*** p < 0.01; ** p < 0.05; * p < 0.1

## Table 5-3 Estimation Result: Multinomial Logistic Regression Model

| | Model (1) | | | | Model (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Base outcome: Not enrolled (Y=0) | College (Y=1) | | University (Y=2) | | College (Y=1) | | University (Y=2) | |
| | Coeff. | AME*1 | Coeff. | AME | Coeff. | AME | Coeff. | AME |
| **Short-term family financial condition** | | | | | | | | |
| *Quartile of Family Income per Capita | | | | | | | | |
| 2 | -0.054 | -0.026* | 0.221** | 0.043*** | -0.092 | -0.028* | 0.134 | 0.031* |
| 3 | -0.217** | -0.060*** | 0.293*** | 0.068*** | -0.279*** | -0.060*** | 0.124 | 0.043*** |
| Highest quartile | -0.100 | -0.057*** | 0.516*** | 0.105*** | -0.185* | -0.054*** | 0.258** | 0.062*** |
| **Long-term family financial condition** | | | | | | | | |
| *Quartile of Family Wealth Index | | | | | | | | |
| 2 | | | | | 0.108 | 0.011 | 0.129 | 0.016 |
| 3 | | | | | 0.239** | 0.021 | 0.332*** | 0.044** |
| Highest quartile | | | | | 0.238* | 0.003 | 0.575*** | 0.091*** |
| **Personal characteristics** | | | | | | | | |
| Female | 0.251*** | 0.031*** | 0.194*** | 0.019* | 0.244*** | 0.031*** | 0.181*** | 0.017* |
| Ethnic minority | -0.760*** | -0.090*** | -0.581*** | -0.062*** | -0.706*** | -0.086*** | -0.488*** | -0.048** |
| **Family background** | | | | | | | | |
| Father's Education | | | | | | | | |
| Lower secondary | 0.084 | 0.010 | 0.083 | 0.010 | 0.066 | 0.008 | 0.063 | 0.007 |
| Upper secondary | 0.342*** | 0.023 | 0.539*** | 0.081*** | 0.316*** | 0.022 | 0.485*** | 0.071*** |
| College or university | 0.683*** | 0.012 | 1.281*** | 0.212*** | 0.646*** | 0.014 | 1.198*** | 0.196*** |
| Mother's Education | | | | | | | | |
| Lower secondary | 0.012 | -0.016 | 0.275*** | 0.050*** | 0.006 | -0.016 | 0.263*** | 0.048*** |
| Upper secondary | 0.242** | -0.019 | 0.825*** | 0.145*** | 0.229** | -0.018 | 0.781*** | 0.137*** |
| College or University | 0.400** | -0.039 | 1.317*** | 0.242*** | 0.383 | -0.036 | 1.252*** | 0.229*** |
| **Geographical Characteristics** | | | | | | | | |
| Rural | -0.007 | 0.016 | -0.232*** | -0.044*** | -0.081 | 0.016 | -0.419*** | -0.075*** |
| Living in Major Cities | -0.219 | -0.024 | -0.215 | -0.025 | -0.248 | -0.024 | -0.300** | -0.038* |
| *Region (base: Red River Delta)* | | | | | | | | |
| Midlands and Northern Mountain | -0.358*** | -0.031* | -0.568*** | -0.074*** | -0.352*** | -0.032* | -0.543*** | -0.069*** |
| Northern and Central Coast | 0.041 | -0.006 | 0.188** | 0.033** | 0.043 | -0.007 | 0.207** | 0.036*** |
| Central Highlands | 0.001 | -0.042** | 0.547*** | 0.109*** | -0.003 | -0.042** | 0.539*** | 0.107*** |
| Southeastern | 0.220* | 0.004 | 0.470*** | 0.074*** | 0.219* | 0.004 | 0.474*** | 0.075*** |
| Mekong Delta | -0.375*** | -0.077*** | 0.205* | 0.065*** | -0.370*** | -0.079*** | 0.249** | 0.073*** |
| Constant | -0.696*** | | -1.267*** | | -0.763*** | | -1.321*** | |
| Number of observation | 7778 | | | | | | | |
| LR chi2 | 1106.78 | | | | | | | |
| Prob > chi2 | <0.0001 | | | | | | | |
| Pseudo R2 | 0.0669 | | | | | | | |
| Log likelihood | -7713.0953 | | | | | | | |

Source: estimated by Author based on VHLSS2010

(*1) AME: Average Marginal Effect

*** p < 0.01; ** p < 0.05; * p < 0.1

First, the effects of the covariates are analyzed using the simpler forms, Model 1. The gender variable shows positive and statistically significant effects on higher education enrollments. Being a female student increases the chances of higher education enrollment by about 5.0 % points. This likely reflects the tendency in Vietnam that female students generally outperform male students academically. The effect seems to be larger for college enrollment. Being a female, ceteris paribus, raises the chance of college enrollment by about 3.1 % points, while raising the chance of university enrollment only by about 1.9 % points. The effect of gender on university enrollment is only marginally significant ($p < .10$). These differences may suggest that female students are more attracted to college education.

The ethnic minority variable shows strongly negative and statistically significant effects. Everything else being equal, ethnic minorities are less likely to be enrolled in college by about 9.0 % points, and in university by about 6.2 % points. Ethnic minority students who can complete upper secondary education are considered to be successful cases among the ethnic minority youth. Yet, even for those successful ethnic minority students, gaining access to higher education is another big challenge for which they are still disadvantaged.

Parental education is a globally well-known factor that affects the chances of their children's higher education enrollment. Literature on the equity issues in higher education in Vietnam confirm this inter-generational education attainment gaps to be the case in Vietnam as well (World Bank, 2008). The estimation result of the logistic regression with binary outcome is in support of this argument, demonstrating that both father's and mother's educational background are strongly positively

correlated with the probability of higher education enrollment of their children. The estimation result of the multinomial logistic regression with three-way alternatives, however, indicates that the effects of parental education background are considerably limited for college enrollment. Controlled for other variables, the effects of father's and mother's education qualifications on the probability of college enrollment are all small and not statistically significant. On the contrary, the effects of parental education background are found to be strong and statistically significant for university enrollment. Having fathers with upper secondary certificate or higher education degree raises the chances of university enrollment by about 8.0 % points and 21.2 % points, respectively. Mothers' influence appears to be even stronger. Having mothers with upper secondary certificate or higher education degree increases the likelihood of university enrollment by about 14.5 % points and 24.2 % points, respectively. These are the largest effects found among the explanatory variables in the study. What is particularly salient is the strong effects of having parents with higher education qualifications. Children of parents who are college or university graduates themselves are far more likely to attend university.

The rural variable has a statistically significant negative effect on higher education enrollment. Everything else equal, being from rural areas reduces the chance of higher education enrollment moderately by about 3.0 % points. However, rural residency has different impacts on college enrollment and university enrollment. For college enrollment, the effect is positive but statistically not significant, while the effect is large and statistically significant for university enrollment. Upper secondary graduates from rural areas are, ceteris paribus, about 4.4 % points less

likely to be enrolled in university. This probably can be explained, for a large part, by the differences in the level of supply of university institutions outside the major cities. Colleges are geographically more scattered throughout the country including in the provinces where universities are few. For this reason, college education is probably more easily accessible than university education for rural upper secondary graduates.

The city variable, against the expectation, did not show a statistically significant effect on either types of enrollment, meaning living in Hanoi or HCMC does not improve the chances of higher education enrollment. People may generally believe that secondary school students in Hanoi and HCMC have advantage of living near higher education institutions. However, the estimation results reveal that once controlled for other relevant factors living in Hanoi or HCMC alone does not give them any advantage. Perceived higher likelihood of higher education attainment among students in Hanoi or HCMC is attributable to their higher income levels and better parental education background.

The region variable has strong and statistically significant impacts on higher education enrollment, reflecting the country's regional socio-economic diversity. Compared to Red River Delta region where Hanoi is located, living in Midlands and Northern Mountain, the poorest region of the country with few higher education institutions, reduces the chances of higher education enrollment by about 10.5 % points even after income levels and parental education are controlled for. The effects of the region variable are far greater for university enrollment, mostly likely due to the uneven distribution of universities across the regions.

### 5.1.3. Effects of Financial Constraints

Now, in order to examine the effect of financial constraints, the variable of family wealth index is introduced in the equation in Model 2. The family wealth variable is expected to account for long-term financial capability of the students' families and to isolate the effect of the per capita family income variable, which would represent the short-term financial capability, to tease out the effect of financial constraints. In principle, if upper secondary graduates in Vietnam are not constrained for borrowing when they make decisions about going to college or university, the short-term financial capacity of their families should not affect the probability of their higher education enrollment as they can borrow against their future income, and hence the family income variable should have little or no marginal effects on the enrollment outcome. In the presence of financial constraints, the probabilities of higher education enrollment are expected to partly depend on the short-term financial capacity of the families as the current family financial resources defines how much upper secondary graduates can afford to pay for their higher education investment, and hence the family income variable should have some level of positive marginal effects on the enrollment outcome.

First, let's examine the effects of the newly introduced variable, the family wealth index. Model 2 of the logistic regression model shows that the family wealth index has strong positive impact on higher education enrollment. Being in the third and fourth quartile of the family wealth index increases the chance of higher education enrollment respectively by 6.5 % points and 9.5 % points. When the effect of the family wealth index is estimated separately for college and university

enrollment by Model 2 of the multinomial logistic regression, the variable is shown to have no effect on college enrollment. The marginal effects are all negligible and not statistically significant for college enrollment. Contrarily, the family wealth index has strong effects on university enrollment. Being in the third or fourth quartile of the wealth index increases the likelihood of university enrollment by about 4.4 % points and 9.1 % points respectively, indicating powerful influence of families' long-term wealth on children's academic ability and aspirations for university education.

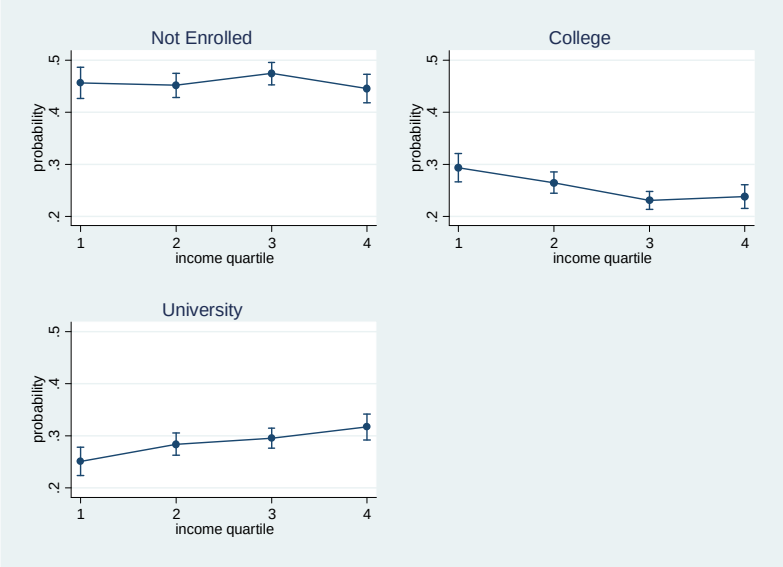
After being controlled for long-term financial capacity, short-term financial capacity, measured by the family income per capita variable, does not significantly affect the likelihood of higher education enrollment as shown in Model 2 of the logistic regression estimation, suggesting the absence or limited effect of financial constraints on higher education enrollment. However, when separated for the effect on college and university enrollment, the family income variable strongly affect the likelihood of college and university enrollment with the effects being opposite between the two. The effects on college enrollment probability are all negative and statistically significant, meaning that with everything else being equal, upper graduates from families with higher current income levels are less likely to be enrolled in colleges. Individuals in the second quartile, third quartile, or fourth quartile of the family income quartile are, ceteris paribus, less likely to be enrolled in colleges, compared to those in the first quartile, by about 2.8 % points, 6.0 % points, and 5.4 % points respectively. For university education, the effects are all positive and statistically significant, meaning that higher family income per capita leads to higher probabilities of university enrollment. Upper secondary

graduates in the second quartile, third quartile, or fourth quartile of the family income quartile are, ceteris paribus, more likely to be enrolled in universities compared to the youth in the first quartile by about 3.1 % points, 4.3 % points, and 6.2 % points respectively. Assuming the effects of families' long-term financial abilities are controlled by the family wealth index, these results point to the presence of financial constraints only for university enrollment. For college education, financial constraints seem to be less of a problem.

