

GRIPS Discussion Paper 15-25

International Remittances, Rural-Urban Migration, and the Quest for Quality Education: The Case of Nepal

**Chakra P. Acharya
Roberto Leon-Gonzalez**

March 2016



GRIPS

NATIONAL GRADUATE INSTITUTE
FOR POLICY STUDIES

National Graduate Institute for Policy Studies
7-22-1 Roppongi, Minato-ku,
Tokyo, Japan 106-8677

International Remittances, Rural-Urban Migration, and the Quest for Quality Education: The Case of Nepal

Chakra P. Acharya^{*,a} and Roberto Leon-Gonzalez^b

*Corresponding Author

^aElection Commission, Nepal,
Kathmandu, Email: acpani2003@gmail.com

^bNational Graduate Institute for Policy Studies (GRIPS), Tokyo
Email: rlg@grips.ac.jp

ABSTRACT

Using primary field data from recently developed urban areas of Nepal, we identify households who migrated from rural to urban areas and analyze the impact of international remittances on their investment in education. The results show that rural-urban migrant households who receive international remittances have lower income and consumption but higher human-capital investment, measured by the level and budget share of expenditure on children's education and the time their children spend studying at home, in comparison to local households and other types of migrant households. The findings suggest that an important motivation for rural-urban migration is the search for higher-quality education, because the experience of international migration helps households to know the higher returns to education abroad and international remittances help to finance the costs of both internal migration and education. We also observe that the quality of education is an increasingly important concern in contemporary Nepalese society, possibly due to the anticipated higher returns to education in the global labor market. (163 words)

Keywords: Rural-urban migration, International migration, Remittances, Hurdle Model, Human capital, Nepal

JEL Codes: O15, C24, J24

I. Introduction

In recent decades, the world has witnessed megatrends of migration and remittances. Approximately 700 million people are internal migrants, mostly living in urban areas of developing countries (DCs); in 2013, 232 million people lived outside their countries, of which 70 percent were migrants from DCs.¹ In 2014, the officially estimated global flow of remittances was \$580 billion, of which almost three-fourths (\$443 billion) was toward DCs.² In fact, remittances comprised the second-largest (after foreign direct investment) external resource flow for DCs. Accordingly, there is a growing interest in the impacts of migration and remittances on an economy among academicians, policy makers, public officials, development practitioners, and others (see de Hass, 2010; Skeldon, 2008; Stark and Wang, 2002). Migration dynamics and, in particular, links between domestic and international migration practices, generally shapes the direction and magnitude of development outcomes, and thus may be especially important in developing economies. Unfortunately, there are limited theoretical and empirical works about the link between internal and international migration. As an exception, Skeldon (2006) has analyzed the evolution and the link between internal and international migration in Southeast Asia and concluded that each can affect the other, suggesting the need to consider them as an integrated system.

Employment and earning potential (Harris & Todaro, 1970; Henderson, Shalizi, & Venables, 2001), investment, for example, in physical and financial assets (Osili, 2004) and the enjoyment of urban amenities (Fafchamps & Shilpi, 2013) are considered the main motives for migration of people from rural areas to urban areas. It already has been established that international migration, through remittances, insures the households left behind against risk and uncertainty (Stark, 1991; Stark & Bloom, 1985) and relaxes credit constraints (Calero, Bedi, & Sparrow, 2009; Halliday, 2006). However, very few studies have explored the role of migration in relaxing information constraints, for instance, migration as a medium for diffusion of learning and knowledge (Williams & Baláž, 2008) and its role in information acquisition and transmission (Acharya & Leon-Gonzalez, 2014) such as enhancing investment in human capital. Accordingly, international migration may induce information-constrained parents (for instance, uneducated mothers)—who may otherwise underinvest in their children’s schooling (as theorized by Becker, 1993)—to increase enroll their children in school or transfer their children from public to private schools (Acharya & Leon-Gonzalez, 2014). However, when the performance of public

schools is poor and there are few private schools in rural areas, the increasing demand for higher-quality education may discourage rural households who receive remittances and aspire for quality education from remaining in their hometowns. They may migrate to nearby town centers, regional cities, or capital cities, depending upon their preferences, proximity, and capabilities. To our best knowledge, whether international migration encourages rural families to migrate to urban areas for their children's education, with international remittances financing the migration, has yet to be explored.

In order to fill this gap, this study attempts to explore the human-capital investment behavior of rural-urban migrant households whose working members live abroad and identify whether the major motivation for their migration to urban areas was their children's education. We measure human-capital investment in terms of the level and budget share of expenditure on children's education and the time the children spend studying at home. We hypothesize that migrant households have a higher level of investment in human capital in comparison to urban natives, despite similar or lower level of current welfare measured by income and consumption, and therefore their major motivation for migration is their children's schooling; otherwise, we would not be sure whether their prime concern was children's schooling. In this study, we use household survey data from newly developed urban areas of Nepal, which was collected by the authors through a nationally representative Nepal Remittance, Investments, and Urbanization Survey (NERIUS) in late 2011. This case is particularly interesting, because during the past two decades Nepal has experienced rapid progress in school enrollment, phenomenal growth in work-related foreign migration and remittance inflows, and astonishing rural-urban family migration and urbanization, despite a decade-long civil conflict, and political and socioeconomic transition.

