Impact of Increased Migration Opportunity on Human Capital Accumulation of Young International Migrants:

A Case of Nepal

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List of Acronyms

CBS	Central Bureau of Statistics
DWH	Durbin-Wu-Hausman
OLS	Ordinary Least Square
WDI	World Development Indicator
GDP	Gross Domestic Product
NLSS	Nepal Living Standard Survey
LFS	Labor force Survey
IOM	International Organization for Migration
PSU	Primary Sampling Units
DFE	Department of foreign Employment
MoLT	Ministry of Labor and transport

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Abstract

The paper uses the recent wave of nationally represented household data to empirically test the effect of migration on two separate hypotheses: brain drain and brain gain. Both the hypothesis have been tested for skilled labor migration however, a huge gap exists for low skilled migration and its impact on human capital accumulation. The paper contributes towards adding knowledgebase in existing but scarce literature on the impact of increased low skill migration opportunity and its impact on human capital accumulation. We take the number of agents present at district level as our independent variable and analyse its impact on current educational attainment of students in secondary and higher secondary level. Since completion of grade 10 is the basic requirement to be eligible to migrate to Malaysia and the Gulf, we find significant positive correlation amongst students in secondary level. An additional increase in recruiting agent in a district is likely to increases the probability of opting for grade 9 or 10 by 0.5 percentage points. Our result provides evidence of brain gain amongst secondary level students due to increased low skill migration opportunity and is statistically significant. Additionally, for the brain drain hypothesis we find that an additional increase in recruiting agent decreases the probability of opting for grade 12 and 13 by 1.9 percentage points and is statistically significant; which provides evidence of brain drain/depletion amongst higher secondary students due to increased low skill migration opportunity.

Relevance to Development Studies

The paper is relevant to development studies since low skill labor migrations originates from developing countries and migrate towards developed countries in search of better lifestyle and employment opportunities. Therefore, the impact on developing countries is the contextual setting of the study. Further, impact of distortionary policies that support incremental low skilled labor production and export have negative effect on the overall welfare of the country. In the long run, the economy will have lower average human capital than without such prospect of low skill migration.

Keywords

Migration, low skill, labor, education

Chapter 1
Introduction

In the last decade, the world has witnessed a striking increase in terms of both surges in international migration as well as inflow in remittance. The World Bank (2006) reported that the rate of migration has been increasing by 3 percent annually since the 1990s and 3 percent of total world's population are migrants. Similarly, there has been an increment in the amount of inflow of remittances by ten folds to US$114 billion from 1975 to 2003 and by three folds to US$316 billion from 2003 to 2008 (WDI 2009; World Bank, 2010). Remittances amounted to 1.9 percent of GDP of developing countries (Adams and Page, 2005).

The soaring of both migration and remittances have led to a growing interest amongst researchers and policymakers in studying the impact of migration on growth and development on both the source and the host countries. Due to easy availability of data on host countries which mainly comprised of developed countries, bulk of literature during 1990's were catered towards studying the impact of migration on host countries. There was a general consensus that migration had positive impact on the economy of these countries (Bhagwati and Hamada 1974; Kwok and Leland 1982; Galor and Tsiddon 1997; and Miyagiwa 1991). More recently, the availability of data on emigration from developing countries, has brought tremendous interest in exploring the impact of migration on the source countries (Kanbur, 2003; Ratha 2003; Docquier and Rapoport 2008, 2012; Gilbson and Mckenzie 2011).

The scholarly and policy debates on migration and development with regards to source countries have swung from sheer pessimism to optimism in the recent years however, a consensus on the issue has not yet emerged. On the development front, three main issues dominate existing literature: remittances, brain drain and human capital accumulation. Studies on remittances are vividly focused in analysing the expenditure pattern and the welfare of household members that remain in the source country. In particular, impact on children's education and health outcome has been empirically tested and there has been a growing consensus on the positive impact of remittances in children's education and health outcomes (Hanson and Woodruf 2003; Lucas and Stark, 1985; Durand, 1996; Rozelle et al., 1999). Another interesting issue on the impact of migration has been on 'brain drain' - the flight of skilled workers from developing countries to developed countries. Developing countries are often said to be poor due to lack of skilled workers and low human capital accumulation. The situation is further exacerbated when by the flight of the few skilled workers that developing countries might raise. In this situation source countries can be losers and are often left with high number of unskilled workers (Haque and Kim 1995; Miyagiwa 1991).

However, lately another strand of literature has emphasized that brain drain can also generate positive dynamic forces for development in source countries (Docquier and Rapoport, 2008, 2012 and Gibson and McKenzie, 2011). This line of research has been called the 'brain gain' effect and empirically supports the impact of migration on human capital accumulation in

source countries (Beine et al. 2001; Gibson and McKenzie 2012; Mountford 1997; Stark 2004 and Stark et al. 1997, 1998).

Both brain drain and brain gain theories have recently dominated the debate on migration and development both at macro and micro level with variation in analysis and indicators. Docquier and Rapoport (2001), used gross migration rates as a proxy for the brain drain in a cross-section of 37 developing countries. They found a positive and significant impact of emigration on gross (pre-migration) human capital formation at origin, stronger for countries with low initial levels of GDP per capita. Easterly and Nyarko (2009) use other sets of instruments (former colonial links, population size and distance to the main destinations) for a sample of developing countries; using a growth accounting framework, they found that the brain drain causes (gross) skill creation, and no evidence it causes (net) skill depletion. The finding on most recent micro level analysis conducted by Batista, Lacuesta and Vicente (2011) on Cape Verde, indicate that migration not only has a net positive effect but is also responsible for the bulk of human capital formation in the country.

Most existing analyses regarding the impact of migration opportunity on human capital accumulation in source countries have been limited to the context of skilled worker. Such analyses provide one sided results and lacks validity for its justification. Muscle drain or low skilled migration has been an important part of migration history and it has seen further increase over the last decade. Docquier (2012) reported 30 percent increase in low skilled immigrant in OECD countries over the last decade. However, research and empirical findings regarding the impact of migration of low skilled labourer on human capital accumulation in home country is scarce.

Analysing the impact of low skilled migration opens a new dimension in studying the manifestation of migration. Bringing low skilled workers into the study of migration opens up a whole new arena of research possibilities and can provide essential policy guidance to source countries. Migration of low skilled worker has been rising exponentially around the globe (Docquier 2012; World Bank 2011) which calls for the need of building knowledge base regarding questions that relate to cause and effect of incremental migration of such low skilled workers. In particular, it will be interesting to explore how low skilled migration opportunity is changing educational investment decision in source countries.

This paper aims to understand migration with specific focus on the correlation between low skilled migration and human capital accumulation. We take education as a proxy for the creation or depletion of human capital. In particular, the research tests both the brain gain and brain drain hypothesis in the context of low skilled migration. Further, we analyse the case of Nepal, a country where 13 percent of its total labour force has migrated abroad with stability across consumption quintiles (NLSS 2011). Another interesting fact about Nepal is the presence of migration (recruiting) agents that are only responsible for recruiting low skilled labours to various countries, specifically to Malaysia and the Gulf. Moreover, the most pertinent fact about Nepal's emigrant population is that the bulk migrants at the time of migration were between the age of 15 to 29 add upto 70.3% of the total international emigrants. We exploit the range within this age group to assist the research since this age group consists mainly of student and will give the closest proximity on the probability of either opt-

ing for higher educational attainment or remaining low skilled due to the impact of migration opportunity. The study has been conducted using the latest wave of nationally represented Nepal Living Standards Survey 2011 (NLSS III).

The primary reason for the choice of this data set is that the surveys have separate and elaborate module on absentee members (emigrants), who are not current household members but have been household members in the past and for whom there is an expectation that they will come back to the household at some point in the future. However, the previous waves of NLSS I and II do not have a module on absentee but only accounts for remittance donor. This would likely underestimate the number of total emigrants since it does not capture information on individuals who have migrated but might not have sent remittance during the survey period. Most importantly, NLSS I and II do not have a variable that can capture the educational attainment of the emigrant. Due to insufficient information from NLSS I and II on migrants, we will not be using these two waves. Information collected on both national and international absentee members who migrated less than one year back from NLSS III will be used for the purpose of this study so that we are not missing out recent migrants who might have migrated during the time of the survey. Variables related to individual, household and communal characteristics that determine educational attainment.

A common limitation to the existing literature on human capital accumulation conducted in both host countries and source countries is that they do not mention the country where education was acquired. It is more related to data issue which rarely collects information on this particular factor. To be able to explicitly analyze the impact of brain drain and brain gain, education should be obtained by individuals in the country which is being analyzed. Another issue with cross country comparison is the standardization of educational levels and skill levels. Further, the relationship between migration and education has always been contextualized in relation to skilled labor. However, such analyses fail to provide a holistic picture in studying the effect of migration on education. It is yet to explore how unskilled labor migration will affect education decisions especially in source countries. However, data on unskilled migration in source countries are limited which further poses a challenge in studying it's impact.

The remainder of the paper is organized as follows. Section 2 presents background to further discuss studies and literatures relevant to our study, outlines the country context of Nepal-the role of migration on Nepalese society and economy, provides a brief section on Qatar, its demand for low skilled workers and the current situation of migrant workers in Qatar and challenges and risks they have been facing. Section 3 sets the theoretical framework including model specification followed by details on sample selection and justification for selection of variable for the model. Section 4 discusses the data source and provides descriptive statistics as an initial exploration of the data. Section 5 presents and discusses the result and Section 6 provides conclusion and policy recommendation.

Chapter 2
Background and Theoretical Framework

Over decades, the manifestation of migration around the world has taken various forms. It is thus important to understand the main context and theories that highlight its development over the subsequent period in time. We also need to take note of the fact that international migration may not always be an individual's *free choice* but can be primarily dependent on circumstances created or imposed by other countries. Selection of migrant population can take the form of positive selection or negative selection. Positive selection refers to skilled migrants whereas negative selection refers to unskilled migrant. The coice to select migrants positively or negatively in general is regulated based on the needs of host countries however, source countries may also have a central role in complementing to the regulations and demand set forth by the host countries (Bohning 1981).

2.1 Related Literature on Brain Drain and Brain Gain

The first wave of brain drain theory was initiated primarily by Grubel and Scott (1966) along with Johnson (1967) and Berry and Soligo (1969). They emphasized the importance of remittances sent back home by migrants which would eventually compensate for any loss that brain drain (loss of skilled workforce) may cause to source countries. Further, these studies are supportive of free migration especially skilled migrants since they contribute towards building international knowledge base. Hence, the first wave of brain drain analysis was more focused on benefits than loss to the source countries. However, it should be noted that these studies were based on assumptions of combination of wage differentials with a production function, particularly inspired by Lucas (1988). The validity of assumptions is debatable in the context of developing countries as also mentioned by Lucas (1988).

The second wave of brain drain came in the 1970s with an opposition to the first wave. Jagdish Bhagwati initiated alternative models to analyze the impact of brain drain on welfare of source countries. Emphasis was given on the negative consequences of brain drain which might lead to an increase in inequality both at national and international levels. Additionally, consequences on domestic labor market and fiscal externalities were explained to take place as a result of brain drain (Bhagwati and Hamada 1974; McCulloch and Yellen 1977). Similar finding were supported by Miyagiwa (1991) and Haque and Kim (1995).