To graphically show the above results, the study estimated the probabilities of enrollment for each of the income quartile groups by changing the value of the income quartile variable while keeping other variables at their mean values. The simulation results are shown in Figure 5-3. It is clear that the probability of college enrollment goes down as the income quartile goes up, while that of university enrollment goes up as the income quartile goes up. The probability of non-enrollment does not seem to be influenced by the income level. Further, Figure 5-4 illustrates the changes in the probability of enrollment across the family wealth index quartiles, while keeping other variables at their means. The probability of non-enrollment decrease steadily as the level of wealth index goes up, suggesting that the family's long-term financial ability affects the children's long-term academic development, which in turn affect the likelihood of successful admission in higher education institutions. The probability of college enrollment does not vary much perhaps because the academic requirements for admission in colleges are usually lower compared to those for admission in universities. The probability of university enrollment increases steadily as the family wealth index goes up, suggesting the importance of long-term financial capacity of the

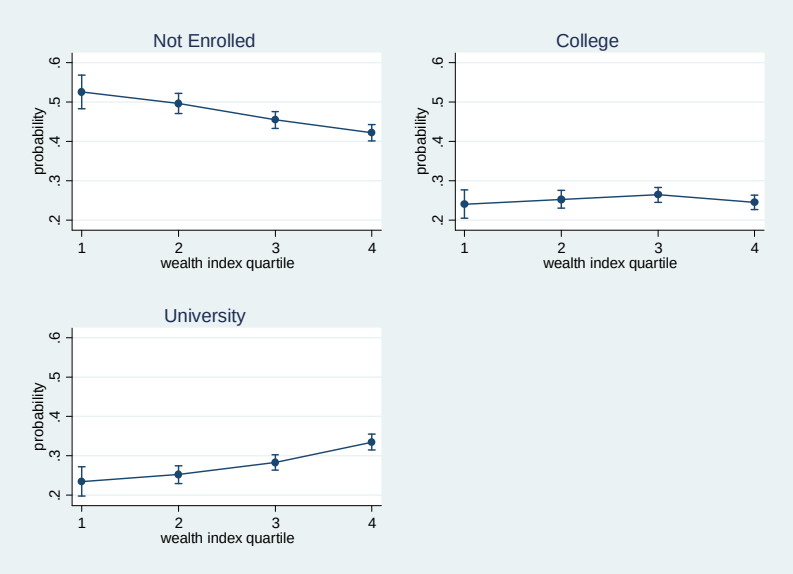
families and academic performance of upper secondary graduates in determining the likelihood of successful admission to universities.

**Figure 5-3 Effects of Short-Term Financial Condition on Enrollment Probability**




Source: Estimated by Author based on VHLSS 2010

**Figure 5-4 Effects of Long-Term Financial Condition on Enrollment Probability**




Source: Estimated by Author based on VHLSS 2010

## 5.2. Effects of Financial Assistances on Higher Education Enrollment

### 5.2.1. Distribution of Targeted Financial Assistances

The study first examines how the benefits of the targeted financial assistances are distributed among students. The descriptive statistics in Table 4-6 in Section 4.6.2 presents the distribution of the three financial assistances. It was shown that the tuition exemption is awarded to higher percentages of students in lower income groups, and so are the student loans. 17.8 % and 8.2 % of students in the poorest income quartile have their tuition exempted and take out student loans respectively, while the rates are 5.5 % and 1.7 % for students in the richest income quartile. Scholarships, on the other hand, seem to be distributed in a less pro-poor manner. The ratio of students receiving any scholarship does not differ significantly between income groups, and the average amount of scholarships received tends to be higher among higher income groups. What should be noted is that this does not necessarily imply the scholarship schemes are particularly prone to leakage. Selection criteria to allocate scholarships vary widely depending on the stated objectives of the scholarship programs, which include not only objectives geared to supporting the poor but also academic promotional objectives. Academic promotion scholarships often result in providing a greater proportion of grant awards to affluent students who tend to outperform poor students in academic skills.

To probe more into the ways the financial assistances are distributed, the study examines the determinants of the probabilities of receiving the financial assistances by executing a probit regression model

with the data of enrolled students. The explanatory variables included in this regression are the same set of covariates that are used in the logistic regression model for the determinants of higher education enrollment. Only addition is the variable of the poor family certificate, which is used in later analyses as an excluded instrument variable. The estimation results are shown in Table 5-3 below.

First of all, it is confirmed that the poor family certification variable is statistically significant for all of the financial assistance schemes. Holding everything else constant, having a poor family certificate increases the chances of receiving tuition exemption by about 20.5 % points, that of receiving scholarships by about 4.6 % points, and that of taking out student loans by about 5.3 % points. These increases are significant considering the overall average proportions of beneficiary students for each financial assistance as shown in Table 4-6: 9.5 % for tuition exemption, 9.2 % for scholarship, and 4.7 % for student loans. Upper secondary graduates with poor family certification, therefore, can expect considerably better chances of receiving these financial assistances.

For tuition exemption, gender, ethnicity, wealth index, and rural residence play a big role in deciding the probability of receiving the benefit. Ethnic minorities are considerably more likely to be exempted from the tuition by about 18.3 % points. Being female moderately increases the chances of having tuition exempted by about 3.2 % points. Students from rural areas are also more likely to have their tuition waived by about 4.6 % points. Students from higher income families in the third and fourth quartile are less likely to be granted tuition exemption by about 4.7 % points and 5.3 % points respectively, compared to students from families in the lowest income quartile. Taken together, it is safe to say

that tuition exemptions are granted mainly to people who are generally considered disadvantaged groups in Vietnam, including ethnic minorities, female, rural residents, and the poor.

For scholarships, the effects of determinants are somewhat complex reflecting the diversity of scholarship programs. Ethnic minorities are considerably more likely to receive scholarships. It is probably because there are quite a few educational support programs for ethnic minorities provided by various governmental and non-governmental organizations. Female students have somewhat higher chances of receiving scholarships, probably because of their social vulnerability or because of their generally higher academic performance relative to their male counterparts. Father's educational qualifications have some positive effects, which is also indicative of prevalence of merit-based academic promotion scholarships. The family wealth index and family income levels do not seem to play a role, supporting the findings from Table 4-6 that low income groups are not particularly favored in the distribution of scholarships. Living in Hanoi or HCMC reduces the chances of receiving scholarships by about 4.6 % points. Perhaps fewer scholarship programs are available for students from the metropolitan areas as they are generally perceived as economically advantaged.

For student loans, only a few determinants are significantly affecting the awarding probably apart from poor family certification. Students in the highest family wealth index quartile are about 2.9 % points less likely to benefit from subsidized student loans. However, being in other family income or wealth index quartiles does not affect the probability of receiving student loans, which is in line with what Table 4-6 shows. Student loans are distributed somewhat widely across the whole

income groups, while moderately favoring lower income groups. The eligibility screening by family income criteria may not be implemented so stringently for the student loans program as is the case for tuition exemption. Students from rural areas are more likely to take out student loans by about 2.4 % points. Students from major cities are less likely to take out the student loans by about 3.2 % points, perhaps partly because there are other forms of borrowing opportunities available in major cities. Unlike other two assistance schemes, gender and ethnicity variables do not show any significant effects. Parental education background also have no significant effects on the probabilities of receiving student loans, which suggests that subsidized student loans are distributed with no or little regard to students' academic abilities.

**Table 5-4 Determinants of Receiving Financial Assistances for Enrolled Students**

| | Tuition Exemption | | Scholarship | | Student Loans | |
|---|---|---|---|---|---|---|
| | Coeff. | AME*1 | Coeff. | AME | Coeff. | AME |
| Poor Family Certificate | 0.895*** | 0.205*** | 0.252** | 0.046** | 0.412*** | 0.053*** |
| **Personal characteristics** | | | | | | |
| Female | 0.216*** | 0.032*** | 0.308*** | 0.048*** | 0.105 | 0.010 |
| Ethnic minority | 0.825*** | 0.183*** | 0.624*** | 0.136*** | -0.162 | -0.014 |
| **Family background** | | | | | | |
| Father's Education | | | | | | |
| Lower secondary | 0.023 | 0.003 | 0.161* | 0.024** | -0.004 | -0.001 |
| Upper secondary | -0.026 | -0.004 | 0.137 | 0.020 | -0.090 | -0.009 |
| College or university | -0.037 | -0.005 | 0.300** | 0.049** | -0.285 | -0.024 |
| Mother's Education | | | | | | |
| Lower secondary | 0.067 | 0.010 | -0.030 | -0.005 | 0.069 | 0.007 |
| Upper secondary | -0.023 | -0.003 | -0.055 | -0.009 | 0.099 | 0.010 |
| College or University | -0.229 | -0.029 | -0.081 | -0.013 | empty*2 | . |
| Family Wealth Quartile | | | | | | |
| 2 | -0.138 | -0.025 | 0.101 | 0.017 | -0.053 | -0.006 |
| 3 | -0.276** | -0.047** | -0.055 | -0.008 | -0.106 | -0.012 |
| Highest quartile | -0.318*** | -0.053** | 0.021 | 0.003 | -0.283* | -0.029* |
| Family Income Quartile | | | | | | |
| 2 | -0.058 | -0.008 | 0.034 | 0.005 | 0.061 | 0.007 |
| 3 | 0.111 | 0.017 | 0.105 | 0.016 | -0.013 | -0.001 |
| Highest quartile | 0.054 | 0.008 | 0.080 | 0.012 | -0.204 | -0.018 |
| **Geographical Characteristics** | | | | | | |
| Rural | 0.324*** | 0.046*** | -0.004 | -0.001 | 0.257*** | 0.024*** |
| Living in major cities | -0.231 | -0.030 | -0.355** | -0.046*** | -0.454 | -0.032* |
| *Region (base: Red River Delta)* | | | | | | |
| Midlands and Northern Mountain | -0.137 | -0.019 | -0.111 | -0.014 | 0.112 | 0.013 |
| Northern and Central Coast | 0.110 | 0.018 | 0.192** | 0.030** | 0.014 | 0.001 |
| Central Highlands | 0.216** | 0.037* | 0.376*** | 0.067*** | 0.070 | 0.008 |
| Southeastern | -0.132 | -0.018 | 0.169 | 0.026 | -0.384** | -0.030*** |
| Mekong Delta | -0.204* | -0.027* | 0.084 | 0.012 | -0.269* | -0.023** |
| Constant | -1.637 | | -1.857 | | -1.719 | |
| Number of observation | | 4234 | | 4234 | | 3879 |
| LR chi2 | | 317.07 | | 103.92 | | 93.21 |
| Prob > chi2 | | <0.0001 | | <0.0001 | | <0.0001 |
| Pseudo R2 | | 0.1191 | | 0.0399 | | 0.0596 |
| Log likelihood | | -1172.4897 | | -1249.5561 | | -735.31849 |

Source: estimated by Author based on VHLSS2010

(*1) AME: Average Marginal Effect;

(*2) Mother education = 3 predicts failure perfectly, 355 obs. not used.

*** p. < 0.01; ** p. < 0.05; * p. < 0.1

### 5.2.2. Effects of Financial Assistances on Education Expenditure of Households

Financial aids are essentially tools to influence people's decisions through their ability of spending. Before any claim can be made about the impact of financial assistances on higher education enrollment, it should be investigated how the benefits from the financial assistances in question affect the actual education expenditure of beneficiary students. Inferring from the analytical model for financial constraints, some predictions can be made regarding the effects of the financial assistances on education expenditure under the financial constraints under the assumption that beneficiaries are financially constrained.

Tuition exemption should reduce direct education expenditures, but the size of the reduction should be less than the amount of exempted tuition and fees as some of the reduction is absorbed in the form of reduced working hours. Students receiving grant scholarships should increase the education expenditures of beneficiaries as it adds resources on the initial wealth, but the size of increase should be less than the size of the scholarship for the same reason. Student loans should increase the education expenditure as it raises the borrowing limit. Student loan beneficiaries would increase their education expenditure only if they are financially constrained and in need of borrowing. Otherwise, students are already making an optimal investment, and student loans should only have little impact on education expenditure. The size of increase in education expenditure is expected to be smaller than the ceiling amount of borrowing of the student loans program because it is rational for students to borrow only as much as they need to fill the borrowing gap. Even if they choose

to borrow up to the upper ceiling amount attracted by the favorable interest charge, actual increase in educational expenditure should be equal to the size of the borrowing gap.

Table 5-5 below descriptively shows the average total education expenditures of students enrolled in colleges and universities grouped by family income quartile, and Table 5-6 presents the OLS estimates of the effects of the financial assistances and other covariates on the amount of higher education expenditure. The VHLSS 2010 dataset contains the information about the amount of education expenditure that the households made for each household member over the past 12 months.

The effect of tuition exemption is found to be most prominent. It is found that students benefiting from tuition exemption consistently spend much less than non-beneficiary students across all the income quartile groups as shown in Table 5-5. The OLS estimation indicates that, ceteris paribus, being granted tuition exemption reduces education expenditure by about VND 2,593,000 (approximately equivalent to USD 139[11]) annually. The reduced amounts of the total education expenditure appear to be more or less equal to what public higher education institutions usually charge as tuition fees[12]. The level of reduction appears to be somewhat larger than predicted by the theoretical model, but it is probably because tuition exemptions are usually awarded in conjunction with exemptions from other fees and contribution obligations. All in all, it seems safe to say that the beneficiary students of tuition exemption reduce

[11] At the interbank exchange rate on Jan 1, 2010: USD 1 = VND 18,616.