We find that rural-urban migrant families, particularly those that migrated very recently and received international remittances, invest more on human capital than do local families with a similar level of education, despite their lower level of income and consumption. These migrant households spend three times more on education and allocate a larger share of their budgets to education than do local households. Moreover, children of these migrant households spend more time studying at home than do children of local households. These findings suggest that the human-capital investment motive is stronger than is the urban-life motive among recent migrant households, especially those that have received international remittances. We also observe that the quality of children's education—a factor found to be crucial to productivity and economic growth (see Barro,

1992; Hanushek & Woessmann, 2008)—is an increasingly major concern in contemporary Nepalese society. This concern may relate to the increasing expected return on investment in education, for instance, due to the “brain drain” (Beine, Docquier, & Rapoport, 2001), the potential to migrate abroad, where the return on education is much higher than in Nepal. This finding is in line with that of Shrestha (2015), who showed that changing the education criteria for recruitment of Gurkha in the British Army improved the schooling of both migrants and non-migrants in Nepal. The level of human-capital investment is found to be very high among rural-urban migrant households that received remittances from abroad, with international migration possibly contributing to the “knowledge acquisition about value of and return to children’s education” among information-constrained parents (Acharya & Leon-Gonzalez, 2014). In addition, international migrant parents’ experiences in the global labor market could increase their anticipated returns to education. Meanwhile, international remittances have made the costly internal migration of rural households feasible by financing the costs of migration, settlement in urban areas, and education expenses.

The remainder of this paper is organized as follows. Section II provides an overview of recent changes, migration practices, and the educational system in Nepal. Section III describes the survey methodology, data, and descriptive analysis. Section IV discusses the empirical models. Section V presents the results, discussion, and robustness checks. Section VI concludes the paper by summarizing some policy implications of the findings.

II. Migration Practices and the Educational System in Nepal

Contemporary Nepalese society is characterized by unique socioeconomic and political transition. First, Nepal experienced political openness through the restoration of multiparty democracy in 1990 after the demise of the three-decade party-less panchayat regime. Afterward, the Nepalese government adopted a liberal economic policy that not only encouraged participation of the private sector in the education, health, communication, transportation and manufacturing sectors but also facilitated open trade and out-migration. The April 2006 mass protest (Jana Andolan II) ended the two-and-a-half-century monarchy and concluded the decade-long Maoist insurgency (1996–2006) into a peace process.³ The protest also paved the way for restructuring a unitary

country into a federal and inclusive democratic country by encouraging broader participation from the more than 125 castes and ethnic groups and 123 linguistic groups.⁴

Second, Nepal experienced phenomenal growth in migration, driven by foreign employment opportunities and the resulting inflow of remittances back to the households that had been left behind in Nepal. Annual emigration from Nepal, excluding those who migrated to India, increased from a few thousand people in 1993/94 to more than 512,000 people in 2014/15. It is estimated that at least 3 million Nepalese live abroad (excluding India), at least half of that concentrated in Malaysia, Qatar, Saudi Arabia, and United Arab Emirates.⁵ It is estimated that one-third of all Nepalese households have at least one family member living abroad for employment or education (CBS, 2011). Accordingly, the recorded annual remittance inflows to Nepal increased from \$50 million in 1993 to \$5.87 billion in 2014, with the ratio of remittance inflows to GDP increasing from 2 percent to 29.9 percent. In 2014, Nepal had become the third-largest remittances recipient country relative to the size of economy.⁶

Third, Nepal has achieved remarkable progress with regard to access to education, despite slow economic growth and political turbulence. Net primary school enrollment increased dramatically, from 64 percent in 1990 to 96.2 percent in 2014/15.⁷ In addition, parental concern for English education has increased, possibly due to English knowledge increasing the probability of employment in both the domestic and international markets and providing the potential for study abroad. Accordingly, the private sector has become more involved in education, with its share on enrollment increasing sharply, from less than 5 percent in 1990 to 27 percent in 2010/11 (CBS, 2011).

There is a sharp difference in the quality and cost of education between public and private schools. In general, the academic performance of public school students is poorer than that of private school students. For instance, in the national School Leaving Certificate (SLC) examination in 2015, only 47.79 percent of students passed, but the pass rates for public school students (33.74%) and private school students (89.8%) differed dramatically. Among the passed students, 86.44 percent private school students scored first division (score above 60%) or distinction (score above 80%) while only 32.1 percent public school students scored at first division or distinction.⁸ In terms of finance, private schools in Nepal, in contrast to religious schools or other types of private schools in other countries, are financed almost entirely by the parents. For instance, in our survey data, the average household expenditure on education per child, including all related expenses, such as tuition, books, stationary, uniforms, lunch, and so forth, for children attending private

school (\$222.50) is almost four times than that for children attending public school (\$57.80). These statistics reveal the large parental investment in private schooling for higher-quality education in Nepal.