Late 1990s was marked by the start of third wave that came up with a new hypothesis 'brain gain' that supported brain drain could actually be beneficial to source countries. Analysis on migration shifted from impact on those left behind to potential migrants themselves. Models were primarily based on higher expected returns to education after migration which would increase present human capital accumulation. In general, findings reveled that migration of skilled workers can act as an incentive to increase human capital for non-

migrants. (Mountford 1997; Vidal 1998; Stark 2004 and Stark et al. 1997, 1998; Stark, Helmenstein, and Prskawetz (1997, 1998).

At macro level, Stark et al (2012) for the first time modeled the impact of migration of unskilled workers on human capital accumulation in source country. They provide elaborate proof that increased and attractive employment opportunities in foreign countries for low skilled workers will negatively affect human capital accumulation decision in source countries by assessing the human capital accumulation decision in two distinct scenarios- in a closed economy without migration and in an open economy with the prospect of migration (Stark et al 2012: 1).

Both scenarios are illustrated using an individual utility function that describes the workers choice to gain more skill or to remain unskilled (in terms of human capital accumulation) at a given wage. In equilibrium, the wage rate is an increasing function of human capital acquisition for both skilled and unskilled workers and the firms maximize their profit by equalizing efficiency wage to marginal product of each type of labor (Stark et al 2012: 3). An open economy is characterized with prospect of migration exclusively for unskilled workers under quota system (like in Gulf countries). The wage rates for both skilled and unskilled workers in foreign destination are higher than what is offered in home country. However, employment opportunities are confined to high skilled jobs since they are reserved for the natives therefore, migration should take place from a pool of low skilled labors (Stark et al 2012: 5).

In the short run, migration of unskilled workers will raise the average level of human capital in home country and relative wage rate for skilled (unskilled) workers will decrease (increase) since skilled workers will be more costly for firms. This creates an incentive for individuals to remain unskilled due to increase in wage rate for unskilled workers in both foreign countries and home country. This will continue until the incentive to acquire human capital accumulation is more rewarding than remaining unskilled which will lead to the new equilibrium in an open economy (Stark et al 2012: 6). Since skilled workers are more costly in an open economy, the demand for skilled labor decreases leading to a decline in both total stock of human capital and average human capital accumulation in the economy in the new equilibrium consequently leading to a "brain depletion" (Stark et al 2012: 7-9).

At micro level, the most relevant empirical paper related to our study is the study by Brauw and Giles that analyzed the impact of increased off-farm low skilled migration opportunity on educational decision amongst youths in rural China (Brauw and Giles 2008). The paper established causal linkage between increased migration opportunities leading to reduction in migration barriers due to increased migration network formation in destination (host countries). Particularly it is written in light of the growing income inequality in China due to the differential educational attainment and returns to education amongst youths residing in the same community. Although the paper acknowledges the fact that inequality might decline over time due to migration and due to equalization of returns to labor however, it strongly puts forward the point that differential educational attainment leads to the prospect of permanent inequality (Brauw and Giles 2008: 1-5). Therefore, providing incentives for youths to remain and graduate from high school could help reduce the long term or

permanent inequality in China. However, the effectiveness of such policies also depends on other factors that simultaneously affect educational investment decisions. Therefore, the paper directly addresses the root cause of altering educational investment decision amongst rural youths due to increased employment opportunities as a result of increased migration opportunities and reduction in migration barriers hence imposing higher opportunity cost of remaining in school.

The paper uses household and village level panel data from 1998 to 2003. For the analysis, the total number of village residents with employment as migrants outside the home county has been taken as a proxy to account for migration opportunity/migration network and decreasing migration barrier has been taken as an independent variable. Migration network is instrumented using a reform that allowed migrants a temporary residence through a national ID card in 1988 and further exploit the random distribution of ID's across communities to account for exogenous variation in time and space and to avoid any bias based on systematic correlation between the distribution of ID and educational attainment (Brauw and Giles 2008: 11-15). The estimated impact on high school enrollment after 1988 by using generalized method of moments (IV-GMM) estimator shows that "one percent increase in migration from a village reduces the probability that a middle school graduate will attend high school in the following year by 0.18 to 0.23 percent" due to subsequent increase in employment opportunities for high school youths due to an increase in village migration network (Brauw and Giles 2008: 21). The main caveat of the paper is that it takes international migrants as migrant for internal rural urban migration. The validity of its linkage with rural urban migration within China is questionable since both factors and determinants of internal and external migration can be different.

In the same vein, Batista et al (2012) for the first time use a tailored household survey to explicitly test the brain gain hypothesis in Cape Verde which has the highest 'brain drain' rate in the Africas as well as a fast growing human capital stock since 1990 (Batista et al 2012:33). The paper estimates the impact of own future migration probability on education decisions for individuals aged 16 to 30 using a simultaneous equation model instrumented by duration of longest migration spell in household, combining migration spell with local unemployment rate and unemployment rate and GDP per capita in destination countries (Batista et al 2012:36-37).

They find positive significant results for all three instruments. Additionally, census data from main destination countries is used to evaluate the impact of rise in migration barriers and they find that a shock decreasing migration by 11 pp, reduces the educational attainment of non-migrants by 16 pp (implying an elasticity of 0.32), and that of migrants by only 7 pp (implying an elasticity of 0.10) (Batista et al 2012:40), hence strongly supporting the brain gain hypothesis.

2.2 **Country Context: Nepal**

The culture of Nepalese migration for work dates back to 200 years to work in to work in tea estates in India, serving in British and Indian army and for seasonal manual labour (Pemble, 1971; Seddon, 1987). Although India was the major attraction for Nepalese, however more migrants have chosen Malaysia and the Gulf as their destination recently. The ten year long Maoist insurgency from 1996 to 2006 has been attributed as a major "push factor" for out migration. Many people were force to leave their home while others fled to urban areas or to other countries. Additionally, the increment in international migration has also been a response to political instability, limited local employment opportunities, wage difference and surplus labour time (World Bank 2011: 63).

Migration for work has generated substantial inflow of remittance to the country and over the last decade has been a significant feature of the Nepalese economy. The inflow of remittance in 2010 increased by four times since 2004 with a total of US$ 3.5 billion and made up one fifth of Nepal's GDP. Nepal is also ranked amongst top 6th countries in the by remittance inflows as a proportion of GDP in 2010 (Datt 2012). Although studying the impact of remittances on poverty and development is undoubtedly important and has already been undertaken in the past in the context of Nepal (World Bank 2006; Datt 2012) however, a bigger knowledge gap remains in analysing the impact of increased migration opportunity on human capital investment decision of potential future migrants.

Recent migration destination for work includes other countries but the top destination has been Malaysia and the Gulf. Increased migration prospect has led to an increase in youth migration with 13% of domestic labour force currently residing abroad (LFS 2008). The scale of external migration for work is certainly much larger than internal migration for work. In 2010, there were 50% more external migrant workers relative to those migrating within the country for work (NLSS III 2011). Additionally, international migration (officially registered departures) in the past six years increased by an average of 19.5 percent. However, there was a decline in migration during 2009 and has been attributed due to the effect of global financial crisis but gets back on track in 2010 due to increased demand of labours from Malaysia and the Gulf countries (World Bank 2011:10).

Emigration to India for work and study has always been part of Nepalese culture. There is also some difference between emigration of workers to India and that to other countries (especially, the Gulf and Malaysia). First, India has an open, porous border with Nepal. Citizens of either country do not need a visa to travel across the border. There are also shared ties of language and culture especially across the neighbouring parts of India. Finally, majority of Nepalese opt for temporary seasonal migration to India for work. However, the high demand for low skilled labour from Malaysia and Gulf countries is shifting the migration pattern of Nepalese workers. Migration to Gulf countries increased by 3%, and migration to India reduced by 6% from 2008 to 2010 (World bank 2011). The bulk of total international migrant workers are now in Malaysia and Gulf countries constituting of total 44.5% of the total international Nepalese workers (NLSS 2011).

The surge of Nepalese migration to these top destinations began in the early 1990s and is accounted mainly to the rapid growth and development of these destinations When large-scale development activities started after the 1973 spurt in oil prices in the six Gulf Cooperation Council (GCC) countries of Saudi Arabia, Bahrain, Kuwait, Oman, Qatar, and the UAE, an upsurge in the flow of workers and labourers from India began. India and Pakistan supplied most of such unskilled labour (IOM 2004:90). Further, the growth in construction and manufacturing industries led to an increased demand of unskilled labour. Unskilled labours were being imported primarily from South Asia due to their low wage demand. However, skilled jobs in these countries are reserved for the natives and migrants are only allowed to work in unskilled sector where natives rarely work.

The case of both Malaysia and gulf countries is especially interesting because of their rigid labour law to prevent permanent settlement of migrant workers. However, this has been recently positively relabelled as "circular migration" (IOM 2008: 8). Migrants in these destinations are not allowed to obtain permanent residence to stay back. Labourers enter the country in a two year contract and will have to leave the country for two years before applying for another contract. Contracts can be extended for another two years depending on the employer's need. Therefore, Nepal provides a unique situation to assess the impact of both unskilled migration as well as temporary migration.

2.3 **Migrant workers and their demand in the Gulf and in Qatar**

Since the 1970s, the demand for low skill foreign labor is high in Gulf countries such as: Bahrain, Oman, Qatar, Saudi Arabia and the United Arab Emirates. The demand is basically for the development of their industrial infrastructure, which is further influenced by oil and natural gas boom during 1970s (Kouaouci 2005). The internal problem of Gulf countries is they do not have excess labor to be supplied domestically for building the industrial base through construction. So, the only feasible solution is to import labor from countries where there is labor surplus and the wage is relatively cheap.

The initial import of labor started from Arab nations such as Egypt, Yemen and Jordan and then later it shifted to Southeast Asia and Africa. Today, 'out of the 35 million people living in the Gulf, approximately 13 million are expatriates, most of which are migrant laborers (Pessoa and Shirrawi 2009: 2). These migrants were primarily performing jobs that the rich citizens of Golf countries didn't want to take up. Such jobs included material production, construction, industrial and domestic service (Kouaouci, 2005).

The Qatar Labor Force Survey (2007) estimates Qatar's economically active population (15 years old and above) is about 831,900, of which Qatari

incorporate only 7.6% as opposed to 92.3% of foreign labor force from different countries in the world[1].

The migrant workers in Qatar face various challenges during their stay in the country due to entry and exit regulation and restriction imposed by sponsorship system. Under the sponsorship system, there has been a lot of cases where the host has confiscated the migrant's passport and not letting the migrant leave the country. Despite these facts, the migrant labors from South East Asian Countries, are continuing their work and stay in the Gulf countries to support their families economically and to strengthen the economies of their home countries (Eelens & Speckmann 1990). The Qatar's migration system allows for the migrant worker to be placed under the authority of one Qatari citizen which is known as *kafeel*. This citizen is the sponsor of the migrant worker for all economic cases and is responsible for any kind of work done by the migrant worker for a period of two years (NHRC 2006). The problem related to this kind of sponsorship is that the Qatari citizen who is taking the liability of foreign citizen is also the employer. The migrant worker is not allowed to work beyond the will of his employer and also can not able to work with more than one sponsor. The duration of migrant worker and his extension of stay totally depend on his good will of work and understanding with his sponsor. Another major problem related to this kind of sponsorship is that the sponsors keep the workers' passports. So, their freedom is restrained and the movement or exit from the country is totally controlled by the so called sponsors (Longva 1997). Besides, there is also limited change to complain against the sponsor for any kind of work-related problems or physical harassment (NHRC 2006). Hence, the system forces migrant workers to tolerate substantial hardship rather than giving any opportunity to shorten their contract with the sponsor and return back to their home country.