[12] The government's decree No. 49/2010/ND-CP (Socialist Republic of Vietnam, 2010) on "regulations on exemption and reduction of school fees, learning support costs and collection mechanisms, use of tuition for education under the national education system from the academic year 2010-2011 to school year 2014-2015" mandates that the ceiling rates of tuition for higher education in the academic year 2010/11 are VND 290,000 per month for social science majors, VND 310,000 per month for natural science majors, and VND 340,000 per month for medicine related majors. One academic year consist of 10 months.

the total education expenditure to the same extent of the amount that has been exempted from tuition fees. The reduced direct costs for higher education should render higher education more affordable for low-income families and lead to increased higher education investment.

Contrary to the assumption, scholarships seem to have little impact on the level of education expenditure. As shown in Table 5-5, the average amounts of educational expenditures do not differ between beneficiaries and non-beneficiaries in the lower income group for whom financial constraints should be an issue. For the higher income group, the average total educational expenditures are marginally smaller for beneficiaries of scholarships. The OLS estimation reveals that after controlled for other covariates, the effect of scholarships becomes positive, but is small and not statistically significant. Scholarships do not seem to be significantly contributing to the alleviation of the burdens of higher education expenditures.

The way that student loans impact the students' higher education expenditure is in line with the expectation, but the size of increase appears to be smaller than what was expected. The average total education expenditures are higher for student loan beneficiaries, except for the highest income quartile, as shown in Table 5-5. The OLS estimation shows that when other important covariates are controlled for, receiving student loans increase higher education expenditure by about VND 1,200,000 (approximately equivalent to USD 64) annually. However, the extent of increase appears to be rather limited considering the ceiling amount of the student loan schemes, which was set at VND 1 million per month or VND 10 million per year.

Let's also examine the effects of other covariates. It is interesting

to note that ethnicity does not play a role in deciding the level of higher education expenditure. People often argue in Vietnam that the level of awareness about the importance of education is low among ethnic minorities and thus tend to limit educational investment. This may not be the case as far as ethnic minorities studying in higher education institutions are concerned. Ethnic minorities who manage to attend higher education institutions may not be from the most disadvantaged groups, and rather from more assimilated ethnic minorities who are economically better-off than other ethnic minorities as Ito (2011) argues. Students from rural areas spend considerably more for educational purposes. Everything else being equal, students from rural areas spend about VND 1,090,000 (approximately equivalent to USD 58) more for their higher education than students from urban areas. This is likely due to the additional costs for transportation and accommodation that rural students have to bear to commute to higher education institutions. Another interesting finding is that when controlled for other variables, the family income level does not seem to be a strong influential factor for the level of higher education expenditure. Their effects are small and not statistically significant. Apparently, the differences in the total expenditure across income groups observed in Table 5-5 are likely to be a result of the differences in the distribution of other factors such as rural residency and type of institutions.

**Table 5-5 Effects of Financial Aids on Higher Education Expenditure**

| | Income Quartile | | | |
|---|---|---|---|---|
| | Poorest | 2 | 3 | Richest |
| **Tuition waiver** | | | | |
| Beneficiaries | 5,377 | 4,145 | 4,513 | 5,540 |
| Non-beneficiaries | 7,679 | 7,130 | 8,174 | 13,134 |
| **Scholarship** | | | | |
| Beneficiaries | 7,199 | 6,600 | 7,233 | 10,472 |
| Non-beneficiaries | 7,198 | 6,674 | 7,899 | 13,000 |
| **Student loans** | | | | |
| Beneficiaries | 10,606 | 6,987 | 8,241 | 9,495 |
| Non-beneficiaries | 6,819 | 6,641 | 7,821 | 12,839 |
| **Average** | | | | |
| | 7,198 | 6,666 | 7,844 | 12,733 |

Source: Calculated by Author based on VHLSS 2010

Note: the total education expenditure for a higher education student in the past 12 months. Amounts in VND '000.

**Table 5-6 OLS Estimates of Effects of Financial Assistances and Other Characteristics on Higher Education Expenditure Level**

| | Total Education Expenditure | |
|---|---|---|
| | Coefficient | Std. Err. |
| **Financial Assistances** | | |
| Tuition exemption | -2593.62*** | 453.73 |
| Scholarship | 502.88 | 460.04 |
| Student loans | 1200.53** | 580.23 |
| Institution Type (based = college) | | |
| Enrolled in university | 911.48*** | 280.96 |
| School Type (based = public) | | |
| Community-established | 2032.54*** | 460.82 |
| Private | 3055.47*** | 1290.34 |
| Personal characteristics | | |
| Ethnic minority | -451.03 | 709.38 |
| Family background | | |
| Family income quartile | | |
| 2 | -522.64 | 477.28 |
| 3 | 222.36 | 449.25 |
| Richest | 561.80 | 466.69 |
| Regional Characteristics | | |
| Rural | 1090.14*** | 303.49 |
| *Region (base: Red River Delta)* | | |
| Midlands and Northern Mountain | 405.21 | 519.86 |
| Northern and Central Coast | 620.77* | 358.17 |
| Central Highlands | 1314.20** | 578.77 |
| Southeastern | 191.93 | 489.43 |
| Mekong Delta | 741.25 | 486.22 |
| Constant | 5410.45*** | 536.30 |
| Number of observation | | 784 |
| F( 16, 767) | | 6.87 |
| Prob > F | | <0.0001 |
| Adj R-squared | | 0.1070 |

Source: Estimated by Author based on VHLSS 2010

Note: Unit VND '000.

### 5.2.3. Impact of Financial Assistance on Higher Education Enrollment Probability

This section presents the estimation results on the impact of the three financial assistances. There are two points that need to be highlighted with regard to how the estimations are performed. First, because all the three financial assistances are expected to produce the effects essentially in the same mechanism and share the same instrumental variable, the effect of the assistances is estimated all together regardless of the types. The binary treatment variable takes the value of 1 if the individual receive either one of the three assistances. The estimated effect is, therefore, the effect of receiving at least one of the three financial assistances. Secondly, because the financial assistance programs are designed to assist poorer population it is sensible to focus the estimation on less wealthy segments of the population. For that purpose, the study executes the 2SLS regressions with the sub-sample below the second income quartile to concentrate on the effects for the less wealthy in addition to the estimations with the sub-sample of all the income groups. Results from such estimations should be interpreted as applicable not to an entire population, but only to the poorer population.

Table 5-7 presents an overview of the variables in the sub-sample below the second income quartile in comparison with the entire sub-sample. Table 5-8 presents the outcome of the estimations. Model 1 and Model 3 are estimated by a single-stage logistic regression and shows the estimates without applying an IV method, and Model 2 and Model 4 are estimations by the 2SLS regression method using the entire sub-sample and the restricted sub-sample below the second income quartile

respectively. Table 5-9 shows the first-stage estimation of the 2SLS regressions for the treatment probabilities.

According to Table 5-7, the observations in the sub-sample below the second quartile seem to be more concentrated in rural areas and have lower parental education background. The proportion of beneficiaries of the financial assistances is higher, and 24% of observations in the sub-sample below the second quartile receive at least one form of financial assistance.

**Table 5-7 Overview of Variables in Sub-Sample of Below the 2nd Income Quartile**

| | Full Sub-Sample | Below the 2nd quartile |
|---|---|---|
| **Outcome** | | |
| Enrolled | 0.54 | 0.48 |
| **Personal characteristics** | | |
| Gender (Female = 1) | 0.53 | 0.53 |
| Ethnic Minority | 0.11 | 0.17 |
| **Family background** | | |
| Monthly family income per head | 1,481 | 663 |
| *Father's Education* | | |
| No Schooling or Primary Only | 0.28 | 0.36 |
| Lower Secondary | 0.41 | 0.45 |
| Upper Secondary | 0.23 | 0.17 |
| Higher Education | 0.08 | 0.02 |
| *Mother's Education* | | |
| No Schooling or Primary Only | 0.37 | 0.45 |
| Lower Secondary | 0.39 | 0.43 |
| Upper Secondary | 0.19 | 0.12 |
| Higher Education | 0.06 | 0.01 |
| **Regional Characteristics** | | |
| Urban-Rural (Rural = 1) | 0.67 | 0.83 |
| Cities (Hanoi/HCMC) | 0.05 | 0.01 |
| *Region* | | |
| Red River Delta | 0.28 | 0.24 |
| Midlands and Northern Mountain | 0.17 | 0.21 |
| Northern and Central Coast | 0.27 | 0.33 |
| Central Highlands | 0.07 | 0.07 |
| Southeastern | 0.09 | 0.05 |
| Mekong Delta | 0.12 | 0.10 |
| **Financial Assistance among Enrolled Students** | | |
| Tuition Exemption | 0.10 | 0.13 |
| Scholarship | 0.09 | 0.09 |
| Student Loans | 0.05 | 0.07 |
| Receiving at least one financial assistance | 0.19 | 0.24 |
| Observations | 7,778 | 3,511 |

Source: Calculated by Author from VHLSS 2010

**Table 5-8 Estimation Results on Impact of Three Financial Assistances**

| Enrolled in College/University (Y=1) | Model (1) (Single eq. logit) | | **Model (2) (2SLS)** | Model (3) (Single eq. logit) (Below the 2nd quartile) | | **Model (4) (2SLS) (Below the 2nd quartile)** |
|---|---|---|---|---|---|---|
| | Coeff. | AME | Coeff. | Coeff. | AME | Coeff. |
| **Financial Assistances** | | | | | | |
| | 0.896*** | 0.190*** | -0.118 | 0.860*** | 0.189*** | -0.048 |
| **Personal characteristics** | | | | | | |
| Female (base: Male) | 0.172*** | 0.038*** | 0.053*** | 0.156** | 0.034** | 0.047*** |
| Ethnic minority | -0.697*** | -0.155*** | -0.118*** | -0.907*** | -0.200*** | -0.166*** |
| **Family background** | | | | | | |
| Father's Education | | | | | | |
| Lower secondary | 0.047 | 0.011 | 0.017 | -0.024 | -0.005 | 0.003 |
| Upper secondary | 0.392*** | 0.089*** | 0.100*** | 0.333*** | 0.074*** | 0.078*** |
| College or university | 0.968*** | 0.208*** | 0.210*** | 1.252*** | 0.261*** | 0.253*** |
| Mother's Education | | | | | | |
| Lower secondary | 0.127** | 0.029** | 0.032** | 0.008 | 0.002 | 0.002 |
| Upper secondary | 0.516*** | 0.115*** | 0.123*** | 0.442*** | 0.098*** | 0.111*** |
| College or University | 0.958*** | 0.205*** | 0.179*** | -0.004 | -0.001 | 0.024 |
| Wealth Index Quartile | | | | | | |
| 2 | 0.144 | 0.032 | 0.024 | 0.110 | 0.024 | 0.015 |
| 3 | 0.333*** | 0.074*** | 0.060*** | 0.313** | 0.070** | 0.054* |
| Richest | 0.463*** | 0.103*** | 0.089*** | 0.306** | 0.068** | 0.056* |
| Family Income Quartile | | | | | | |
| 2 | 0.039 | 0.008 | -0.006 | - | - | - |
| 3 | -0.054 | -0.012 | -0.028 | - | - | - |
| Richest | 0.090 | 0.020 | -0.003 | - | - | - |
| Log Family Income per capita | - | - | - | 0.162 | 0.036 | 0.013 |
| **Regional Characteristics** | | | | | | |
| Rural | -0.301*** | -0.066*** | -0.055*** | -0.223** | -0.049** | -0.042* |
| Living in Hanoi or HCMC | -0.225* | -0.049* | -0.067** | -0.429 | -0.093 | -0.111 |
| *Region (base: Red River Delta)* | | | | | | |
| Midlands and Northern Mountain | -0.423*** | -0.095*** | -0.104*** | -0.778*** | -0.175*** | -0.187*** |
| Northern and Central Coast | 0.097 | 0.022 | 0.033** | -0.142 | -0.033 | -0.026 |
| Central Highlands | 0.234** | 0.052** | 0.072*** | 0.051 | 0.012 | 0.026 |
| Southeastern | 0.340*** | 0.075*** | 0.080*** | -0.031 | -0.007 | 0.007 |
| Mekong Delta | -0.030 | -0.007 | -0.012 | -0.443*** | -0.102*** | -0.115*** |
| Constant | -0.441*** | | 0.446*** | -1.108 | | 0.436*** |
| No. of obs. | | 7776 | 7776 | | 3510 | 3510 |
| LRchi2(22)/Wald chi2(22)(20) | | 953.67 | 1068.26 | | 432.33 | 478.83 |
| Prob > chi2 | | 0.000 | <0.001 | | <0.001 | <0.001 |
| Pseudo R2/R-squared | | 0.089 | 0.0654 | | 0.0889 | 0.082 |
| Log likelihood | | -4882.2448 | | | -2214.5186 | |