Besides the sponsorship system, migrant workers especially the low skilled workers face various challenges in Qatar and Golf countries. Among the challenges the most notables are work documentation, poor working and living condition due to lack of minimum wage, withholding of salary, long work hours, cramped and dirty labor camps, etc. and also lack of providing sufficient safety measure while working (Pessoa and Shirrawi 2009: 3).

The challenges are primarily put forward by the labor laws of Golf countries and also by sufficient regulation on the sponsorship system by the government of these countries. There is also a need for substantial funding to be able to migrate internationally to be able to cover the cost of recruiting agent fee, airfare and to obtain formal documentation. Most of times, such funding are provided through loans from friends and relatives at high interest rates. It was reported that Nepalese migrant workers on average paid NPR 92,000 (US$ 910) to explore employment opportunity abroad through recruiting agents. The charge paid to recruiting agents were about 10 folds of their monthly income. The charge paid to recruiting agents proportionately increase with destination, with Malaysia being charged the highest of US$ 1500. It was 20 times higher than their monthly salary (World Bank 2011:2). However, there are several hidden costs that might increase both the risk and cost of migration, in-

[1] Source: http://www.qsa.gov.qa/eng/index.htm.

cluding harassment, exploitation and pre mature contract termination. The worst case however has been increase in deaths of Nepalese works in Qatar. The New York Times reported at least 44 Nepalese deaths last summer in Qatar. It was reported that the cause of deaths were mainly due to heat and bad working conditions. Although there are agreement on protection of migrant workers and requirement of health insurance, these agreements are not taken very seriously.

This story is different for the workers who are protected officially by the sponsor's contact. They are entitled to demand protection against any kind of harassment mental or physical under the law in Qatar. Also, they can raise their demand and rights by forming unions and striking or by filling complaints officially against the sponsors. However, practice these right in Gulf countries are very limited and also difficult to get that kind of sponsorship which allow all kind of facilities for the migrant works.

2.4 Migration Agents: Evolution and Presence

The demand in low skilled labour led to a bilateral agreement between government of Nepal and with Malaysia and Gulf through the development of new Employment Policy in 2006 which for the first time emphasized on international migration. Nepal also signed foreign employment agreement with the above mentioned countries which only allows documented legal migrants to leave the country. Further, the Foreign Employment Act 2007 laid out the criteria for the operation of recruitment agencies which required licensing from the government and deposit NRs 5 lakhs (US$5000) as security deposit.

However, agencies were only allowed to operate in three major cities within the valley- Kathmandu, Bhaktapur and Lalitpur. Within two years, there were 700 licensed agencies operating within the valley. The government also established Foreign Employment Promotion Board and Department of Foreign Employment (DFE) under the Ministry of Labor and Transport to facilitate and supervise international migration. DFE is the only body that has the right to approve license and regulate recruiting agencies (World Bank 2011:10)

The recruiting agencies act as a mediator between potential migrants and the Ministry of Labor. They advertise and publish foreign jobs, recruit individuals, check eligibility criteria and process visa and paperwork. The legal documents are then forwarded to MoLT for no objection which authorizes individuals to migrate. However, due to the increased demand of low skilled labor from Malaysia and Gulf, MoLT legally allowed for agents within the valley to open branches at district level in 2010. Before the operation of district agents, individuals had to travel to the capital to process their documents and stay as long as the processing would take. Therefore, the main aim of licensing district agents was to increase accessibility and lower the processing cost for migration. Each agent in the valley is responsible for any risk regarding their branch operation. The branches also need to get license from DFE and need to deposit NRs 3 lakhs (US$ 3000) as security deposit (based on interview with officials from MoLT and DFE).

Placement of Migration Agent

We have conducted DWH test to confirm that our independent variable- migration agent is not endogenous in our model. The result shows…..Although it is statistically important to prove that migration agent is not endogenous, it is equally important to qualitatively and logically verify the statement. Based on information gathered from discussion with officials from MoLT, DFE and migration agents, it has been confirmed that migration agents in district started operating from January 2010. The timing of start of district agents is parallel with the NLSS III survey which conducted its first survey phase on February 21, 2010 (NLSS 2011: 16-17). Therefore, NLSS III should be able to capture the initial effect of the presence of migration agents at district level on educational attainment of children. Further NLSS III survey was carried out throughout the year to capture seasonal variability, therefore any variation in time of operation of agents should be very well captured by the survey.

We cannot deny the fact of existence of informal agents at district level in the past. However, it is important to differentiate the capacity and power of informal agents with the current formal licensed agents. Informal agents are more or less similar to migration networks, they can give out important information on host countries like job prospect, salary level, life style etc. and is limited to that. More critical aspects of pre migration includes collaborating with the company based in host country regarding contract, visa and other legal issues which is only authorized through the licensed agents. Finally, licensed agents are the main mediator in obtaining no objection letter from the government (MoLT) to authorize departure for individuals. The role of licensed agent is unique and important in our analysis since thy provide access to migration and reduce cost of migration.

Based on our discussion with MoLT, DFE and agents, we tried to explore the placement of agents at district level and how they were being selected. Trust was the primary factor for selection of district agents by the agents based in valley. In general close relatives and friends who are reliable and trustworthy was driving selection of district agents. Although location was also an important factor but the personal economic condition of district agents were more important since district agent have to deposit NRs 3 lakh (US$ 3000) as an initial security deposit which is a fairly high amount.

Chapter 3
Methodological Framework

This chapter lays out the theoretical framework based on utility theory. We use the model derived from theoretical framework to further specify our empirical model. The empirical model presents specification for our model to test two different hypotheses: brain gain and brain drain. Finally, we describe sample selection that best supports our hypothesis.

3.1 Theoretical Framework

We develop a theoretical model based on household utility model to assess the impact of presence of at least one migration agent at district level as a proxy for increasing migration opportunity, on the decision to further enroll a child either secondary or high school. The model incorporates the relationship between the cost of opting for migration, expected returns to school attainment, and the opportunity cost of schooling. We take the basic human capital investment model from Glewwe and Jacoby (2004) and allow for the effect of migrant wage employment and migration opportunity (presence of an agent) on human capital investment decision. We follow similar theoretical model used by Brauw (2008) in their study to analyze the impact of migration network on human capital accumulation amongst rural youths in China. The theoretical model is used to further establish our empirical specification to estimate the impact on human capital investment decision using our dataset.

Following Glewwe and Jacoby (2004), household utility at a given time *t* depends on two types of capital: human capital (H_t) and physical capital (K_t):

$$\boldsymbol{U=(H_t, K_t)}$$

Since our focus is only on human capital, we assume physical to be constant. We assume human capital will be accumulated by sending school aged children e_t to school and the cost of attending school P_t^e. The household then accumulates human capital:

$$H_{t+1} = H_t + \psi_t \mathrm{G}(e_t) \quad (1)$$

where G is a production function and $\boldsymbol{\psi_t}$ is a learning productivity parameter (ability, motivation, education quality).

Following Brauw (2008), we assume households may earn income from agricultural production, non-agricultural self-employment and employment in migrant labor markets. Physical capital and labor of both children and adults may be utilized for household production activities,

$y_t^h=\theta_t F(K_t, L_t^{a1}, L_t^{c1})$ where, θ_t is a multiplicative productivity shock with a mean of one, K_t is the current stock of capital, and L_t^{a1} and L_t^{c1} are adult and child labor for production. Household income from the migrant la-

bor market is $y_t^m = w(H_t^a, M_{jt})\ L_t^{a2} + w(H_t^c, M_{jt})\ L_t^{c2}$ where L_t^{a2} and $w(H_t^a, M_{jt})$ are adult labor and wage, and L_t^{c2} and $w(H_t^c, M_{jt})$ are child labor and wage from migrant employment respectively (Brauw 2008:7). Wages are therefore function of both human capital and the presence of an agent. Further, M_t^j is the presence of a migration agent in district j which increases access to migration through job announcement and matching and can reduce the cost of migration. The household will thus accumulate physical capital according to:

$$K_{t+1} = K_t + \theta_t F(K_t, L_t^{a1}, L_t^{c1}) + w(H_t^a, M_{jt})\ L_t^{a2} + w(H_t^c, M_{jt})\ L_t^{c2} - c_t - P_t^e e_t \quad (2)$$

Where c_t is the household consumption function; e_t the school enrollment of children and P_t^e is the schooling cost (books, fees). We further impose credit constraint on the household $K_{t+1} \geq 0$.

We consider *t*=1 if a child completed a certain grade last year and is eligible to attend school up to T; returns to education is an increasing function of *t* (higher education=higher return).Therefore the utility of human and physical capital can be accumulated up to period T and we represent it by Φ (K_t, H_T), representing an uncertain future utility from educated children. Current utility now is a function of consumption (c_t), child's current enrollment (e_t) and leisure of both adult and children (l_t^a=1-L_t^{a1}-L_t^{a2} and l_t^c=1-L_t^{c1}-L_t^{c2}) (Brauw 2008: 8).The household's objective is to maximize:

$$E_s = [\sum_t^{T-1} \delta^t U\ (c_t, e_t, l_t^a, l_t^c) + \Phi\ (K_t, H_T)\ ] \quad (3)$$

Subject to (1) and (2) and credit constraint, where δ^t is the subjective discount factor and E_s is the expected decision on educational attainment of children. Future values of ψ_t, θ_t, w, P_e and Φ are uncertain for the household.

The first-order conditions for an interior solution are:

$$U_c(t) = \lambda_t \quad (4)$$

$$U_{l_t^a}(t) = \lambda_t(\theta_t F_{L_t^{a1}} + w(H_t^a, M_{jt})) \quad (5)$$

$$U_{l_t^c}(t) = \lambda_t(\theta_t F_{L_t^{c1}} + w(H_t^c, M_{jt})) \quad (6)$$

$$U_e(t) + \mu_t \psi_t \mathrm{Ge(t)} = \lambda_t\ [\ \theta_t F_{L_t^{c1}}(t) + \ w(H_t^c, M_{jt})\ - P_e] \quad (7)$$

Where μ_t and λ_t are time varying shadow values of human and physical capital scaled by δ^t (Brauw 2008:8)

The demand function for school enrollment is:

$$S_t^* = \mathrm{S}^*[\lambda_t, \mu_t, \psi_t, \theta_t F_{L_t^{c1}}, \theta_t F_{L_t^{a1}},\ w(H_t^c, M_{jt}), w(H_t^a, M_{jt}),\ P_e\ ] \quad (8)$$

We simplify (8) by recognizing household endowments and other characteristics X_t^h, that affect wealth and family preferences for education. For instance, parental education, number of siblings etc. The enrollment demand function can then be written as:

$$S_t^* = S^*(\lambda_t, \psi_t, \mu_t, \theta_t, X_t^h, P_e, M_t^j) \quad (9)$$

3.2 Empirical Strategy

We estimate the impact of a distortionary (low skilled) migration policy on educational attainment in home country using a probit model. Given the binary nature of our dependent variable (0 and 1) and the various advantages of probit model over a linear probability model (LPM), we are convinced that probit model best justifies our empirical specification since it fulfills: i) non-normality of the disturbances of the error term and ii) the error variance is heteroscedastic. More specifically, the probit model complies to the need of our empirical specification by i) limiting to the restriction that the estimated value of dependent variable lies between 0 and 1 $[0 \leq \text{Pi} = E(Yi|Xi) \leq 1]$ and ii) allowing for nonlinearity between P_i and X_i, since a probability cannot have a linear relationship with the independent variable for all possible values. Finally we select probit over logit model because of the normal distribution of error term which simplifies specification problems and also widely preferred by economists (Wooldrige 2009:577).

Robustness check is conducted to test for endogenity of independent variables through the Durbin-Wu-Hausman (DWH) and sensitivity test by comparing the estimates of probit model with that of logit model to check for any significant differences amongst the coefficients.

Basic Model

Our basic model is derived from equation (9):

$$\boldsymbol{S_i^* = \alpha_0 + \alpha_1 M_{ij}^* + \varepsilon_i} \quad (10)$$

$S_i=1$ $(S_i^* \geq 0)$; $M_i=1$ $(M_i^* \geq 0)$

Where, both S* and M* are latent variables or are unobserved. S* is the educational investment decision in home country taking the value 1 if there is an occurrence of further educational investment and 0 otherwise; M* is the presence of a migration opportunity in home country taking the value 1 and 0 otherwise and ε is symmetrically distributed error term with zero mean and has its normal distribution function.

To model the above theoretical factors with latent variable, we need to relate the latent variables with variable that can be observed and measured. For the latent variable S*, we observe whether individuals who completed the academic year last year are currently attending school this year or not (S) hence capturing the decision to further invest in education. Similarly, for the latent variable M* we observe the presence or absence of migration agents at district level (M) to account for migration opportunity[2]. We test for two hypothesis

[2] Migration agents are exogenous in our model as described in the earlier chapter. However, we empirically test the validity of our assumption through the DWH test.

separately: i) migration opportunity leads to brain gain in home country and ii) distortionary (low skilled) migration opportunities will reverse current educational decisions. Below are the two basic models for testing the two hypotheses:

Hypothesis 1: Migration opportunity leads to brain gain in home country

$$\boldsymbol{S_i = \alpha_0 + \alpha_1 M_{ij} + \alpha_2 X_i + \varepsilon_i} \quad (11)$$

Educational Attainment (S)= { 0= if completed grade 8 or 9 last year and dropped out this year; 1= if completed grade 8 or 9 last year and enrolled in grade 9 or 10 this year

Migration Agent (M_j) = { 0 = absence in district j; 1= otherwise

To test for brain gain hypothesis, we want to see the probability of occurrence or non-occurrence of further educational investment decision conditional on migration opportunity. For this specification, our sample selection will be based on all individuals who completed grade 8 or 9 last year, including internal and external migrants as well. If there is a brain gain due to migration opportunity i.e. presence of an agent, these individuals should move towards completing grade 10 to be eligible to migrate. We should observe increased enrollment in grade 9 and 10 this year compared to dropout. Since the survey captures grade completed in the last academic year and current enrollment status, in equation 2 we include $\boldsymbol{S_i}$ to capture individual *i* who has completed grade 8 or 9 in the last academic year and dropped out this year as our base category (0) and include if individual *i* who completed grade 8 or 9 in the last academic year and is currently enrolled in grade 9 or 10 this year in the treatment category (1). In addition, we observe the presence or an absence of an agent in district *j* for individual *i*. $\boldsymbol{M_{ij}}$ is a dummy variable taking the value 1 if there is at least one migration agent and 0 otherwise for individual *i* district *j* and $\boldsymbol{\varepsilon_i}$ is the error term. According to the brain gain hypothesis, the presence of migration agent should increase an individual's probability of migration, which in turn should lead to more students attending grade 9 and 10 this year of all students who completed grade 8 and 9 last year. Therefore $\boldsymbol{\alpha_1}$ should be positive and significant.

However, to get an unbiased and consistent estimate, the error term should not be correlated with the explanatory variables, and the independent variable should be exogenous. Additionally, the model may suffer from omitted variable bias. There may be some observed or unobserved variables that may be correlated with the error term and the independent variable in explaining current enrollment. Such variables may constitute of vectors pertaining to individual, household or communal characteristics like per capita expenditure, household size, distance to school and so forth. Therefore, to capture these variables, we include $\boldsymbol{X_i}$, vector of individual, household, communal and regional variables to better explain current school enrollment.

Hypothesis 2: Distortionary (low skilled) migration opportunities will reverse current educational decisions.

$$\boldsymbol{S_i = \beta_0 + \beta_1 M_{ij} + \beta_2 X_i + \varepsilon_i} \quad (12)$$

Educational Attainment (S)= { 0= if completed grade 11 or 12 last year and dropped out this year; 1=if completed grade 11 or 12 last year and enrolled in grade 12 or 13 this year

Migration Agent (M_j) = { 0= absence in district j; 1= otherwise

To test for the impact or distortionary migration policy on current educational decision, we model equation 3 separately. For this specification, our sample selection will be based on all individuals who completed grade 11 last year, including internal and external migrants as well. The idea behind choosing this sample is that individuals who already completed grade 11 or 12 last year should have a higher probability of attending grade 12 or 13 this year if there were no such distortionary migration policy or migration opportunities for low skilled labor. However, we are more interested in finding if the presence of such migration opportunity will make more individuals drop out in grade 12 or 13 this year, hence reversing their educational decision. This model is similar to the model used for hypothesis 1 except we change S_i to capture individual i who has completed grade 11 or 12 in the last academic year and dropped out this year as our base category (0) and include if individual who completed grade 11 or 12 in the last academic year and is currently enrolled in grade 12 or 13 this year in the treatment category (1). Similarly, we observe the presence or an absence of an agent in district j for individual i. $\boldsymbol{M_{ij}}$ is a dummy variable taking the value 1 if there is at least one migration agent and 0 otherwise for individual i district j and $\boldsymbol{\varepsilon_i}$ is the error term. We argue that distortionary migration policies or increased low skilled migration opportunities will reverse an individual's educational decision at higher educational levels, leading to higher dropout and opting for migration. Therefore $\boldsymbol{\beta_1}$ should be negative and significant in equation (11)

3.3 Sample Selection

The sample used for the model is derived from age and grade level categorization. All individuals who fall into the two categories are selected including internal and international absentee population. We test two different hypotheses which require two different sample selections. Since we are analyzing our hypothesis in the context of low skill migration opportunity, it is important to know the minimum educational requirement eligibility. Although there is no standard cut off criteria on education requirement for low skill migrants, based on the information given by the Ministry of Labor and transport and Department of Foreign Employment, completion of grade 10 is the minimum eligibility criteria set by host countries for low skilled labors. Based on this information, for hypothesis 1 we select individuals who have completed grade 8 or 9 in the last academic year and is currently enrolled in grade 9 or 10. We impose age restriction based on the existing education system in Nepal (Table:) which states equivalent age for specific grades. However, since such age structure is not well followed in most developing countries and Nepal as well, we increase the age level by three years to capture more individuals who might be slightly older than the school going age but meets our grade criteria. Limiting age cut off based on Nepal's education system substantially decreases our sample size. Therefore we specify age cut off for our sample between age 14 and 18 for hypothesis 1. Similarly for hypothesis 2, we select individuals who have completed either grade 11 or 12 in the last academic year and are currently enrolled in grade 12 or 13. We restrict the age group between 16 and 21. Additionally all internal and international migrants meeting the above cut off and who migrated in the last one year will also make up the sample.

In our model we include all the districts but drop the three districts in the valley: Kathmandu, Bhaktapur and Lilitpur. Migration agents have been operating in these three districts prior to 2010. Therefore, they should be excluded from the model.

Table 3-1: Education System in Nepal

Nepal: Education System		
Educational Attainment Age	Grade	Existing Education System in Nepal
27-30	PhD (4 years)	
25-26 24	Master (2 years)	
18- 23	Tertiary Education (Bachelor: 4 years)	
17 16	12 11	Higher Secondary Education (Intermediate)
15 14	10 9	Secondary Education
13 12 11	8 7 6	Lower Secondary Education
6- 10	5	Primary Education

3.4 Selected Variables for the Model

The dependent variable is Schooling (*S*) which captures current and past educational attainment of children. Since we are testing two different hypotheses for secondary level and higher secondary, we construct dependent variables with respect to secondary and higher secondary levels. The dependent variables are binary variables that captures highest grade completed in the last academic year which we take is the base category (0) and current grade enrollment which takes the treatment category (1) for both hypothesis. Since the motivation of the study is to analyze if more students enroll or don't enroll another level in the current year, we need to capture both highest grade completed last year and current grade. These two variables construct our dependent variable. Number of migration agents at district level is the independent variable. We take the log of number of migration agents to minimize the variation.

We select variables related to individual, household and communal characteristics that better explains the dependent variable. For individual characteristics, we include age, gender, marital status and ethnic groups. Age is an important variable in our model since we restrict our sample size by age cohorts. Age also determines the probability of educational attainment, for instance individuals with higher age are likely leave school early since they become physically capable to work and enter the labor market. Therefore, higher age imposes higher opportunity cost of staying in school especially in the context of developing countries. We predict the sign for age variable to be negative. Gender is an important variable to assess the difference in outcomes for being a male or a female. For a given situation, different outcomes for male and female will lead to an interest as why being a certain gender changes outcomes. Specifically, in the case of Nepal, there exists a huge gender disparity against females. Female face various constraints in availing education for social factors like early marriage, early pregnancy, migration after marriage and the need to carry out daily household chores. These factors imposes time constraint on female to go to school and will impose a conflict between schooling versus fulfilling social norms. In our model we predict the sign for gender to be negative since the age cohort for our sample between 14 and 21 is also the time to get married. Marital status has been chosen to find out the differing educational outcome for individuals who have been either married or separated (divorced) compared to individuals who are single (never married). Further being married also negatively impacts educational attainment since other demands from spouse and children may conflict with own educational attainment. Being married will also increase both individual and social responsibilities which will negatively affect current schooling. The scholarship variable is a dummy if an individual received scholarship or not. Financial constraint is a major factor impeding schooling since households may not be able to cover educational expense (fees, books, uniforms) and may have to take their children out of school. Therefore, scholarship eases financial burden of households and not receiving a scholarship should have negative impact on schooling.

We choose some important household level variables in our model to find out how they are affecting the dependent variable. Household head educa-

tion is a categorical variable that captures the highest level of education completed by household head. An educated household head should know the future returns of education and should support his/her children to go to school. We predict the sign of household head to be positive. We include household size in our model because higher number of household size means each member will get a little share of resources after it is being divided amongst all other members. Household size determines resource allocation and constraint so belonging to bigger household size may lead to less access of resources. We predict the sign for this variable to be negative. We include household annual expenditure as a proxy to capture the income. Most of times, information on income is understated therefore we choose expenditure. Since schooling has a financial cost as mentioned earlier, increase in household income will have a positive impact on schooling. Higher household income may also free children from other activities that take up their time like working in farm or indulging in casual labor. We take selling value of total land as a proxy of wealth. This is very relevant in Nepal's context since majority of the population and in the agricultural sector and depend on their land for livelihood and income. Selling value is a better proxy compared to total acre of land since value of land differs significantly across location. Higher land value may increase confidence of household since it is an important wealth indicator and should have positive correlation with schooling. Similarly, we include a dummy variable to capture if the household has own dwelling. Owning a dwelling is another important wealth indicator for households since it can also lead to income generation through renting. Therefore we predict the variable to be positive.

At community level, we include variables to capture access to the closest school in the community. The survey has information on time taken to travel to the closest primary, secondary and higher secondary school. Increase in travel time will negatively be correlated to educational attainment since it can be associated with other direct (travelling fare) and indirect costs (less time for other activities; tiring). We predict the signs for these variables to be negative. Finally, we include regional dummies to capture the regional variation that may impact the dependent variable. The five development regions of Nepal are very different geographically and there is a huge variation in terms of development and accessibility. Compared to the Central region which has the capital and is the most developed, we expect the signs of all other regions to be negative.