Source: Estimated by Author based on VHLSS2010; *** p. < 0.01; ** p. < 0.05; * p. < 0.1,

**Table 5-9 First-Stage Estimations of 2SLS Regressions for Treatment Probabilities**

| | First Stage For Model (2) | First Stage For Model (4) (Below the 2nd income quartile) |
|---|---|---|
| | Coeff. | Coeff. |
| **Excluded Instruments** | | |
| Poor Family Certificate | 0.180*** | 0.190*** |
| **Personal characteristics** | | |
| Female (base: Male) | 0.051*** | 0.054*** |
| Ethnic minority (base: Kinh/Hoa) | 0.089*** | 0.078*** |
| **Family background** | | |
| Father's Education | | |
| Lower secondary | 0.022** | 0.041** |
| Upper secondary | 0.027** | 0.008 |
| College or university | 0.074*** | 0.000 |
| Mother's Education | | |
| Lower secondary | 0.015 | 0.009 |
| Upper secondary | 0.031** | 0.070*** |
| College or University | -0.009 | 0.101 |
| Wealth Index Quartile | | |
| 2 | 0.003 | 0.004 |
| 3 | -0.006 | -0.007 |
| Richest | 0.000 | 0.011 |
| Family Income Quartile | | |
| 2 | -0.018 | - |
| 3 | -0.023* | - |
| Richest | -0.044*** | - |
| Log Family Income per capita | - | -0.052*** |
| **Regional Characteristics** | | |
| Rural | 0.023** | 0.011 |
| Living in Hanoi or HCMC | -0.074*** | -0.080 |
| *Region (base: Red River Delta)* | | |
| Midlands and Northern Mountain | -0.033** | -0.062*** |
| Northern and Central Coast | 0.033*** | 0.027 |
| Central Highlands | 0.070*** | 0.065** |
| Southeastern | 0.013 | 0.038 |
| Mekong Delta | -0.006 | -0.028 |
| Constant | 0.071*** | 0.405*** |
| No. of obs. | 7776 | 3510 |
| Prob > chi2 | <0.001 | <0.001 |
| Adj. R-squared | 0.0443 | 0.0567 |
| First-stage *F* statistic | 85.66 | 76.63 |

Source: Estimated by Author based on VHLSS2010; *** p. < 0.01; ** p. < 0.05; * p. < 0.1,

The first-stage regressions on treatment probabilities (Table 5-9) indicates that the excluded instrument is sufficiently effective in predicting the likelihood of receiving the financial assistances showing high *F* statistic values for both models. For the full sub-sample estimation and for sub-sample of the second income quartile, having a poor family certificate increases the chances of receiving at least one of the financial assistances by about 18.0 % points and 19.0 % points, respectively.

Model 1 and Model 3 are single-stage logistic regressions without accounting for the endogeneity of the treatment variable. The results of Model 1 and Model 3 shows strong effect of the financial assistances because of the reverse causation problem: Enrollment is the precondition of receiving financial assistances. The study applies an IV method of 2SLS regression to resolve this endogeneity and examine causal relationships between the treatment and outcome variables.

After adjusted for the endogeneity problem by 2SLS method, the financial assistances have no statistically significant effects on the probability of higher education enrollment both in Model 2 (with the sub-sample of all the income groups) and Model 4 (with the sub-sample of only the first and second income quartile groups). It is confirmed that the endogeneity problem is successfully adjusted for in the 2SLS regressions. However, the direction of the coefficients are opposite to what is expected, showing negative signs, and are not statistically significant. Other covariates have more or less similar coefficients with those produced in Model 1 and Model 3 by the single-stage logistic regression, supporting the claim that the use of linear 2SLS regression models are justifiable even though they disregard the binary structure.

The effects of the financial assistances may be limited according

to the estimation results above. One of the possible explanations is that the size of additional incentives from the financial assistances is not sufficiently large to prompt poor students in remote areas to come to large cities to get enrolled in higher education institutions. For them, marginal costs of higher education schooling may be too large relative to the amount of financial support offered by the assistance programs. In particular, upper secondary graduates from provinces far from the five central municipalities usually face greater costs of schooling, having to pay for costly transportation and accommodation expenses in addition to tuition fees because of the high concentration of colleges and universities in the five central municipalities as discussed in Section 2.3.2. Poor rural families are particularly disadvantaged in this regard as the extent of their social networks tend to be narrow. The sizes of financial assistances are defined uniformly by the relevant policies and do not differ according to where students are from. Under such circumstances, the impact of the financial assistances would be limited for those who are faced with greater marginal costs of higher education schooling.

On the other hand, for upper secondary graduates in the central municipalities or in provinces close to the central municipalities where higher education institutions are more readily accessible, marginal costs of higher education schooling can be significantly lower because they are more likely to commute from home or stay with family members, relatives, or friends from same upper secondary schools who live near the higher education institutions. In such cases, the same amount of a financial support, which would not be sufficient for low-income students from remote areas, may create large enough financial incentives for them to overcome the financial constraints.

Based on the above hypothesis, the study attempts another round of probe by focusing on regions where the initial marginal costs of accessing higher education institutions are supposedly relatively cheaper compared to other regions. As discussed in previous chapters, higher education institutions in Vietnam, though they are becoming more widely available than they were before, are still highly concentrated in the five central municipalities that have traditionally hosted a large number of colleges and universities. Among the five central municipalities, Hanoi and HCMC host by far the largest numbers of higher education institutions. In addition, other municipalities[13], Can Tho, Da Nang, and Hai Phong, also host more institutions than other cities. In terms of the regions, Hanoi is located inside the Red River Delta region; and HCMC is located in the Southeastern Area region, bordering Mekong Delta region. Hai Phong also sits inside the Red River Delta region, Can Tho is located in the Mekong Delta region, and Da Nang is in the Coastal Central region. Therefore, these are the areas where the costs of schooling in higher education are likely to be relatively cheaper due to the closer spatial proximity to higher education institutions. The study creates another sub-sample including only these three regions around Hanoi and HCMC (i.e., Red River Delta, Southeastern, and Mekong Delta) and three provinces around Da Nang city (i.e., Da Nang, Thua Thien - Hue, and Quang Nam provinces); and one more sub-sample including only the three regions[14].

The same set of one single-stage logistic and two 2SLS regressions are executed using these two newly created sub-samples. Table 5-10 shows summaries of the values of the covariates in the new sub-samples. Table

[13] Vietnam has five national municipalities; namely, Hanoi, HCMC, Can Tho, Da Nang, and Hai Phong. Administratively, they are treated as equal level to provinces.
[14] For the locations of regions in Vietnam, see the Appendix 1 and 2.

5-11 presents the estimation results for the sub-sample of three regions and three provinces. Table 5-12 presents the estimation results for the sub-sample of three regions only. Model 1 and Model 3 show estimation results from single-stage logistic regressions. Model 2 and Model 4 show 2SLS estimation results with the data of all the income quartile and with the data of the first and second income quartile groups, respectively. Finally, Table 5-13 shows the first-stage regression results for the 2SLS regressions.

**Table 5-10 Overview of Variables in Sub-Sample of Regions with Major Cities**

| | With Three Regions (*1) and Three Provinces (*2) | | With Three Regions | |
|---|---|---|---|---|
| | Sub-Sample | Below the 2nd quartile | Sub-Sample | Below the 2nd quartile |
| **Outcome** | | | | |
| Enrolled | 0.58 | 0.55 | 0.57 | 0.54 |
| **Personal characteristics** | | | | |
| Gender (Female = 1) | 0.54 | 0.55 | 0.53 | 0.55 |
| Ethnic Minority | 0.02 | 0.02 | 0.02 | 0.03 |
| **Family background** | | | | |
| Monthly family income per head | 1,722 | 699 | 1,757 | 701 |
| *Father's Education* | | | | |
| No Schooling or Primary Only | 0.27 | 0.34 | 0.27 | 0.33 |
| Lower Secondary | 0.40 | 0.46 | 0.41 | 0.47 |
| Upper Secondary | 0.23 | 0.18 | 0.23 | 0.18 |
| Higher Education | 0.09 | 0.02 | 0.08 | 0.02 |
| *Mother's Education* | | | | |
| No Schooling or Primary Only | 0.36 | 0.42 | 0.34 | 0.39 |
| Lower Secondary | 0.39 | 0.46 | 0.41 | 0.48 |
| Upper Secondary | 0.19 | 0.11 | 0.20 | 0.12 |
| Higher Education | 0.06 | 0.01 | 0.05 | 0.01 |
| **Regional Characteristics** | | | | |
| Urban-Rural (Rural = 1) | 0.65 | 0.82 | 0.67 | 0.84 |
| Cities (Hanoi/HCMC) | 0.09 | 0.02 | 0.10 | 0.03 |
| *Region* | | | | |
| Red River Delta | 0.51 | 0.54 | 0.57 | 0.62 |
| Midlands and Northern Mountain | - | - | - | - |
| Northern and Central Coast | 0.11 | 0.13 | - | - |
| Central Highlands | - | - | - | - |
| Southeastern | 0.17 | 0.11 | 0.19 | 0.13 |
| Mekong Delta | 0.21 | 0.22 | 0.24 | 0.25 |
| **Financial Assistance among Enrolled Students** | | | | |
| Tuition Exemption | 0.07 | 0.11 | 0.07 | 0.10 |
| Scholarship | 0.08 | 0.08 | 0.08 | 0.07 |
| Student Loans | 0.04 | 0.06 | 0.04 | 0.06 |
| Receiving at least one assistance | 0.16 | 0.20 | 0.16 | 0.20 |
| Observations | 4,280 | 1,601 | 3,811 | 1,390 |

Source: Calculated by Author from VHLSS 2010

(*1) Three regions: Three regions surrounding Hanoi and HCMC, including Red River Delta, Mekong Delta, and Southeastern Area regions.

(*2) Three provinces: Three provinces surrounding Da Nang city, including Da Nang, Thua Thien-Hue, and Quang Nam provinces.

**Table 5-11 Estimation Results on Impact of the Financial Assistances with Sample of Three Regions around Hanoi & HCMC and Three Provinces around Da Nang**

| Enrolled in College/University (Y=1) | Model (1) (Single eq. logit) | | **Model (2) (2SLS)** | Model (3) (Single eq. logit) (Below the 2nd quartile) | | **Model (4) (2SLS) (Below the 2nd quartile)** |
|---|---|---|---|---|---|---|
| | Coeff. | AME | Coeff. | Coeff. | AME | Coeff. |
| **Financial Assistances** | **0.932*** ** | **0.196*** ** | **0.201** | **0.707*** ** | **0.160*** ** | **0.303*** |
| **Personal characteristics** | | | | | | |
| Female (base: Male) | 0.080 | 0.018 | 0.018 | 0.162 | 0.038 | 0.031 |
| Ethnic minority | -0.726*** | -0.164*** | -0.159** | -1.053*** | -0.239*** | -0.261*** |
| **Family background** | | | | | | |
| Father's Education | | | | | | |
| Lower secondary | 0.054 | 0.013 | 0.015 | 0.042 | 0.010 | 0.007 |
| Upper secondary | 0.397*** | 0.091*** | 0.095*** | 0.458*** | 0.106*** | 0.103** |
| College or university | 0.991*** | 0.212*** | 0.194*** | 1.352*** | 0.278*** | 0.287*** |
| Mother's Education | | | | | | |
| Lower secondary | 0.267*** | 0.063*** | 0.062*** | 0.215 | 0.051 | 0.050 |
| Upper secondary | 0.686*** | 0.156*** | 0.154*** | 0.595*** | 0.138*** | 0.124*** |
| College or University | 1.074*** | 0.233*** | 0.211*** | 1.080 | 0.235 | 0.236 |
| Wealth Index Quartile | | | | | | |
| 2 | -0.039 | -0.009 | -0.012 | -0.084 | -0.020 | -0.008 |
| 3 | 0.150 | 0.034 | 0.033 | 0.095 | 0.022 | 0.030 |
| Richest | 0.356** | 0.080** | 0.079*** | 0.062 | 0.014 | 0.025 |
| Family Income Quartile | | | | | | |
| 2 | 0.003 | 0.001 | 0.000 | - | - | - |
| 3 | -0.222** | -0.049** | -0.051* | - | - | - |
| Richest | -0.160 | -0.036 | -0.037 | - | - | - |
| Log Family Income per capita | - | - | - | 0.195 | 0.045 | 0.065 |
| **Regional Characteristics** | | | | | | |
| Rural | -0.142 | -0.032 | -0.031 | 0.019 | 0.004 | -0.004 |
| Living in Hanoi or HCMC | -0.061 | -0.014 | -0.012 | -0.283 | -0.066 | -0.065 |
| *Region (base: Red River Delta)* | | | | | | |
| Midlands and Northern Mountain | - | - | - | - | - | - |
| Northern and Central Coast | 0.221* | 0.050* | 0.049* | 0.303* | 0.070* | 0.059 |
| Central Highlands | - | - | - | - | - | - |
| Southeastern | 0.442*** | 0.098*** | 0.097*** | 0.107 | 0.025 | 0.016 |
| Mekong Delta | 0.078 | 0.018 | 0.017 | -0.281* | -0.066* | -0.063* |
| Constant | -0.389** | | 0.413*** | -1.552 | | -0.001 |
| No. of obs. | | 4279 | 4279 | | 1600 | 1600 |
| Log likelihood | | -2725.333 | | | -1049.8073 | |
| LRchi2(20) / Wald chi2(20)(18) | | 382.47 | 393.61 | | 102.43 | 89.74 |
| Prob > chi2 | | <0.001 | <0.001 | | <0.001 | <0.001 |
| Pseudo R2/R-squared | | 0.0656 | 0.0829 | | 0.0465 | 0.0498 |