Table 3-2: Description of Variables Used in the Estimation Process

Name of Variables	Description
Secondary	All Individuals who completed grade 8 or 9 in the last academic year. 0=not currently enrolled; 1=currently enrolled in grade 9 or 10
Higher Sec	All Individuals who completed grade 11 or 12 in the last academic year. 0=not currently enrolled; 1=currently enrolled in grade 12 or 13
No of agents	Total number of agents present in each district.
Age	Age of the Respondents
Gender	Gender of Respondent. Male=1; Female=2
Marital status (Married=1)	Current Marital Status of the Respondent. Never Married=1; Married=2
Ethnic group	Ethnic Background of the Respondent. Brahmin/Chhetri=1; Terai/Madhesi=2; Dalits=3; Newar=4; Others=5
Scholarship	If the Respondent Received a Scholarship. Yes=1; No=2
Household Size (number)	Total Members in Household
Total Household expenditure	Total annual food and non-food expenditure in Nepalese Rupee
Total Agricultural land	Total selling value of Household's Agricultural Land in Nepalese Rupee
Distance to Primary School (Minute)	Total travel time to reach the nearest Primary School
Distance to Secondary School (Minute)	Total travel time to reach the nearest Secondary School
Distance to Higher Secondary School (Minute)	Total travel time to reach the nearest Higher Secondary School
School type	Type of School that the respondent is Enrolled In. Public=0; Private=1
Total School Expenditure	Total Annual Schooling Cost in Nepalese Rupee
Regions	Five Development Regions in Nepal. Eastern=1; Central=2; Western=3; Mid-Western=4; Far-Western=5

Chapter 4
Data and Descriptive Statistics

The chapter specifies the appropriate dataset that is used to conduct the empirical analysis. Additionally, description on the use of two sets of data is presented: household level data and migration agent data. Both the dataset is used for the purpose of empirical analysis. The sub section on descriptive statistics provide first hand analysis and exploration of data detailed out below.

4.1 Data Source

Our empirical work has been conducted based on the last wave of nationally represented Nepal Living Standards Survey 2011 (NLSS III) data. The survey was conducted by Nepal's Central Bureau of Statistics under the technical guidance of the World Bank. Data collection started from February 2010 and continued over a period of 12 months to cover capture seasonal variation of variables and to capture annual cycle of activities. NLSS III is a household level survey that covers the entire country including both rural and urban areas. For the purpose of the survey, 14 strata were identified based on 75 districts, 5 ecological zones and 3 belts along with urban and rural. 500 PSU were chosen from the strata based on the probability proportional to number of households (CBS 2011:7-8).

Household Data

NLSS III provides a household level data covering 5,988 households (28, 670 individuals) from a cross-section sample. The data includes socio-economic indicators on various topics including health, employment, agriculture, housing, access to facilities etc. It includes an elaborate module on education which is our dependent variable. The module includes details on educational status of all individuals who attended school in the past or are currently enrolled in school. For our analysis, we will primarily be using education variables on highest grade completed, current grade enrollment, past enrollment, years out of school and annual educational expense. We also make use of the new module that captures absentee information and educational background. Finally, household level data on access to education is incorporated for the purpose of our analysis along with other general socio-economics variables that capture expenditure, unemployment, assets and wealth.

Migration Agent Data

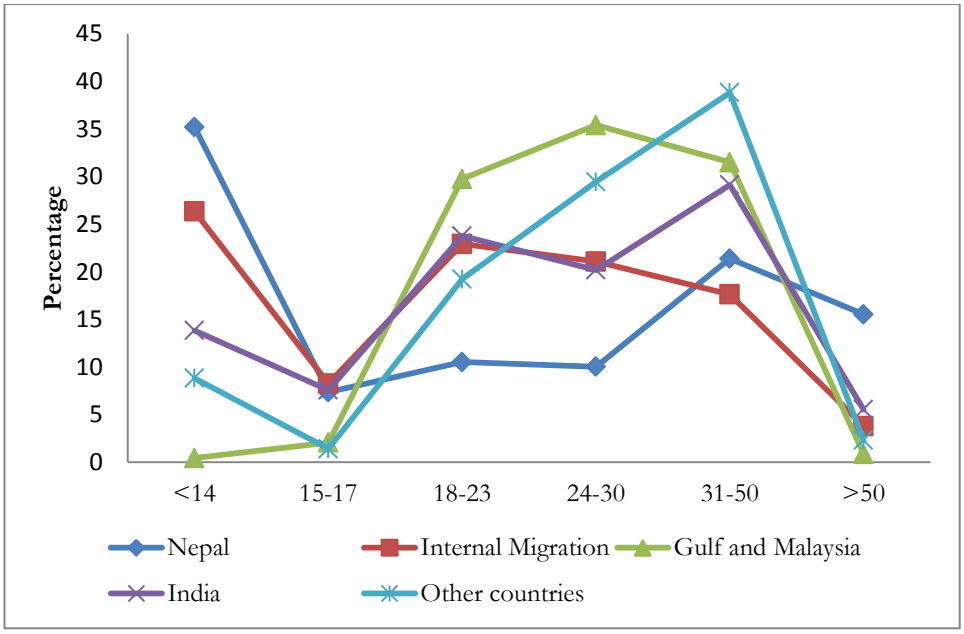
Data on migration agents operating at district level for 2010-2011 has been provided by Department of foreign Employment (DFE) which is part of Ministry of Labor and transport (MoLT). The data covers total number of migration agents for each district. However, it does not include the exact date when the agent was issued license. If information on date of establishment was available, we would had been more relevant to our analysis since we could capture the variation in time. We choose not to use the presence or absence of agent in

a district but rather to use total number of agents (log) in each district as our independent variable since the later tells us more about coverage and variation in coverage for each district.

4.2 Descriptive Statistics

Before going to present the results from the regression analysis, it is important to see the distribution of sample population. Figure 4.1, shows the distribution of the sampled population based on their age and the place of destination both for internal i.e. Nepal and international i.e. in Gulf countries (such as: Saudi Arabia, Qatar, UAE etc.), Malaysia, India and other countries (Bhutan, China, Bangladesh, Hong Kong, Japan, UK, USA, South Korea, Australia, Israel and others) during survey period. The most active labor age groups between 18 to 23 and 24 to 30 are currently in Gulf countries and Malaysia and make up 65% of total Nepalese migrant force in these two destinations. The total populations currently living in Nepal (with internal migrants) from these age groups are approximately less by 1 percent. Migration to India and internal migration follows a similar pattern but diverges by about 10 percent for age group 31 to 50 before converging again. For the same age group, migrants currently living in other countries are the highest making up approximately 40 percent of total Nepalese migrant force in these destinations. Since, the category other countries include mainly developed countries, restriction in barrier to entry might be delaying both migration prospect and age at migration.

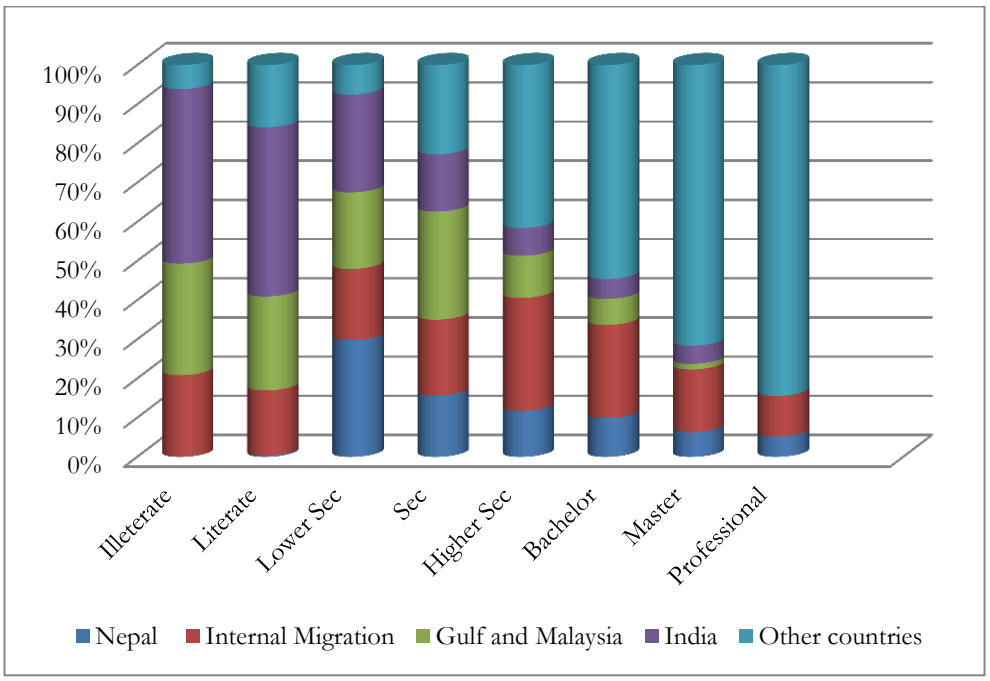
Figure 4-1: Percentage Distribution of Nepalese Population by Age and Destination



Source: Author's Computation based on NLSS III (2011).

Now, we come to the distribution of educational attainment of Nepalese population, which includes both migrants and non-migrants information. Educational attainment is measured by highest grade completed. Figure: 4.2, shows that majority of illiterate and literate (level less) are currently living in India. About 50 percent of population currently living in Nepal have completed lower secondary however, declines for secondary level by 5 percent. The gap in decline from lower secondary to secondary is primarily filled in by migrants going to Gulf and Malaysia and to other countries. Educational attainment after higher secondary falls drastically for migrants going to Gulf and Malaysia and to India while it keeps rising for individuals migrating to other countries.

Figure 4-2: Distribution of Population by educational attainment and destination



Source: Author's Computation based on NLSS III (2011).

As mentioned earlier in the empirical specification, we are testing two different hypotheses with the same dataset (NLSS III):

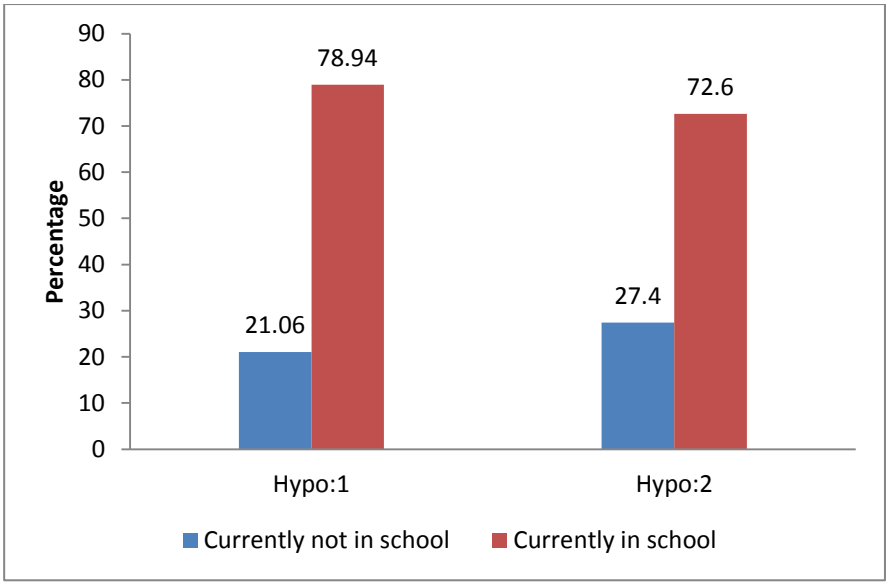
Hypothesis 1: Migration opportunity leads to brain gain in home country
Hypothesis 2: Distortionary (low skilled) migration opportunities will reverse current educational decisions.