Source: Estimated by Author based on VHLSS2010; *** p. < 0.01; ** p. < 0.05; * p. < 0.1,

**Table 5-12 Estimation Results on Impact of the Financial Assistances with Sample of Three Regions around Hanoi & HCMC**

| Enrolled in College/University (Y=1) | Model (1) (Single eq. logit) | | **Model (2) (2SLS)** | Model (3) (Single eq. logit) (Below the 2nd quartile) | | **Model (4) (2SLS) (Below the 2nd quartile)** |
|---|---|---|---|---|---|---|
| | Coeff. | AME | Coeff. | Coeff. | AME | Coeff. |
| **Financial Assistances** | | | | | | |
| | **0.965*** ** | **0.203*** ** | **0.254** | **0.736*** ** | **0.167*** ** | **0.349** * |
| **Personal characteristics** | | | | | | |
| Female (base: Male) | 0.085 | 0.019 | 0.017 | 0.177 | 0.041 | 0.035 |
| Ethnic minority | -0.655** | -0.148** | -0.151** | -1.036*** | -0.234*** | -0.251*** |
| **Family background** | | | | | | |
| Father's Education | | | | | | |
| Lower secondary | 0.038 | 0.009 | 0.009 | 0.141 | 0.034 | 0.026 |
| Upper secondary | 0.423*** | 0.097*** | 0.100*** | 0.585*** | 0.137*** | 0.133*** |
| College or university | 1.008*** | 0.217*** | 0.198*** | 1.345*** | 0.286*** | 0.296*** |
| Mother's Education | | | | | | |
| Lower secondary | 0.234** | 0.055** | 0.054** | 0.112 | 0.026 | 0.027 |
| Upper secondary | 0.607*** | 0.139*** | 0.136*** | 0.457** | 0.106** | 0.089* |
| College or University | 1.037*** | 0.225*** | 0.202*** | 0.974 | 0.214 | 0.212 |
| Wealth Index Quartile | | | | | | |
| 2 | 0.042 | 0.010 | 0.010 | 0.027 | 0.006 | 0.020 |
| 3 | 0.291* | 0.067* | 0.067* | 0.268 | 0.063 | 0.074 |
| Richest | 0.424*** | 0.097*** | 0.097*** | 0.165 | 0.039 | 0.053 |
| Family Income Quartile | | | | | | |
| 2 | -0.018 | -0.004 | -0.002 | | | |
| 3 | -0.186 | -0.042 | -0.040 | | | |
| Richest | -0.111 | -0.025 | -0.020 | | | |
| Log Family Income per capita | | | | 0.096 | 0.022 | 0.044 |
| **Regional Characteristics** | | | | | | |
| Rural | -0.122 | -0.027 | -0.027 | 0.101 | 0.023 | 0.015 |
| Living in Hanoi or HCMC | -0.054 | -0.012 | -0.008 | -0.203 | -0.047 | -0.042 |
| *Region (base: Red River Delta)* | | | | | | |
| Midlands and Northern Mountain | - | - | | | | |
| Northern and Central Coast | - | - | | | | |
| Central Highlands | - | - | | | | |
| Southeastern | 0.422*** | 0.093*** | 0.092*** | 0.118 | 0.027 | 0.017 |
| Mekong Delta | 0.052 | 0.012 | 0.012 | -0.279* | -0.066* | -0.061 |
| Constant | -0.480** | | 0.383*** | -1.114 | | 0.074 |
| No. of obs. | | 3810 | 3810 | | 1389 | 1389 |
| Log likelihood | | -2433.5286 | | | -911.99134 | |
| LRchi2(19) / Wald chi2(19)(17) | | 334.47 | 331.29 | | 92.7 | 79.41 |
| Prob > chi2 | | <0.001 | <0.001 | | <0.001 | <0.001 |
| Pseudo R2/R-squared | | 0.0643 | 0.0804 | | 0.0484 | 0.0463 |

Source: Estimated by Author based on VHLSS2010; *** p. < 0.01; ** p. < 0.05; * p. < 0.1,

**Table 5-13 First-Stage Estimation Results of the 2SLS Regressions**

| | For Model (2) in Table 5-11 | For Model (4) In Table 5-11 (Below the 2nd income quartile) | For Model (2) in Table 5-12 | For Model (4) in Table 5-12 (Below the 2nd income quartile) |
|---|---|---|---|---|
| | Coeff. | Coeff. | Coeff. | Coeff. |
| **Excluded Instruments** | | | | |
| Poor Family Certificate | 0.220*** | 0.240*** | 0.215*** | 0.241*** |
| **Personal characteristics** | | | | |
| Female (base: Male) | 0.042*** | 0.044** | 0.040*** | 0.037* |
| Ethnic minority | 0.166*** | 0.180** | 0.143** | 0.116 |
| **Family background** | | | | |
| Father's Education | | | | |
| Lower secondary | 0.044*** | 0.052** | 0.042*** | 0.068*** |
| Upper secondary | 0.036** | 0.043 | 0.030* | 0.044 |
| College or university | 0.065*** | -0.051 | 0.054** | -0.033 |
| Mother's Education | | | | |
| Lower secondary | -0.007 | 0.006 | -0.009 | -0.006 |
| Upper secondary | 0.006 | 0.058 | 0.007 | 0.063 |
| College or University | 0.010 | -0.010 | 0.009 | -0.016 |
| Wealth Index Quartile | | | | |
| 2 | -0.034 | -0.054 | -0.020 | -0.045 |
| 3 | -0.001 | -0.023 | 0.012 | -0.025 |
| Richest | -0.009 | -0.027 | 0.007 | -0.027 |
| Family Income Quartile | | | | |
| 2 | -0.039** | - | -0.035* | - |
| 3 | -0.048** | - | -0.037* | - |
| Richest | -0.077*** | - | -0.074*** | - |
| Log Family Income per capita | - | -0.085*** | - | -0.078*** |
| **Regional Characteristics** | | | | |
| Rural | 0.031** | 0.046* | 0.015 | 0.026 |
| Living in Hanoi or HCMC | -0.056*** | -0.040 | -0.066*** | -0.060 |
| *Region (base: Red River Delta)* | | | | |
| Midlands and Northern Mountain | - | - | - | - |
| Northern and Central Coast | 0.017 | 0.063* | - | - |
| Central Highlands | - | - | - | - |
| Southeastern | 0.014 | 0.041 | 0.011 | 0.039 |
| Mekong Delta | -0.008 | -0.025 | -0.009 | -0.025 |
| Constant | 0.100*** | 0.612*** | 0.099*** | 0.579*** |
| No. of obs. | 4279 | 1600 | 3810 | 1389 |
| Prob > chi2 | <0.001 | <0.001 | <0.001 | <0.001 |
| Adj. R-squared | 0.0504 | 0.0794 | 0.0421 | 0.0691 |
| First-stage *F* statistic | 53.46 | 43.15 | 41.19 | 35.72 |

Source: Estimated by Author based on VHLSS2010; *** p. < 0.01; ** p. < 0.05; * p. < 0.1,

The distribution of the covariates (Table 5-10) indicates both that the new sub-sample of the three regions and three provinces and the new sub-sample of the three regions have slightly higher average income and fewer ethnic minority upper secondary graduates compared to the entire sub-sample. There is little difference in terms of parental education background and the ratio of rural residency. The new sub-samples also have slightly lower proportion of the financial assistance beneficiaries. While it is difficult to negate entirely the possibility of some selection biases with regard to extracting the data of these particular regions, the summary statistics show no strong indication of biased distributions of important covariates.

According to the first-stage regression results (Table 5-13), the excluded instrument, poor family certificate, is sufficiently effective in increasing the probability of receiving the financial assistances. In all the models, having a poor family certificate increases the chances of receiving at least one of the three financial assistances by about 21 – 24 % points. The first-stage *F* statistic which indicates the significance of excluded instrument(s) is well over the threshold of 10 and thus can be deemed as sufficiently strong (Stock, Wright, & Yogo, 2002).

Let's first review the estimation results of the estimations with the sub-sample of three regions and three provinces (Table 5-11). The single-stage logistic regressions in Model 1 and Model 3 show positive and statistically significant effect; however, this is not an indication of causal relationships because of a strong influence of the endogeneity bias of reverse causation problem. Adjusting for the endogeneity bias, the 2SLS estimation in Model 2 indicates a positive but not statistically significant ($p = .171$) effect of the financial assistances. When the sub-sample is

narrowed down to include only the first and second income quartile (Model 4), the 2SLS indicates a statistically significant (p. = .058) positive effect of the financial assistances on higher education enrollment. After controlling for other variables and adjusting for the endogeneity problem, receiving at least one of the financial assistances increases the chance of higher education enrollment by about 30.3 % points among the lower income group in the three regions and three provinces.

Next, the observations from the three provinces around Da Nang are dropped as Da Nang is the smallest city in terms of population among the five central municipalities hosting fewer higher education institutions, and is spatially isolated from other central municipalities. The estimation results are shown in Table 5-12. The single-stage logistic regressions in Model 1 and Model 3 again show strong and statistically significant positive effects which are biased due to the endogeneity problem. Adjusting for the endogeneity bias, the 2SLS regression results in Model 2 shows positive but statistically not significant (p = .127) effect of the financial assistances. When the sub-sample includes only the first and second income quartile groups, the 2SLS estimator in Model 4 shows statistically significant (p. = 0.049) positive effect of the financial assistances on the probability of higher education enrollment. Controlled for other covariates and adjusted for the endogeneity, receiving at least one of the three financial assistances increases the chance of higher education enrollment by about 34.9 % points among the lower income group in the three regions – Red River Delta, Southeastern, and Mekong Delta – surrounding Hanoi and HCMC.

# Chapter 6.
# DISCUSSION AND CONCLUSION

## 6.1. Discussion

This chapter discusses the findings in relation to the hypotheses presented in Section 4.2, reviewing the results presented in the chapter 5 as well as the literatures reviewed in the chapter 3, to answer the research questions of the study, which are (1) what are the demand-side factors that affect the likelihood of enrolling in higher education institutions in Vietnam, and (2) to what extent has the targeted financial assistances been effective in improving the chances of enrolling in higher education institutions among low-income youth.

### 6.1.1. Demand-side Determinants of Higher Education Enrollment

#### a) Individual, Family, and Geographical Factors

The research question 1-1 asks what kind of factors are affecting the likelihood of young people enrolling in higher education in Vietnam, and the research question 1-3 asks about the differences in the effects of those factors between college and university enrollment. What the study found in regards to the relationships between students' background factors and their probabilities of higher education enrollment are in line with the previous studies in Vietnam such as L.H. Vu et al. (2010) and L.T.H. Vu et al. (2012a). It is confirmed that higher education enrollment in Vietnam, be it college or university, is strongly affected by students' individual characteristics, family background, and geographical areas of residence.

Overall, the ethnic majority groups, economic better-offs, and better educated groups are considerably in a more advantageous position than others. This raises serious concerns over stifled inter-generational social mobility and perpetuating socio-economic gaps in Vietnam.

According to the estimation results in Section 5.1.2, Kinh/Hoa students who belong to the social majority have considerable advantage over ethnic minorities even after being controlled for other income and parental education factors. They are more likely to be enrolled in both colleges and universities. Studies on equity in basic education in Vietnam consistently show that ethnic minority students in primary and secondary education levels often underperform Kinh/Hoa students not only in terms of rates of enrollment but also in terms of grade repetition and their academic skills (World Bank, 2004). There are numerous socio-cultural factors associated with lower academic achievement among ethnic minority students. Language of instruction is often cited as an important factor determining academic performance (Glewwe, Chen, & Katare, 2012). Because of this low scholastic ability, ethnic minority students lose out in the completion for admission to higher education institutions. There are non-financial preferential treatment policies in place to grant easier access to public higher education for ethnic minorities such as granting additional marks to examination scores and offering preparatory bridge courses reserved for ethnic minority students. These policies may alleviate some of the difficulties for ethnic minority students; however, the result shows that ethnic minorities are still disadvantaged in the competition for college and university attendance.

Another possible reason behind the weaker accessibility to higher education for ethnic minorities is their weaker prospects of finding good

paying formal employment after completing higher education. Graduates of colleges and universities commonly seek jobs in the formal sector, possibly in the public sector or in the formal business sector. Finding jobs in these sectors would increase their life-time earnings. As the theoretical model suggests, the optimal level of higher education investment is decided at the level where marginal returns to higher education investment in the second period equal marginal costs of higher education in the first period. While marginal costs of higher education do not differ considerably between Kinh/Hoa students and ethnic minority students with similar scholastic ability and from the same area, their expectations about returns to higher education investment can differ significantly. It is widely known that finding wage jobs in Vietnam, be it in public sector or in businesses, is greatly influenced by how well job-seekers are connected in the kinship and social networks. Ethnic minorities are often far less well-connected than Kinh/Hoa students are and are sometimes subject to stereotyping and misconceptions (Dang, 2010). Ethnic minority students are probably well aware of these phenomenon and may believe that they will be disadvantaged in the competition for high wage jobs after their graduation from universities and colleges, which lowers their expected returns to higher education investment and their optimal higher education investment levels. This perceived low levels of return to higher education investment for ethnic minorities may be one of the reasons that being ethnic minorities decreases the probability of higher education enrollment.

Children who are born with parents who have education qualifications higher than upper secondary are far more likely to attend universities. If youths have parents with higher education qualifications,

their chances of attending universities are even greater. In other words, we can say that children of those who are well educated are far more likely to be well educated themselves, and the gaps in university enrollment are likely to be passed down from one generation to the next, limiting intergenerational social mobility. However, at the same time, college enrollment do not seem to be influenced significantly by parental education, at least not as much as university enrollment are. This may partially have to do with social capital issues described by Thomsen et al. (2013). Parents who have studied in higher education institutions not only fully understand the importance of going to higher education, but also are more cautious in selecting the right kind of higher education institutions (Thomsen et al., 2013). Parents in Vietnam with higher education experience may be more serious about pushing their children towards gaining university qualifications as they know very well that university degrees promise better chances of high earning jobs and higher return on investment. On the other hand, the finding that college enrollment are not significantly influenced by parental education indicates that higher education have become increasingly accessible for general population regardless of ones' social hierarchical associations, unlike in the past when access to higher education was confined to the elite groups.

Family wealth also play an important role in deciding the likelihood of higher education enrollment. After controlling for other variables, youth from higher family wealth index have better chance of attending universities. For college enrollment, the family wealth does not have significant effect. Family wealth index is expected to represent the long-term financial conditions of households, which are known to affect the children's scholastic abilities. The positive correlation found between

the family wealth index and university enrollment point to the importance of scholastic abilities in defining the chances of admission to universities. Because of the booming popularity of higher education, it has been highly competitive to gain admissions to higher education institutions, in particular to public universities. Admissions to colleges are usually less competitive, which is reflected in the insignificant effect of the family wealth index on college enrollment.

Family income per capita, representing the short-term financial capacity of the household, has different impacts on higher education enrollment than family wealth. University enrollment is strongly affected by the family income per capita. Youths from higher income families are significantly more likely to be enrolled in universities, indicating the existence of strong influence of financial constraints. In stark contrast with university enrollment, college enrollment probabilities are negatively affected by family income levels, meaning youths from higher income groups are less likely to attend colleges. The next section discusses this issue in more details.

Urban residency has different effects between college and university enrollment. It has been found in the previous studies that individuals in rural areas are less likely to attend higher education institutions. However, the estimation results of the study revealed that rural population is not particularly disadvantaged as far as college enrollment is concerned. Rural residency does not affect significantly the chances of college enrollment after controlled for other variables. Access to college education may have become more equitable between urban and rural areas. On the other hand, university enrollment continues to be significantly influenced by urban residency. In contrast with the

insignificant effect on college enrollment, living in rural areas has significant negative effects and reduce the chances of enrolling in universities even after controlled for other variables such as income differences and ethnicity.

One of the possible reasons is proximity to higher education institutions. College education has become more accessible for rural students because of the expansion of supply of colleges in wider geographical areas in the past decade (Section 2.3.2). Some colleges are located in the provincial capital city which is likely to be well within the social network of rural residents in that province. Universities are still concentrated in major cities. Major cities such as Hanoi and HCMC are outside of the social network of rural residents. Urban residents, on the other hand, tend to have wider social networks and greater mobility than rural residents (Dang, 2010), and are able to access major cities at smaller costs.

In addition to identifying the effects of individual variables, it should also be noted that these identified effects of parental education background, family wealth / income, and urbanity do not exist in isolation of each other. Oftentimes, parents with high education qualifications are also high income earners, owning more household assets. People often earn higher income in urban areas, and it is easier to find wage jobs in urban areas if you have good educational qualifications. Together, the combined effects of these factors create a group of youths who are very likely to go to universities. Drawing on the Jackson (1978)'s concepts, they are the Type 1 students who never thought about not going to higher education, and can be seen as the elite group.

It was also found that the ways the probability of college

enrollment is affected by these individual, family, and geographic factors are entirely different from how they affect university enrollment. This finding was not reported in the previous studies. While ethnic minorities are still disadvantaged for college enrollment, other family background variables that are significant for university enrollment such as parental education and family wealth have no statistically significant effects when it comes to college enrollment. These findings suggest that access to college education have become more equitable, and enrollment in colleges have become a realistic option for able upper secondary graduates regardless of their background; whereas, university education is still hard to attain for students with disadvantaged background.

Most of the previous studies on Vietnamese higher education treated higher education enrollment as a binary unit of choice, aggregating college enrollment and university enrollment. This finding of the study clearly points to the need of separating the analysis between college and university enrollment when discussing the issues of equality.

In sum, answering the research question 1-1, it has been confirmed that individual, family, and geographic factors are affecting the likelihood of higher education enrollment, particularly university enrollment. The hypothesis 1-1 is, therefore, confirmed. In relation to the research question 1-3, the finding is that college enrollment is far less affected by family background and geographic factors than university enrollment, making college education more accessible for poor youths, confirming the hypothesis 1-3.

**b) Financial Constraints**

The research question 1-2 asks to what extent the financial constraint is

affecting the likelihood of higher education enrollment in Vietnam, and the research question 1-3 asks about the difference in such effects between college and university enrollment. Whether borrowing constraints are preventing qualified but poor youths from gaining access to higher education has been a contentious issue in the international academic debate (Section 3.4). A key difficulty associated with the topic is that there is no direct measurement of borrowing constraints, and also that the level of family income – a good indicator of borrowing requirement - determines not only the borrowing needs but also affect children's learning achievement, which makes it difficult to directly use the family income level as a proxy to the levels of borrowing constraints for the household. To address this difficulty, the study differentiated long-term family financial conditions and short-term financial conditions by introducing family wealth index to represent families' long-term financial conditions. Short-term financial conditions, which are directly relevant to financial constraints, are represented by family income per capita.

Section 5.1.3 presented the results of estimation on financial constraints. The results show that family income per capita, representing short-term financial status, has statistically significant positive effect on the probability of university enrollment, while having significant negative effect on the probability of college enrollment. The family wealth index, on the other hand, is found to have statistically significant positive effects on university enrollment, but no significant effects on college enrollment. It is somewhat complicated to interpret these results in conjunction with the issue of financial constraints. If the assumption that the long-term financial status of the family is a factor strongly correlated with students' academic performance holds as Cameron & Heckman (2001) suggests

(Section 3.4), the family wealth index variable can be treated as a financial proxy of students' academic skills. Then, the positive effect of the family wealth index on university enrollment can be interpreted to mean that youths with higher academic skills have higher chances of being accepted in universities, whereas the lack of significant effect of the family wealth index on college enrollment can be interpreted as an indication of less stringent academic requirements for admission to colleges. This result is in line with the proposition that the expanded supply of colleges may have lowered the entrance requirements for colleges. The charts in Figure 5-4 support this view. It clearly demonstrates that the higher the family wealth index, the lower the proportion of non-enrollment becomes. It seems to show that better long-term family financial condition, as represented in the higher family wealth index, increases the chance of higher education enrollment, especially university enrollment.

The question, then, is how the short-term financial constraints, as represented by family income per capita, can be interpreted. Assuming students' academic skills are sufficiently controlled for by the family wealth index and by parental education, the effects from the family income per capita variable can be interpreted as a manifestation of financial constraints. Under the assumption of zero financial constraints, students would borrow according to his/her ability as shown in the analytical model in Section 4.1.2, and given the obvious high benefit of higher education in Vietnam, youths would attempt to enroll in the best public institution possible that their ability allows them to choose regardless of their families' short-term financial ability. In this case, the effect of the family income per capita should be insignificant. In other words, if the family income variable shows significant effects on enrollment probabilities after

being controlled for other variables including the family wealth index and parental education, it would indicate the existence of financial constraints.

From this perspective, the identified significant positive effect on university enrollment and significant negative effect on college enrollment of the family income variable do seem to indicate that there is some level of financial constraints as far as the access to university enrollment is concerned. It is also noticeable that the negative effects of the family income variable on college enrollment are more or less consistent with the levels of the positive effects on university enrollment. The graphs in Figure 5-3 also indicates that the family income variable does not have significant effects on the probability of non-enrollment. This may suggest that financial constraints tend to impact people's higher education enrollment decision through the choice of types of higher education, rather than through the choice of whether or not to enroll. It seems to be a reasonable course of action for upper secondary graduates in Vietnam to enroll in whatever higher education institution affordable for their family even if it is not the best possible choice for their examination scores, because the expected returns to higher education are generally deemed high, be it college or university education. Therefore, when financially constrained, Vietnamese upper secondary graduates would settle for cheaper college education even if they are academically qualified to enroll in university, rather than giving up higher education altogether. Some of the academically qualified youths are deterred from attending university because of a lack of financial capabilities and borrowing opportunities. The negative effect on college enrollment, on the other hand, suggests that there are some students who are academically qualified to attend universities but choose to attend colleges instead

because of the financial constraints.

To sum up, answering the research question 1-2, it can be said that there are some level of financial constraints that limit the accessibility to university education among poor upper secondary graduates. Therefore, the hypothesis 1-2 is confirmed only with regard to access to universities. Some of the poor and able upper secondary graduates are deterred from attending universities because of being financially constrained. Access to college does not seem to be significantly financially constraining even for poor youths. In relation to the research question 1-3, the hypothesis 1-3 is confirmed. Short-term financing capacity is considerably a greater issue for able poor upper secondary graduates wishing to attend university than for poor upper secondary graduates who just want to attend college.

### 6.1.2. Effectiveness of Financial Assistances to Increase Higher Education Enrollment for Low-Income Youth

#### a) Distribution of Financial Assistances

The research question 2-1 asks about the extent that the targeted financial assistances are reaching the low-income groups. According to Section 5.2.1, the distributions of tuition exemption and student loans are found to be more or less well-targeted to the poorer income groups. In particular, the distribution of tuition exemption is highly favorable to the poorest group. A high proportion of students in the lowest income quartile enjoy tuition exemption. Student loans are distributed slightly more widely through the second income quartile, perhaps because the requirement of parental guarantee for repayment (Section 2.6.3) shunned some parents and students in the poorest group who are not confident about their

repayment capacity and want to avoid taking such financial risks.

Scholarships, on the other hand, are distributed more evenly across the income groups. The proportions of scholarship beneficiary students remain at the same level even for the highest income group. In terms of average amount, students in the lowest income group have the lowest average scholarship amount. This can be explained by the fact that scholarships are granted not only for the purpose of promoting access among poor students, but also to provide monetary incentives to students for their outstanding performance. A combined approach of these two is also common – granting scholarships to poor students with excellent academic achievement. There is no way of telling which scholarship is for which purpose due to the data limitation. With regard to the purpose of analysis of the study, it is assumed that scholarships given to low-income students, regardless of the nature of the scholarship program, would have an effect to encourage the higher education enrollment of poor upper secondary graduates.

In summary, to answer the research question 2-1, it is confirmed that most of tuition exemption and student loans are reaching the low-income students, their intended targets; while tuition exemption is more efficient in terms of reaching the poorest, and student loans are somewhat more widely available through the first and second income quartile groups. The hypothesis 2-1 is confirmed as far as tuition exemption and student loans are concerned. Scholarships, on the other hand, are evenly distributed across income groups in part because of the academic promotion merit-based scholarships; and the lowest income group tends to receive smaller amounts of scholarship. The hypothesis cannot be found true for the distribution of scholarships.

**b) Effects of Financial Assistances on Educational Expenditure**

The research question 2-2 asks how the targeted financial assistances are affecting higher education expenditures of the beneficiary households. Effects on educational expenditure are found to differ between the three financial assistance schemes.