The sample for hypothesis 1 includes all individuals (migrant and non-migrant) who completed grade 8 or 9 in the last academic year and dropped out this year. We take this as our base category (0) and include if individuals who completed grade 8 or 9 in the last academic year and are currently enrolled in grade 9 or 10 this year. We take this as our treatment category (1). Similarly, the sample for hypothesis 2 includes all individuals (migrant and non-migrant) who completed grade 11 or 12 in the last academic year and dropped out this year (0) and include if individuals who completed grade 11 or 12 in the last ac-

ademic year and are currently enrolled in grade 12 or 13 this year (1). Hereon, we refer to these specific samples as Hypo1 and Hypo2.

For both the hypothesis, we observe current enrolments in successive grades are much higher than the dropout rate. Specifically, for Hypo1 the current enrolment is 3.7 times higher than dropout and for Hypo2 it is approximately 2.6 times higher. However, there is higher dropout for the sample in Hypo2 and this could be explained by the increasing opportunity cost of attending high school (Figure: 4.3).

Figure 4-3: Percentage Distribution of Students According to Study Hypothesis



Source: Author's Computation based on NLSS III (2011).

The gender distribution of dropout for Hypo:1 if quite high for males (77%) and fairly balanced for those who are currently enrolled. Hypo: 2 has a fairly balanced gender distribution for both dropout and currently enrolled (Table: 4.1).

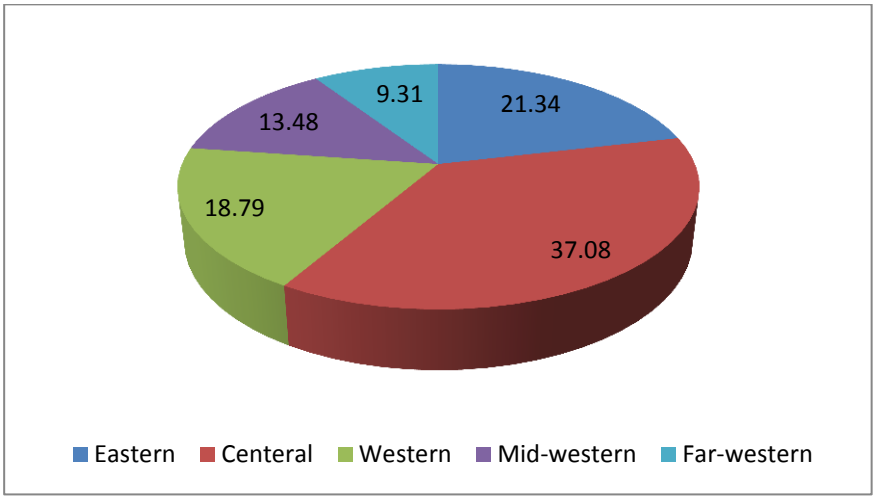
Table 4-1: Gender wise distribution of Students According to Study Hypothesis

Hypothesis	Education Status	Male	Female
Hypothesis 1	Currently not in school	77.05	22.95
	Currently in school	51.27	48.73
Hypothesis :2	Currently not in school	47.63	52.37
	Currently in school	47.86	52.14

Note: Table shows row percentages.
Source: Author's Computation based on NLSS III (2011).

Now, if we look at the distribution of migration agents in each region, we see that migration agents are present in all five development regions with central region having the highest coverage (37%) and far-western with the least (9.3%). This is in line with geographical variation and accessibility for the ease of operation. Central region has the capital and is more accessible in terms of infrastructure, electricity, internet and other services that might ease the daily operation of the agents compared to other regions. On the contrary, far-western region imposes several difficulties and challenges due to its geographical location (mountain area), least development and being furthest away from the capital. This reflects that the numbers of agents are determined by both geographical location and accessibility (Figure: 4-4).

Figure 4-4 Percentage Distribution of Agents by Regions



Source: Author's Computation based on NLSS III (2011).

The distribution of presence of agent for samples in both hypotheses is above 55 percent. The purpose of this table is to illustrate accessibility of agent by sample cohorts. However, the presence specific to cohorts are quite randomly distributed but overall there is higher presence of agent for the sample in hypothesis 1 compared to hypothesis 2 (Table 4-2).

Table 4-2: Presence of Agents by Educational Level

HYPO: 1			
Grade	Sample Cohort	No	Yes
Secondary	Grade 8 or 9 last year and not in school	30.00	70.00
	Grade 8 or 9 last year and in school	38.85	61.15
HYPO: 2			
Higher Sec	Grade 11 last year and not in school	43.22	56.78
	Grade 11 last year and in school	42.38	57.62

Note: Table represents row percentage.
Source: Author's Computation based on NLSS III (2011).

The summary statistics for all the variables used in the estimation process are presented in Table: 4-3. The table shows that the means of the dummy variables for secondary and higher secondary are 0.789 and 0.726 respectively. That implies that on an average 79 percent and 73 percent of the children belong to secondary and higher secondary level respectively. On average each district has at least 7 migration agents present to provide accessibility to migration prospects and to lower the cost of processing.

The average age of the respondents is 26 and around 49 percent of the respondents are male. The expenditure variables such as: total household expenditure and total school expenditure show that average household expenditure is more that NRs. 25 thousands in which NRs. 83 hundreds spend behind children's school expenditure. The variable price of agricultural land captures the wealth of a household. On average households the market price of agricultural land that a household holds is NRs. 1.65 million.

Table 4-3: Summary Statistics of all the Variables

Variable	Number	Mean	Std. Dev.
Secondary	1448	0.789	0.408
Higher Sec	1157	0.726	0.446
No of agents	28670	7.403	18.080
Age	34744	26.617	19.140
Gender (Male=1)	34744	1.490	0.500
Marital status (Married=1)	28670	0.499	0.500
Ethnic group	28670	3.010	1.764
Scholarship (Received=1)	28670	1.946	0.226
Household Size (number)	28670	5.87	2.76
Total Household expenditure (food and non-food: Yearly)	28670	251585.70	424340.30
Total Agricultural land (NRs.)	28670	1656533	9513881.00
Distance to Primary School (Minute)	28670	12.745	26.836
Distance to Secondary School (Minute)	28670	32.581	43.537
Distance to Higher Secondary School (Minute)	28670	49.194	64.826
School type (Private=1)	28670	0.753	0.431
Total School Expenditure (NRs.)	10409	8361.748	19088.440
Regions	28670	2.523	1.226

Note: NRs. represents values are in Nepalese rupees.
Source: Author's Computation based on NLSS III (2011).

Chapter 5
Results and Discussion

This section provides result on full sample and discusses the impact of increase in number of (log) migration agents on educational attainment for both the hypothesis. Our empirical analysis strongly supports both the hypothesis. For the first hypothesis, we observe that (log) migration agents at district level significantly leads to brain gain for students who completed grade 8 or 9 in the last academic year, thus increasing the probability of currently being enrolled in grade 9 or 10. For the second hypothesis, we observe that the occurrence of brain drain or rather *brain depletion* phenomenon amongst students who completed either grade 11 or 12 in the last academic year. Increase in (log) migration agent actually leads to lower probability of students currently attending grade 12 or 13. Therefore, more students are likely to drop out from higher secondary school in the current academic year amongst those who completed grade 11 or 12 in the last academic year.

Both OLS and probit model are estimated and reported for the sample however, given the binary nature of our dependent variable (0 and 1) OLS will not restrict the values of the dependent variable between 0 and 1 but will assume linearity in distribution. Therefore, the estimates from OLS will not be efficient and reliable. Therefore, in the section below, we will limit our discussion to the signs and significance level for OLS but will discuss the coeffiecients from probit model in more detail.

5.1 Impact on Human Capital Accumulation

Hypothesis 1: Migration opportunity leads to brain gain in home country

Table 5.1, presents OLS and Probit estimates for educational attainment of children who completed grade 8 and 9 in the last academic year. Our main hypothesis was to find out if migration agents are acting as a positive incentive for more students to move up to successive grades. Eventually completing grade 10 would make them eligible for international migration. Both the estimates of OLS and probit model support our main hypothesis that having migration agents at district level positively influences current school attainment or human capital accumulation.

Table 5-1: Estimation of Probability of Attaining Secondary School (Grade 9 and 10)

Variables	OLS Coefficients	Probit Marginal Effects	Logit Marginal Effects
Log (Agents)	0.013**	0.005*	0.005*
	(0.005)	(0.003)	(0.003)
Age	-0.005*	-0.003**	-0.002*
	(0.003)	(0.002)	(0.001)
Gender (Female=1)	-0.001	0.008	0.003
	(0.012)	(0.007)	(0.005)
Marital status (Married=1)	-0.363***	-0.067***	-0.051***
	(0.026)	(0.019)	(0.016)
Ethnic Group 2[A] (Tarai=1)	-0.011	-0.006	-0.012
	(0.023)	(0.019)	(0.024)
Ethnic Group 3 (Dalits=1)	-0.013	-0.006	-0.012
	(0.021)	(0.015)	(0.168)
Ethnic Group 4 (Newar=1)	-0.027	-0.031	-0.039
	(0.025)	(0.035)	(0.041)
Ethnic Group 5 (Janati=1)	-0.044***	-0.038**	-0.037**
	(0.014)	(0.016)	(0.016)
Ethnic Group 6 (Others=1)	-0.013	0.0006	-0.004
	(0.042)	(0.014)	(0.014)
Scholarship (yes=1)	0.009	-	-
	(0.021)		
Education of Household Head	0.006*	0.003*	0.003*
	(0.004)	(0.002)	(0.002)
Household Size	0.000	-0.0005	-0.0006
	(0.003)	(0.001)	(0.0009)
Log (Expenditure)	0.006	0.006	0.004
	(0.009)	(0.005)	(0.004)
Log (value of Agricultural Land)	0.003	0.007	0.0007
	(0.005)	(0.002)	(0.002)
Distance from primary School (Minute)	0.0001	0.0005	0.004
	(0.0001)	(0.0003)	(0.0003)
Distance from Secondary School (Minute)	-0.001**	-0.0002	-0.0002
	(0.0002)	(0.0001)	(0.0001)
Distance from Higher Secondary School (Minute)	-0.0003**	-0.0002**	-0.0001**
	(0.0001)	(0.0001)	(0.00009)
Dwelling (own dwelling=1)	0.028	-	-
	(0.027)		
Region 1[A]	0.020	0.007	0.006
	(0.019)	(0.006)	(0.005)
Region 3	0.013	0.003	0.004
	(0.018)	(0.008)	(0.006)
Region 4	0.029	0.011**	0.011**
	(0.019)	(0.006)	(0.005)
Region 5	0.014	0.004	0.002
	(0.022)	(0.010)	(0.009)
Observations	930	930	930
R Squared/ Pseudo R Squared	0.228	0.357	0.364
Log Likelihood	-	-96.324	-95.392
DWH Test [B] (*Prob>F*)		0.296	

Note: [A] For Ethnic Group reference category is Brahmin/Chhetri and for Region, reference category is Central. [B] The *p* value of Durbin-Wu-Hausman test of equality of OLS and IV estimates Scholarship and Dwelling variables are dropped for Multicollinearity.
Significance *** p<0.01, ** p<0.05, * p<0.1; Standard Errors are in Parenthesis.
Source: Author's Computation based on NLSS III (2011).