The clearest impact is found with the tuition exemption scheme. As discussed in Section 5.2.2 the beneficiaries of tuition exemption reduce their education expenditure more or less to the same extent of the saving from the exempted tuition and other contributions. The regression analysis shows that, controlled for other variables, tuition exemption reduces the higher education expenditure of the households by about VND 2,590,000 (Table 5-4 ), while the upper ceiling of tuition for social science courses is set at VND 290,000 per month (Table 2-6 ). The cost-sharing policy since the Doi Moi reform puts more emphasis on the role of households as one of the main cost bearers, resulting in the current situation where about 30 % of the revenue of public higher education institutions in Vietnam comes from tuition and fees (Table 2-5). As discussed in Section 2.4.3, the burden of private financing for higher education is high, especially for low-income families. In this sense, the results in Section 5.2.2 confirm that tuition exemption has indeed been successful in relieving some of the financial pressure from poor families.

The theoretical model suggests that the size of impact of tuition exemption on higher education enrollment is primarily dependent upon the degree of reduction of direct education costs when individuals are financially constrained. The distribution of tuition exemption is highly concentrated on the lowest income group who are most likely to be

constrained in their ability to borrow. Thus, it is expected, at least in theory, that the tuition exemption scheme has been effective in promoting higher education enrollment.

The impact of student loans on higher education expenditure is positive but less pronounced than tuition exemption. The beneficiary students constantly expend more than non-beneficiary students in all the income groups except among the highest income group. The regression model shows that with everything being equal, being the beneficiary of student loans raises the higher education expenditure about VND 1,200,000 annually. This is clearly an indication of positive impact of student loans on higher education expenditure. Student loans seem to be successful in alleviating borrowing constraints for poor households and allowing them to increase educational investment towards their optimal levels of higher education investment.

Nevertheless, the extent of additional educational spending created by student loans seems to be rather moderate in comparison with the ceiling amount of student loans (VND 1 million per month) (Section 2.6.3). One possible explanation is that students who borrow from student loan schemes choose to borrow as much as they can, exceeding the amount needed to fill the borrowing constraint gap, and save the excess wealth or increase non-educational consumption. From the parents' viewpoint, parents choose to let their child borrow the maximum amount regardless of the financial gaps and spend less from the family wealth. This scenario is possible only because the interest rate charged on student loans is set at an extremely low level, even below the prevalent inflation rate or interest rates normally offered by commercial banks for savings accounts. The availability of student loans at a concessional rate would not only

relieve low-income families from financial pressures from education costs but also enable them to use their scares resource for other investment or consumption purposes, while letting their children live on the borrowed money. This would of course increase the willingness of students' family to let their child enroll in college or university. The concern should of course be raised about the efficiency of resource allocation of the student loan program. This indicates that the amounts of student loans provided are more than sufficient for many beneficiary students, and larger than the amount needed to fill the financial gaps between the constrained and the optimal investment levels. Given the extremely concessional interest rate charged on the student loans which is even below the prevalent interest rates given to commercial bank accounts in Vietnam, it would make most economic sense for students to just borrow to the maximum amount permitted and save the current family financial resource instead. Due to this fungibility between the loaned fund and current family financial resource, the families of student loans beneficiary would receive not only the support for their children's higher education, but also additional subsidies for their family consumption and other investment, which would create a strong incentive for parents to allow their children to take out student loans and study at higher education institutions.

Another possible explanation for the moderate impact of student loans on education expenditure is that the beneficiaries of student loans may also reduce the hours of part-time work while in school. It is not unusual for students in Vietnam to take on part-time jobs to make small earnings to pay for educational and living expenses such as transportation and rent. Receiving student loans, they are likely to reduce work hours or stop working altogether so as to concentrate on their study. This would

allow them to improve the quality of learning to earn more knowledge and skills, which affects positively their employability after graduation and increases expected returns to higher education investment. Under this scenario, student loans may increase higher education expenditures only moderately as students reduce their income from part-time jobs, yet they can have positive impacts on the likelihood of higher education enrollment through enhancement of the quality of academic experiences and expected returns to higher education investment.

Scholarships do not seem to produce any significant impact on higher education expenditure at any income level. The regression analysis also shows no significant effect of the receipt of scholarship on education expenditure. Reasons for scholarship support failing to produce positive effect on higher education expenditure are not immediately clear, but some tentative explanations can be given. One reason can be that scholarships are somehow distributed to students who are not financially constrained. In absence of the financial constraints, the investment levels are already optimal relative to their abilities. Granting them more resources under such circumstance will result in reduced/increased amount of borrowing/saving or increase in non-education spending. As examined in the earlier section, scholarships are distributed equally to every income group and the amount of scholarships are larger for higher income groups. This may support the above explanation for higher income groups. For lower income groups, it is perhaps because the amount of scholarships are too small to make tangible impact on total education expenditures. This can be explained by the small size of scholarship benefits as well as by the fact that the majority of scholarships are given to relatively high income students. They are probably already spending at the optimal

education expenditure levels, hence additional income does not lead to additional educational expenditures.

To sum up, regarding the research question 2-2, the hypothesis 2-2 is only partially confirmed. The study's finding was that, giving tuition exemption has been effective in reducing the total education expenditure but does not seem to increase non-tuition expenditure. As for student loans, it was found that recipient students increase their higher education expenditure, but the extent of the increase is found to be moderate compared to the generous ceiling amount of the student loans scheme. This is possibly due to the highly concessional interest rate charged on student loans. Cheap money from the student loan scheme seems to be crowding out spending from the current family financial resource. Scholarships do not seem to have any effect on higher education expenditure, which is most likely a result of the small size of scholarships, and distributing scholarship to students in higher income groups who have no additional financial need for educational spending.

### c) Effectiveness of Financial Assistances to Promote Higher Education Enrollment

The research question 2-3 asks how effective the three targeted financial assistances have been in improving the chances for youths from low-income groups to enroll in higher education institutions.

First, the theoretical analytical model presented in Section 4.1.2 clearly indicates that in principle the mechanisms of all the three financial assistances to impact higher education investment decisions are identical as long as beneficiaries are constrained in their ability of borrowing. It is predicted that the degree of impact on higher education schooling is

affected only by the size of financial assistance provided (i.e., the amount of scholarship, the amount of tuition waived, and the amount of borrowing from student loan). The study is unable to use the amounts of financial assistances as an explanatory variable due to data limitation. Instead, it uses a binomial dummy variable that indicates the receipt of financial assistances. In this regard, it makes sense to estimate the effects of the three assistances jointly altogether without distinguishing the types of assistances.

Financial constraints play a key role in interpreting the estimation results for the effects of financial assistances. As indicated by the theoretical model, financial assistances have little effect to promote enrollment without the presence of financial constraints. It is in principle through the alleviation of financial constraints that financial assistances exert impacts on individuals' decisions for higher education enrollment.

The study identified positive impacts of the financial assistances only for limited sub-group of the population. The results from the 2SLS regressions presented in Section 5.2.3 show that receiving at least one of the three assistances increases the chance of higher education enrollment for low-income youth by about 30-35% points; however, at the same time this positive impact can be found only for low-income upper secondary graduates living in the relatively advantageous regions (i.e., Red River Delta, Southeastern Area, and Mekong Delta regions) which surround the five central municipalities such as Hanoi and HCMC where higher education institutions are traditionally concentrated. The assistances are not found effective in promoting enrollment for higher-income youths and for those who are in less advantageous regions that are far from the central municipalities. The theoretical model clearly shows that financial

assistances can have an effect to increase the levels of schooling only if beneficiaries are constrained financially. The lack of impact of the financial assistances among higher-income youths can be explained by this lack of financial constraints among higher income groups and is consistent with the prediction of the theoretical model.

Even though the lack of impact of financial assistances for the higher income group can be explained, it is still somewhat puzzling that the 2SLS estimation with the data of all the income groups does not produce a statistically significant positive effect. In reality, there are a small proportion of students in the higher income group who are certified as poor families and receive financial assistances. These cases can most likely happen when non-poor families suffer from economic shocks such as natural calamities and bread-winner family members falling sick for which local authorities recognize and issue poor family certificates. Upper secondary graduates from such families face sudden drops in their chances to progress to higher education because of such economic shocks that their families experienced. One of the key assumptions behind the IV method is a lack of direct causal relations between the instrument and outcome variable (i.e., exclusion restriction). However, as far as non-poor households with poor family certificates are concerned, their poor family certificates are likely to be indications of particular hardships that they are experiencing. These hardships or economic shocks are likely to affect directly and negatively the chances of higher education enrollment for their children. In this sense, the exclusion restriction is unlikely to be satisfied for poor family certificates among households in the higher income group. This renders the 2SLS estimation with the data of all the income quartile groups somewhat biased toward underestimation of the

effect of the financial assistances.

Why is the impact of the financial assistances identified only for those in the regions that have the central municipalities? The central municipalities are traditionally endowed with far greater numbers of higher education institutions compared to other cities in the country, which lowers the direct costs of higher education for students in the regions surrounding the central municipalities. Upper secondary graduates living in regions which surround the central municipalities not only have to pay less for their transportation between their hometown and areas of their colleges and universities because of the geographical proximity to institutions, but also are more likely to have some family networks which they can rely on for accommodations and other in-kind support after enrolling in colleges and universities. On the contrary, upper secondary graduates in regions away from the central municipalities often have to pay greater costs for transportation to a nearby institution and are less likely to have supportive family networks in the areas of their colleges and universities. In particular, low-income families in such remote regions may have extremely limited social or kinship connections to provide support for their children during their higher education schooling. Under such circumstances, marginal costs of higher education can differ considerably between residents of the regions with the central municipalities and the remote regions. It is likely that upper secondary graduates in the remote regions have to bear higher marginal costs of schooling for their higher education.

The analysis of factors for higher education expenditure presented in Section 5.2.2 partly supports this proposition as it shows that two of the three remote regions are associated with increased household

expenditure for higher education. Despite these differences in marginal costs of schooling, the size of benefits provided by the financial assistances do not vary depending on students' provinces of origin. The amounts of tuition waived are same for everyone in the same institution, and the upper ceiling of the student loan is equal for every student. The theoretical model indicates that the degree of effect of financial assistances to promote higher education investment depends on the relative size of the financial assistance against the size of marginal costs of higher education. If marginal costs increase while financial assistances remain constant in size, the size of effect of financial assistances to increase education investment becomes smaller. Therefore, it is theoretically understandable that the impact of the financial assistances on higher education enrollment becomes smaller for upper secondary graduates in the remote regions who have to pay greater direct costs to enroll in higher education institutions unless the amounts of the financial assistances are adjusted according to the marginal education costs for different groups of students.

Finally, there are some possible confounding variables that merit further discussion. The system of poor family certification is a cross-sectional policy that affect pro-poor assistance schemes not only in the education sector but also in the other sectors such as health and agriculture sectors. These sectors also have their own assistance policies to support low-income households using poor family certification as one of the targeting criteria. Thus, it should be asked whether or to what extent the effects of the three financial assistances in the education sector that the study tries to identify using poor family certificate as the instrument variable are confounded by those other assistance policies in other sectors.

Examples of other pro-poor assistances in other sectors that are affected by poor family certificate include support in health insurance cards, exemption from costs of medical checks, support in daily-life water supplies, food aid, preferential credit for the poor, and support in production inputs. While it is admittedly not possible to completely negate the possibility of other assistances affecting the probabilities of higher education enrollment, the effects of these possible confounding factors are minimal. The study estimated the effects of those assistances on higher education enrollment by a simple logistic regression model using the data of the lowest income quartile group both for all the regions and for the regions with the central municipalities. None of the other assistances is shown to have a statistically significant effect on higher education enrollment. Some of the other assistances even show negative coefficients. From the theoretical viewpoint, it is reasonable to assume that assistances in other sectors such as health and agriculture may influence household members' education investment decisions through their impacts on family wealth. The assistance of agricultural inputs, for instance, would improve agricultural production and then increase family income. Increased family income should then improve the chance of higher education enrollment. For the analysis of the study, family income and wealth are controlled when estimating the effect of the financial assistances. Among the other assistances in other sectors, only the assistance of preferential credit for the poor may have unique relevance to higher education enrollment decisions. Even though preferential loans in other sectors are always provided tied to specific investment activities, it is theoretically possible that they can relax financial constraints for upper secondary graduates due to the fungibility within a household. Nevertheless, the logistic regression

estimation indicates no statistically significant effect of other preferential loans on the probability of higher education enrollment. Therefore, it is safe to conclude that confounding effects from other assistances in other sectors are minimal, if any.

To sum up, regarding the research question 2-3, the hypothesis 2-3 is partially confirmed. The financial assistances are found to be effective in promoting higher education enrollment among low-income youth, but only for those who are in the regions and provinces with easier access to higher education institutions. For those who live in regions where higher education institutions are harder to reach, the financial assistances do not seem to be effective in improving the likelihood of higher education enrollment.