The coefficient for (log) migration agent (independent variable) is positive and significant at 5 percent level for OLS estimates. An individual's age and marital status have negative impact on educational attainment and are significant at 10 percent and 1 percent level respectively. Going to school might lead to higher opportunity cost as one gets older and married individuals are less likely to go for further education than single individuals due to increase in responsibilities to look after more members and the need to enter labor market earlier. Household head educational status (highest grade completed) is positive and significant at 10 percent level. Having higher educated household head increases the probability of educational attainment. Distance to school or accessibility is an important factor while analyzing educational attainment. Increase in travel time to get to closest secondary and higher secondary school decreases educational attainment since it might have direct or hidden cost associated with it. They are both statistically significant at 5 percent level. Finally, belonging to Janajati ethnic group (indigenous group) has a negative impact compared to Brahmins/Chhetri and is statistically significant at 1 percent level.

We rely on probit estimate in terms of our main findings. Although the significance level and signs of most variables in both the models are similar, it is worth discussing the marginal effect for probit model since it will give us the probability of change in dependent variable due to change in any of the independent variables. A unit change in number of (log) agents increases the probability of opting for grade 9 or 10 by 0.5 percentage points. This illustrate that there is a significant brain drain for students between grade 8, 9 and 10. Both age and marital status are negative associated with educational attainment. Increase in age by one year decreases the probability of entering grade 9 or 10 by 0.3 percentage points. Similarly, married individuals are 6.7 percentage points less likely to continue to grade 9 and 10. Both increase in age and being married relates to fulfilling more household and family responsibilities and hence increasing the opportunity cost for further education. Similarly, individuals belong to Janajati ethnic groups are 3.7 percentage points less likely to continue grade 9 and 10 compared to Brahmins/Chhetri and is significant at 5 percent level. However, there has been educational and scholarship programs implemented by the government of Nepal to support such indigenous/minority groups.

The above estimates of variables suggest that there is a positive impact amongst individuals who completed grade 8 or 9 in the last academic year and more of these students are currently enrolled in successive higher grade 9 or 10. Since the impact is positive and statistically significant, we conclude that there is occurrence of brain drain due to the presence of migration agents amongst individuals attending school between grades 8 to 10. This can be attributed to the future expectation of returns to education, also in conjunction with our theoretical model. Additionally, individual characteristics including age, marital status, belonging to Janajati ethnic group are the main determinants of human capital accumulation. At household level, household head's educational attainment is the main determinant; an increase in one additional grade completion by household head increases the probability of students belonging to that household attending grade 9 and 10 by 0.3 percentage points. Finally, at community level, distance to secondary and higher secondary school are also playing important role behind educational attainment of children.

Hypothesis 2: Distortionary (low skilled) migration opportunities will reverse current educational decisions.

Hypothesis 2 states that increased opportunity for low skilled migration may reverse educational investment decision with more students not completing higher secondary level but have completed grade 11 and 12 in the last academic year. Students who completed these grades in the last academic year are overqualified for low skill labor employment and also fall under educated category according to national level; mean national educational attainment is 8.1 years (CBS 2011: 82). If low skilled migration opportunity is not an incentive for individuals who completed grade 11 and 12 in the last academic year, should not be affected by the presence of migration agents. Alternatively if low skill migration opportunity is a stronger incentive, this may alter current educational investment decisions of students who attended grade 11 and 12 last year hence creating higher opportunity cost to attend school in present. We will then observe lower proportion of current enrollment in grades 12 and 13 and higher proportion not attending higher secondary School.

Table 5.2 presents OLS and Probit estimates of current educational attainment of children who completed grade 11 and 12 in the last academic year. Both the estimates of OLS and probit models support our main hypothesis that having migration agents at district level negatively influences current school attainment or human capital accumulation for students in grades 12 to 13. The empirical results support the occurrence of the probability of an increase in brain drain or rather brain depletion with increase in migration agents at district level. As mentioned earlier, we will focus more on the results of probit model than the OLS.

The coefficient of the independent variable, (log) number of agents is negative and significant at 10 percent level for both OLS and probit model. This validates our hypothesis of brain drain/brain depletion and we can claim that there exists a statistically significant relationship between children's school attainment and (log) number of agents. For individual level characteristics, age, belonging to ethnic categories of Janajati and others are negatively related to the dependent variable. Age is statistically significant at 1 percent and 5 percent level for the two models. For household level characteristics, total agricultural land value (market price) and household expenditure have a positive impact on educational attainment and are highly significant in both the models. We can infer that individuals belonging to wealthier households are more likely to attend higher grades 12 and 13. Finally, at community level, distance to closest secondary school is negatively related to educational attainment for both OLS and probit model and statistically significant at 5 and 10 percent level respectively. As mentioned earlier, longer travel distance to school reduces accessibility and induces costs. Finally, situated in Eastern region also reduces educational attainment for both the models and is statistically significant at 1 percent level for both OLS and probit.

Table 5-2: Estimation of Probability of Attaining Higher School (Grade 12 and 13)

Variables	OLS Coefficients	Probit Marginal Effects	Logit Marginal Effects
Log (Agents)	-0.017*	-0.019*	-0.018*
	(0.010)	(0.011)	(0.010)
Age	0.031***	0.049**	0.056***
	(0.004)	(0.009)	(0.009)
Gender (Female=1)	-0.017	-0.018	-0.017
	(0.031)	(0.032)	(0.029)
Marital status (Married=1)	0.014	0.002	0.003
	(0.045)	(0.053)	(0.053)
Ethnic Group 2[A] (Tarai=1)	-0.038	-0.048	-0.072
	(0.068)	(0.074)	(0.076)
Ethnic Group 3 (Dalits=1)	-0.029	-0.035	-0.038
	(0.069)	(0.072)	(0.069)
Ethnic Group 4 (Newar=1)	-0.002	-0.015	-0.029
	(0.064)	(0.067)	(0.067)
Ethnic Group 5 (Janati=1)	-0.096**	-0.104**	-0.108**
	(0.038)	(0.043)	(0.042)
Ethnic Group 6 (Others=1)	-0.225**	-0.265**	-0.277**
	(0.099)	(0.132)	(0.150)
Scholarship (yes=1)	-0.012	-0.017	-0.017
	(0.064)	0.064	0.60
Education of Household Head	0.010	0.011	0.010
	(0.009)	(0.009)	(0.002)
Household Size	-0.008	-0.012*	-0.013*
	(0.007)	(0.007)	(0.007)
Log (Expenditure)	0.068***	0.067**	0.069**
	(0.023)	(0.027)	(0.026)
log (selling value of Agricultural Land)	0.021**	0.023**	0.023**
	(0.011)	(0.012)	(0.011)
Distance from primary School (Minute)	0.0004	0.0007	0.0007
	(0.0003)	(0.0004)	(0.0005)
Distance from Secondary School (Minute)	-0.0013**	-0.0012*	-0.0012*
	(0.0007)	(0.0007)	(0.0006)
Distance from Higher Secondary School (Minute)	-0.0002	-0.0003*	-0.0002*
	(0.0003)	(0.0003)	(0.0003)
Dwelling (own dwelling=1)	0.113	0.109	0.103
	(0.069)	0.076	0.075
Region 1[A]	0.188***	0.160***	0.151***
	(0.051)	(0.045)	(0.040)
Region 3	0.019	0.023	0.018
	(0.047)	(0.047)	(0.044)
Region 4	0.011	0.006	0.008
	(0.056)	(0.056)	(0.054)
Region 5	0.059	0.049	0.033
	(0.056)	(0.053)	(0.051)
Number	798	798	798
R Squared/ Pseudo R Squared	0.117	0.122	0.130
Log Likelihood	-	-414.57	-410.58
DWH Test [B] (*Prob>F*)		0.217	

Note: [A] For Ethnic Group reference category is Brahmin/Chhetri and for Region, reference category is Central. ; [B] The *p* value of Durbin-Wu-Hausman test of equality of OLS and IV estimates Scholarship and Dwelling variables are dropped for Multicollinearity.
Significance *** p<0.01, ** p<0.05, * p<0.1; Standard Errors are in Parenthesis.
Source: Author's Computation based on NLSS III (2011).

The probit estimate for a unit increase in (log) number of migration agents reduces the probability of attaining grades 12 and 13 by 1.9 percentage points. The marginal effect is significant at 10 percent level showing the significant relationship between the two variables hence supporting our second hypothesis. Contrary to the estimate for the first hypothesis, one year increase in age is more likely to increase educational attainment by 4.9 percentage points. Although this is an expected fact, it could also be related to the educational structure of Nepal where there is no strict entry or exit to specific grade based on age categorization. Additionally, individuals from Janajati and others ethnic group are less likely to attain higher secondary enrollment compared to Brahmins/Chhetri. The probabilities are 10.4 and 26.5 percentage points less comparison to Brahmins/Chhetri.

Household level characteristics specifically household size, total household expenditure and total agricultural land value (NRs) significantly affect educational attainment at higher secondary level. An increase in additional household member is likely to lower the probability of attaining grade 12 or 13 by 1.2 percentage points and is highly significant at 10 percent level. Bigger household size may lead to distribution of resources scarcely amongst the household member and simultaneously affect educational attainment. Additionally, increase in total household expenditure and agricultural land value implies the better economic status of household members and has a positive effect on attaining higher secondary education. One Nepalese rupees increase in expenditure and agricultural land value is likely to increase educational attainment of higher secondary by 6.7 and 2.3 percentage points respectively. The positive impact is driven by the wealth effect.

At the community level, distances to closest secondary and higher secondary school both significant affect the educational attainment of children. An increase in travelling distance by one minute for secondary and higher secondary school is likely to decrease the probability of attaining grade 12 and 13 by 0.1 and by 0.03 percentage points respectively. On regional basis, living in Eastern region compared to Central region is likely to decrease educational attainment in higher secondary level by about 16 percentage points and is statistically significant at 1 percent level. The high significance level of Eastern region can also be explained by the fact that this region shares boarders with India and due to the access of free movement across borders; individuals might be moving back and forth for both work and study purpose.

The above findings point out the specific significant determinants of education at individual, household and communal level. Majority of the determinants are common across hypothesis and between the two models: OLS and probit. It is suggestive that these variables should be well considered in analyzing the context of educational attainment. Finally, our data successfully proves both the hypothesis of brain gain and brain drain/depletion in the context of increased low skilled migration opportunity with significant results.

5.2 Robustness Check

To check for the robustness of our results, we first test the endogeneity of the independent variable (migration agents) and then conduct sensitivity tests using a different method for the same model i.e, logit.

Test for Endogeneity

Majority of migration literature has acknowledged the endogenity of migration when analyzing its relation with human capital accumulation (e.g. Brauw and Giles 2008; Batista et al 2012; Beine, Docquier, and Rapoport 2008) and the need to use valid instruments to overcome the problem of endogeneity. The most famous and commonly used instruments are related to migration opportunity and specifically are migration network or diaspora, local migrant population and number of household migrants. Although, studies using these instruments have produced robust significant results, their findings can be disputable on the basis of validity of these instruments reverse causality So far, we have not come across any literature that uses presence or number of migration agent and its impact on child educational attainment. In Chapter 2, we have provided our logical reasoning to support the exogeneity of this variable, however there is a necessity for statistically testing the endogeneity of the variable in the original model.

We use the Durbin-Wu-Hausman (DWH) test to find out if migration agents are endogenous in our model, as suggested by Davidson and MacKinnon (1993: 238). To implement this test, we assume migration agent is endogenous in our model. We follow two-step procedures. We run an OLS regression keeping migration agent as a function of all exogenous variables. Then we obtain the residual from the first stage of equation and place it in our main model including the residual as an explanatory variable in the right hand side. If the coefficient obtained from the residuals is significant then agent variable has endogeneity and we need to instrument it, otherwise there is no endogeneity and hence OLS is consistent.