## 6.2. Limitation of the Study

The study identifies the following limitations that readers should be aware of: (1) Use of the binomial enrollment outcome status for the analysis of aid effect, (2) endogeneity in the family income per capita variable, and (2) Analysis on the joint effect of the three assistances.

First, due to the limitation of the IV methods, the analysis can only be performed for binomial enrollment outcome of whether or not to enroll instead of multinomial outcomes which differentiate college and university enrollment. There is a good chance that the financial aids help students in somewhat different ways for college and university enrollment due to the differences in the effect of financial constraints between these two schooling alternatives. Highly complex mechanisms come into play to determine how these two alternatives are affected differently, the analysis

of which is beyond the capacity of this study.

Finally, due to the limited choice of the excluded instrument and the overlapping of the target groups, it is technically difficult to analyze the effects of the three financial assistances individually. The size of benefits can be quite different between the three assistances; so can the size of their effects. The analysis of the effect of each individual financial assistance should certainly merit further study.

## 6.3. Conclusion

In the contemporary global economy, higher education plays increasingly important part in the socio-economic development of countries along with the financial success of its citizens. Higher education enrollment rates have consistently been on the upward spiral throughout the world including countries with less developed economies. Vietnam, an emerging economy with impressive economic growth in the recent decades, is part of this global trend. The country's higher education sector has been going through a major transformation from the system which nurtures the cadre of elite members of the society to a more mass-based education system that caters to the educational needs of the general population.

The Doi Moi reform has integrated Vietnam more into market economy and the global businesses. The ensuing economic development has stimulated demand for higher education to an unprecedented level. Responding to the rising demand, a large number of colleges and universities were newly established or upgraded from other training institutions, rapidly increasing enrollment in both colleges and universities. To finance the rapid expansion of the country's higher

education system, the government of Vietnam, following the examples of many other governments, adopted a cost-sharing policy by introducing tuition fees for all courses. Although the level of tuition for public higher education is tightly regulated and kept relatively low by the government, it still puts significant financial burden on the poor families. Partly due to this financial burden, there are persistent disparities in access to higher education between the rich and the poor. The government has put in place three financial assistance schemes to help alleviate the financial burden of higher education schooling for poor households. The schemes include tuition exemption, scholarship grants, and student loans.

With this background in perspective, the study focuses on the issue of equal access to higher education in Vietnam while emphasizing on the effectiveness of the government's financial assistance programs in terms of promoting access to higher education among the low-income population. As part of the socialist-era heritage, Vietnam has traditionally placed great emphasis on equality in the society, and has been known for its success in maintaining relatively equal distribution of education in the basic education level. The challenge faced by the country now is how it can make sure the higher education sector grows without leaving the poor population behind. The research questions of this study were inspired by this very historic challenge that the Vietnamese higher education system is trying to overcome.

The study sets out to investigate the following two major research questions: (1) what factors determine the chances of upper secondary graduates actually enrolling in higher education institutions, with special attention paid to the influence of financial constraints and differences between colleges and universities; and (2) to what extent the government's

targeted financial assistance programs are effective in promoting access to higher education among low-income population. The objectives of the study are to enhance understanding on the factors that contribute to an unequal distribution of opportunities of higher education and to analyze whether the financial assistances aimed at increasing the chances of higher education enrollment for poor students have been effective, and if so, to what extent they have been effective. Finally, based on the evidences obtained, the study aims to provide some recommendations on the enhancement of those financial assistance policies.

The study's findings would add to the existing knowledge regarding the determinants of access to higher education in Vietnam, and contribute to the debate on financial constraints in access to higher education and the effectiveness of financial aid policies in higher education. The subject of determinants of higher education enrollment in Vietnam has only been researched in a few studies so far. Building on these past studies, the detailed analysis of the study will add to the existing empirical evidences especially in terms of differences among various types of institutions. The question over the presence of financial constraints is still under debate. The study intends to contribute to this debate by generating evidence related to Vietnam. Finally, with regard to the effectiveness of financial aids on higher education enrollment, the previous literatures are mostly from developed countries, the United States in particular, and those from developing countries are scarce even though more and more countries are introducing such policy measures. Furthermore, the results from those studies have been quite mixed. The study provides some evidences on that front using the case of the Vietnamese higher education sector.

The analytical models are developed based on an education investment decision model utilizing two-period consumption maximization model. The model shows the level of higher education investment in the absence of financial constraints is decided independent of family wealth and just hinges on the marginal gain and costs of higher education investment. Once the borrowing constraints are introduced in the model, higher education investment decision is also influenced by family wealth and borrowing limits. The model also shows that the financial assistances are effective in raising schooling investment levels in the presence of borrowing constraints. The mechanisms of the three financial assistances affecting higher education investment decisions are in principle same for all the three assistances, and the extent of the effects of the assistances is determined by the size of the benefits.

The study bases its analysis related to the research question 1 on the following hypotheses: (1-1) Access to higher education in Vietnam is influenced by ethnicity, parental education, family income, and regional differences; (1-2) Financial constraint of education costs on family income is hindering access to higher education among lower income groups; and (1-3) Access to college is less influenced by family background, regional differences, and financial constraint compared to that to university. For research question 2, the study hypothesizes as follows: (2-1) Targeted financial assistances are reaching students from low income groups; (2-2) Financial assistances affect the level of expenditure in education of beneficiary students; and (2-3) The receipts of targeted financial assistances improve the chance of enrolling in higher education especially among low-income groups.

The study applies a multinomial logistic regression model to

analyze the determinants of higher education enrollment and the influence of financial constraints, and instrumental variable estimation methods – 2SLS – to examine the impact of the financial assistances. The study utilizes a nationally representative household survey data, Vietnam Household Living Standard Survey (VHLSS), of the year 2010. The sub-sample of upper secondary graduates in the age group of 18-22 years is used for the analyses.

### 6.3.1. Determinants of Higher Education Enrollment and the Effects of Financial Constraints in Vietnam

The estimation results on the determinants of higher education enrollment shows that, while confirming the significant effects of individual, family and geographic factors as the past studies had shown, the effects of those variables differ considerably between college enrollment and university enrollment. College enrollment is much less influenced by family background and geographical factors. Parental education levels, family wealth index, and urban-rural residency variables do not seem to have significant impact on college enrollment, whereas university enrollment continues to be strongly influenced by those factors. Upper secondary graduates who are from families with more assets and have parents with high levels of education qualifications are significantly more likely to attend universities, making university education less attainable for students from families with little assets and parents with weak educational background. In the past years, the government expanded the supply of colleges in many provinces which used to have no or few colleges, making college education physically more accessible for population in those

remote provinces, especially for rural residents. Academic requirements for admission to universities are also usually more competitive than those for admission to colleges. This partly explains the differences in the determinants of enrollment between colleges and universities. Clearly, the finding points to the need of differentiating the two in the future discussions on equitable access to higher education. Inequality can now occur not only between those who are enrolled and those who are not, but also between those who can access university education and those who can only afford college education.

With regard to the issue of financial constraints, the estimation results indicate the existence of strong financial constraints over university enrollment. The directions of the influence are opposite for colleges and universities. Higher family income, after being controlled for other long-term financial factors such as family wealth index and parental education background, leads to higher probabilities of university enrollment and lower likelihood of college enrollment. In other words, short-term financial constraints are deterring lower-income upper secondary graduates from attending universities, while ushering them into attending colleges whose education services are more affordable. At least as far as college education is concerned, therefore, financial constraints have become less of an issue even for students from relatively low-income households. University education, however, is still subject to considerable restriction due to short-term liquidity constraints of the households of upper secondary graduates.

### 6.3.2. Impact of Financial Assistances on Higher Education Enrollment

Distributions of the beneficiaries of the financial assistance schemes across income groups show that lower-income groups are receiving larger shares of the benefits under the tuition exemption policy and the student loan programs. Scholarships, however, are found to be more favorably distributed among mid-income to high-income groups, partly because of the existence of academic scholarships.

Tuition exemption and student loans are found to have impacts on how much households spend on their children's higher education. Families of tuition exemption beneficiaries reduce the amount of higher education expenditure, which is a sign of reduced financial pressure on the part of families. The extent of the reduction of expenditure is substantial, and more or less equal to the amount of payments waived. Student loan beneficiaries increase their spending on higher education, suggesting alleviated financial constraints. The amount of increase, however, appears to be smaller than the amount of additional funds made available by the student loan schemes, suggesting that cheap loans are crowding out the families' financial resources. Scholarships seem to have no obvious effect on the households' higher education expenditures. Perhaps scholarships provided to the poor, needy students are too small in amount and only few in number to make significant impact, while scholarships awarded to non-poor academically able students end up becoming expendable income.

The analyses on the effects of financial assistance programs revealed that the financial assistances are effective in increasing the chance of higher education enrollment only for low-income upper

secondary graduates who are in the regions that have greater accessibility to higher education institutions – especially the three regions surrounding Hanoi and Ho Chi Minh City. In those regions the marginal costs of higher education enrollment are supposedly lower compared to other remote regions due to overall closer proximity to higher education institutions. This likely renders the effect of the financial assistances in terms of increased higher education schooling greater in those advantageous regions than in other remote regions. The financial assistances are not found to be effective in raising the probability of higher education enrollment among higher income groups and among low-income groups in regions that are remote from the central municipalities.

## 6.4. Recommendations

The study revealed that despite the recent steady increase in the number of enrollment in higher education, the chances of individuals to access to higher education are still being strongly influenced by their family background and where they are from; and as a result, access to higher education are distributed unequally to different segments of the population. Meanwhile as the study showed, access to colleges seem to be considerably less influenced by those factors, suggesting more equal access to colleges compared to access to universities. The fact colleges are more widely available now even in provinces outside of the central municipalities may have to do with relatively equal accessibility to colleges. The government of Vietnam should continue to increase the supply of higher education institutions with more emphasis on establishing colleges and universities more geographically equally in remote regions

and in urban areas outside of the provincial capital cities.

The government of Vietnam should also expand the existing financial assistances schemes as they are found to be effective in improving the chances of higher education enrollment for some of the low-income students. Some improvements are desired based on the findings of the study.

The study reveals that some of the financial assistances are distributed to students in higher income groups as well as those in low-income groups. In other words, they are leaking to non-targeted populations. Given the lack of impact of the financial assistances on higher education enrollment for higher-income youths, the MOET and local authorities should modify eligibility criteria or be more stringent about enforcing the eligibility criteria at the screening process when selecting beneficiaries. Awarding financial assistances to students who are not poor is not likely to improve their chances of higher education enrollment as they may well progress to higher education regardless of the financial support.

Particular attentions should be paid to the distribution of and exclusion errors in student loans. Unlike other two schemes, because of the requirement of repayment, there are conflicting incentives on the part of the executing bank of the student loans program. The executing bank has strong incentives to lend to non-poor students who are more likely to repay and perceived as more safe borrowers while they are officially required to comply with the government policy of targeting students below 150% of the poverty line. Meanwhile, non-poor students also have strong incentives to borrow from the student loans program because of its highly subsidized favorable lending conditions. The study showed that student

loans are actually made available to non-poor students who are in the second or third income quartile. The MOET should, therefore, carefully monitor the screening and selection process at the executing bank and adjust the relevant policies if necessary so as to minimize the exclusion errors in the distribution of student loans.

Furthermore, because the financial assistances seem to be less effective in promoting higher education enrollment in the regions away from the central municipalities, it is recommended that the MOET differentiate the size of the financial assistances provided depending on students' region of origin and strengthen non-financial assistances which target students from the remote regions specifically. Poor students from the regions which are distant from the central municipalities may need larger support to overcome financial constraints compared to equally poor students from the regions around the central municipalities because of the greater direct schooling costs that they have to bear as transportation and accommodation costs. Therefore, it seems reasonable that they are provided with larger financial assistances. Non-financial support may include measures to help reduce the direct schooling costs for students from the regions away from the central municipalities, examples of which may include expanding student boarding facilities specifically for poor students from remote provinces and developing the capacity of provincial authorities of remote provinces to provide various support to poor students from their provinces who study in colleges and universities in the major cities.

Finally, though the study is not able to distinguish the effects of the three assistances individually, the analytical model suggests that the degree of effect of financial assistances to promote higher education

schooling is dependent primarily on the amounts of the assistances. Among the three assistances examined in the study, the subsidized student loans program offers the greatest amount of financial support. The MOET may wish to expand the student loans program in order to efficiently strengthen its effort for achieving equal access to higher education across income groups. Needless to say, it will need to be closely examined if healthy loan repayments are maintained.

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## APPENDICES

### Appendix 1. Map of Vietnam


Source: Central Intelligence Agency. (2013). CIA Maps – Vietnam Administrative [image]. Retrieved from https://www.cia.gov/library/publications/cia-maps-publications/Vietnam.html

## Appendix 2. Regions of Vietnam


Source: AsiaMapstore. (2013). Vietnam, Provincial Map [image]. Retrieved from http://www.vietnamnews.kr/