The DWH test (Table 5.1 and Table 5.2) results show that we fail to reject the null hypothesis of no endogeneity of agent variable as the p values from first (P>F= 0.296) and second (P>F=0.217) model are highly insignificant. Hence, we get strong evidence in favor of no endogeneity of agent variable in our model. Therefore, there is no need to go for an instrumental approach and we can rely on the results of OLS estimates.

Test for Sensitivity

In the above section, DWH test proves that migration agents are not endogenous in our model. It is important to conduct sensitivity test of our estimates to the choices of variables in the model. For the purpose of this test, we use a logit model due to the non-linearity nature of our dependent variable. We compute logit marginal effects for both the hypothesis (Table 5.1 and 5.2) and compare our estimates to see if there are any significant differences in the coefficient of our estimate from that of the probit model. We find similar if not

negligible variation in the coefficients from the two models, with no significant differences in coefficients across models for both the hypothesis. All estimates of our variables are consistent and have same level of significance for both logit and probit models, for both the hypothesis.

Chapter 6
Conclusion

This paper overall contributes towards filling the gap of scarce existing global literature on migration and its impact on source countries. Recent literatures contextualizing migration and its impact on source countries have all limited their focus on skilled labor based on brain drain and brain gain theories. Such studies provide only one sided analysis based on skilled labors, hence bypassing a significant population of unskilled labor. This might not come up as a big issue in the global context since skilled labor migration is still dominant, however when analyzed from a country context it can emerge as a central issue, especially on countries that export cheap unskilled labor. It also becomes essential to analyze the impact of increased unskilled labor migration and migration opportunity prospect on micro- macro consequences of source countries. Specifically, the paper links increased low skilled migration opportunity and analyzes its impact on the source country.

The paper has been analyzed in the context of Nepal, which provides a unique setting to study low skilled migration. The country started a new policy which allowed for licensed recruiting agents to operate in districts, which in the past was only limited to recruiting agents operating in the capital and two main cities within the valley. This policy is interesting because it opened up access and possibilities for international migration to individuals located in regions away from the valley and especially to rural population. Agents obtain license from the government that authorizes for specific country requirement, Malaysia and Gulf countries being the dominant ones. We combine the data on agents operating in district with the latest NLSS III survey to make use of the new absentee module to capture recent migrants. Nepalese migrants going to these countries are primarily low skilled which further contextualizes our study within the periphery of low skilled migration.

For the first time, we empirically test both the brain drain and brain gain hypothesis in the context of low skill migration. We take the number of agents present at district level as our independent variable and analyse its impact on current educational attainment of students in secondary and higher secondary level. Since completion of grade 10 is the basic requirement to be eligible to migrate to Malaysia and the Gulf, we find significant positive correlation amongst students in secondary level. An additional increase in recruiting agent in a district is likely to increases the probability of opting for grade 9 or 10 by 0.5 percentage points. Our result provides evidence of brain gain amongst secondary level students due to increased low skill migration opportunity and is statistically significant. Additionally, for the brain drain hypothesis we find that an additional increase in recruiting agent decreases the probability of opting for grade 12 and 13 by 1.9 percentage points and is statistically significant; which provides evidence of brain drain/depletion amongst higher secondary students due to increased low skill migration opportunity.

The paper explicitly tests the original brain drain and brain gain hypothesis for all individuals residing within the country or have migrated in the last one year. The purpose of such limitation on sample selection is to clearly

point out that education was obtained in Nepal and to avoid any inconsistencies in data and bias results that could very well be impacted by other factors besides the variable of interest. Additionally, the paper justifies exogeneity of the independent variable both statistically and logically. However, previous studies based on migration networks, diaspora, local and regional proportion of migrants and having migrant in household can be questioned on the validity of its exogeneity and reverse causality. Future analysis should be based on sound logic to support such validity.

The empirical evidence from this paper should be used by government and policymakers in source countries to critically assess the overall impact on welfare in the long term due to the impact of current distortionary policies that support incremental low skilled labor production and export. This links back to the model proposed by Stark (2012) which incorporates both skilled and unskilled labor in the context of developing country characterized by closed and open economy. Their model illustrate attractive unskilled migration prospect abroad reduces the incentive to acquire skills and human capital. In the long run, the economy will have lower average human capital than without such prospect. The model provides an important insight in understanding the impact on overall welfare in relation to increased demand of low skilled migration.

Specifically, in the context of Nepal the mean national educational attainment is 8.1 (CBS 2011: 82). In a country which has a low mean educational attainment, completion of secondary and higher secondary level adds substantial human capital accumulation to the economy. However, the increased demand for low skill labor from host countries (like Malaysia and the Gulf) is creating incentive to leave school and remain unskilled which is evident from our result. In the long run, this can create a fall in average human capital accumulation based on Stark's model (2012). To avoid the loss of educated population from the country for low skill employment abroad, the government should acknowledge the need for a policy to reform its domestic labor market and create incentives for the share of educated population to stay back in Nepal.

Additionally, the surge of inflow of remittances in Nepal is likely to be creating "cushion" for the government and other stakeholders in delaying constructive sustainable labor market polices (World Bank 2011:21). This may actually be creating a vicious cycle of low domestic employment opportunities which leads to increase in migration which results in increased inflow of remittance and again more migrants need to leave the country due to lack of domestic opportunities. It is also worth thinking if the inflow of huge amount of remittance is actually creating a disincentive and providing a cushion for the government to sidestep on their responsibilities.

Recent analysis on migration, remittances and macroeconomic indicators suggest that Nepal is likely to suffer from 'Dutch Disease'. Dutch Disease is a phenomenon when large amount of foreign currency flows to a country which eventually suppresses the manufacturing sector. This is also evident in the case of Nepal where increase in remittances led to an appreciation of real exchange rate by 25 percent. Consequently, manufacturing sector has declined by 2.5 percent as a share of GDP in the last 9 years (Appendix Figure 1.1 and 1.2) and export to other countries has declined by 5 percent (World Bank 2011: 24). Therefore, there is an urgency for Nepal to reevaluate its macro-economic

indicators and policies in the context of surge in migration and inflow of remittances.

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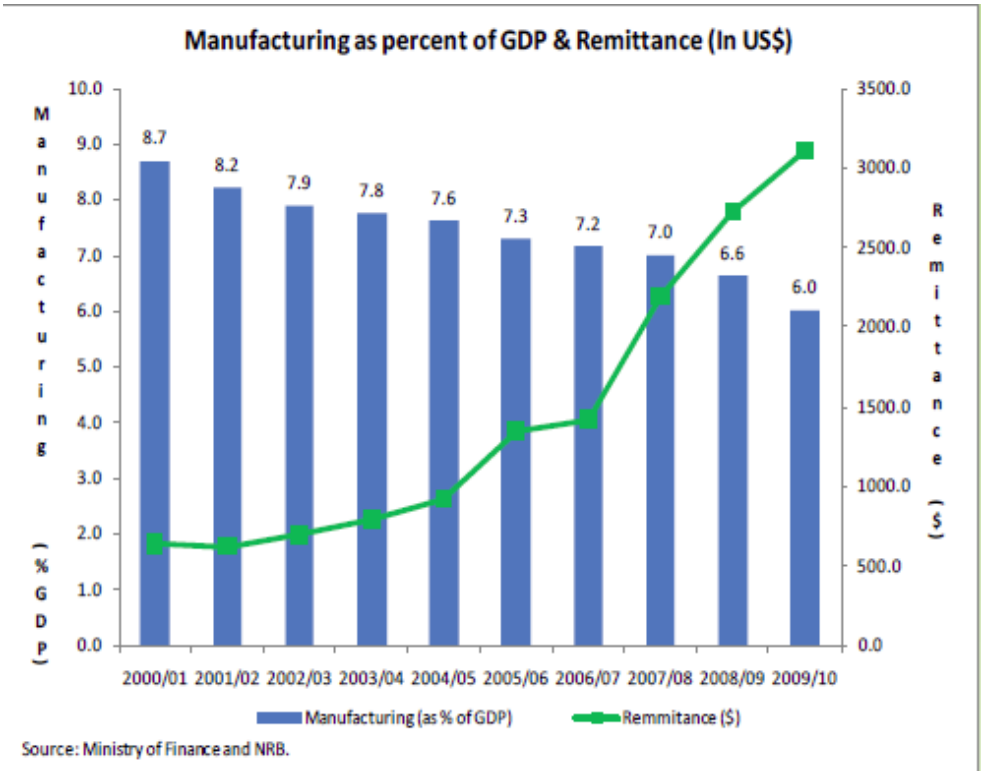
Appendices

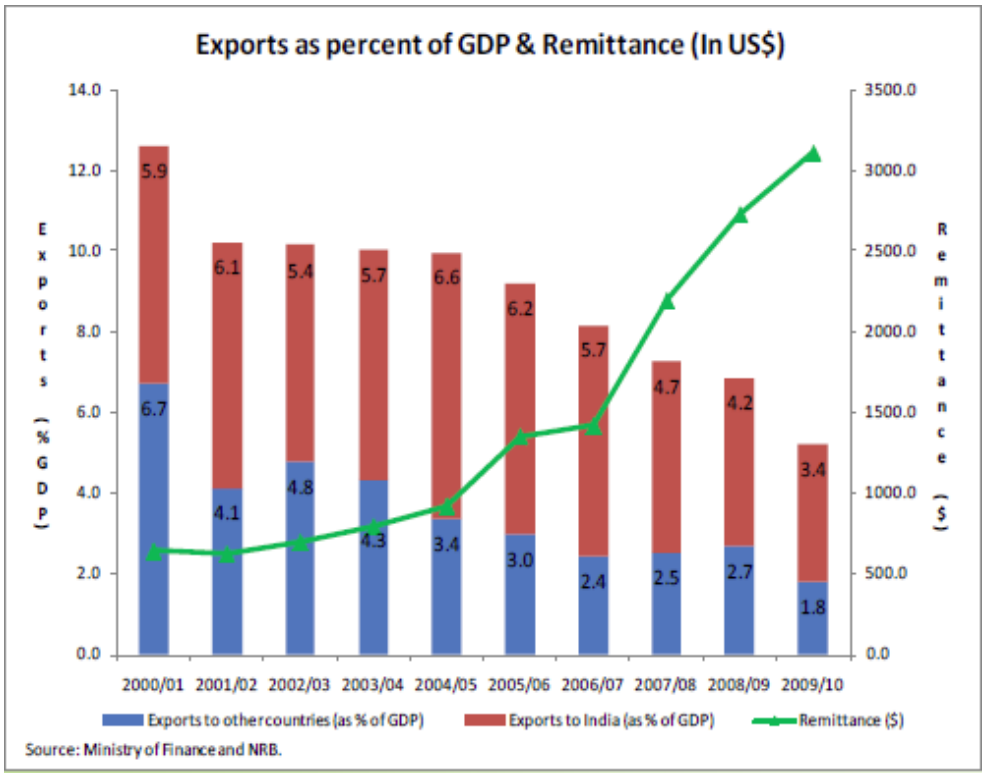
Appendix 1: Some Macro-economic Indicators

Figure 1.1: Manufacturing as a Percentage of GDP and Remittances (US$)



Source: Ministry of Finance and NRB

Figure 1.2: Exports as Percent of GDP and Remittance (US$)



Source: Ministry of Finance and NRB