Fourth, Nepal has experienced astonishing growth of urbanization in recent decades. The number of municipalities increased from 33 in 1986, to 58 in 1997, and 217 in 2015. Accordingly, the urban share of Nepal's population increased from 9.1 percent in 1991, to 14.2 percent in 2001, and 41.8 percent in 2015.⁹ The major factor behind Nepal's rapid urbanization, similar to other DCs (Lall, Selod, & Shalizi, 2006), is rural-urban migration, consistent with the theory of rural-urban migration (Lucas, 1997). According to Population Census (2011), during 2001–2011, in contrast with the national population growth rate of 1.4 percent, 23 of the 75 districts experienced negative population growth; this contrast provides evidence of the concentration of Nepal's population in particular areas.

In addition, many rural households, particularly those that receive a large amount of international remittances, have been moving to urban areas—local and newly developed urban centers, district headquarters, regional cities, the capital city and its suburbs—depending on affordability, preferences, and access to better education, health services, and other facilities. It is generally believed that many of these migrant households are abandoning agriculture and engaging in non-farm activities or doing no income-generating activities other than taking care of children and relying solely on remittances for financial support.

Now, the following questions arise: Has the practice of investing in quality and English medium education increased over time in Nepalese society? Is children's education a primary motivation for the migration of rural households that have working members living abroad? Have international remittances to households in Nepal financed the costly rural-urban migration of those households? In our view, international migration has encouraged rural households in areas that lack quality education to migrate to urban areas for better-quality English medium private education when international remittances finance the migration process, including the costs of settlement in the urban area and the costs of the children's education. To answer these questions, we conducted a survey of 288 households from recently flourished urban areas of Nepal in November and December 2011.

III. Survey Data and Key Features of the Study Area

The household survey data

To capture the general pattern of recent rural-urban migration in Nepal, we define our study area as the 41 new urban areas that were declared municipalities by the government of Nepal (GoN) in mid-July 2011.¹⁰ Although these municipalities were not formally operationalized by the government during the survey period, they serve as proxies for the large number of new urban areas that have flourished in recent years. These new urban areas are heterogeneously distributed across the country. In particular, 4 are located in the Mountain region, 22 are located in the Hill region, and the remaining 15 are located in the Tarai region.¹¹ Administratively, 3 are in Kathmandu, the capital valley, and 15 are district headquarters.

We conducted the survey in 2011, using a three-stage stratified random sampling approach. In the first stage, we randomly chose 12 urban areas, representing all three ecological belts and five development regions, based on their population shares as of 2001 (Figure 1).¹² Figure 1 is a map of Nepal in which the sample urban areas are highlighted.

//Figure 1 about here//

In the second stage, based on the discussions with local authorities, facilitators and informants, the wards of each sample municipality were categorized into three broad groups. The first category consisted of wards that were centers of the municipality, were characterized by mainly urban activities, and had possibly experienced in-migration. The second category consisted of intermediate wards that were characterized by both urban and rural activities and might have experienced in-migration during the previous ten years. The third category consisted of periphery wards that were characterized by mainly agricultural activities and had rarely experienced in-migration. As a primary sampling unit (PSU), one ward was randomly chosen from the first and second category of each municipality; thus, two PSUs were chosen from each sample municipality, for a total of 24 PSUs in the survey.

In the third stage, household rosters for each PSU were prepared. The rosters included basic information about the household head, household size, whether the household had arrived in the study area after 2001, and the number of household members who lived abroad. Based on this information, the listed households were categorized into two groups: local households (urban native households and those households that had arrived in the municipality before or during 2001) and migrant households (households that had arrived in the municipality after 2001). Each group of households was further divided based on whether at least one family member was living abroad. From these four

strata, 12 households in each PSU were randomly selected such that, to the extent possible, at least 50 percent of them were migrant households and at least 50 percent of them had members living abroad. Accordingly, the survey was composed of 288 sample households, 12 from each of 24 PSUs. Table 1 (Panel A) presents the regional and ethnic distribution of households by the above categories.

//Table 1 about here//

We collected household data through individual interviews by using a pilot-tested household questionnaire. The questionnaire consisted of questions about household demographics, income, expenditures, education, land, housing, durable goods and other real assets holdings, and entrepreneurship. More specifically, it captured detailed information about in-migration and out-migration (from the household's hometown to other parts of Nepal and abroad). Data were collected at both the individual and household level, depending on the nature of the information required. We complemented this questionnaire with a community questionnaire, which was administered at the PSU level to capture information about the prices of major commodities, access to major facilities and services, such as schools, transportation, communication, health, banking, and financial services, and the overall pattern of in-migration and out-migration.

Descriptive analyses

Table 2 reports summary statistics for the size, composition, and education of the sample households. Among migrant households, the average year of arrival (YSM) from their hometown village is 4.95 years. On average, remittance-recipient migrant households arrived later than did non-recipient migrant households. Local households were larger in size than migrant households. The proportion of young children (aged below 10 years) was higher among migrant households than local households, while local households had a higher proportion of older children (aged 11–24 years). The proportion of adult men (aged 25–64 years) was higher among migrant households, while local households had a higher proportion of adult women (aged 25–64 years) and elderly (aged above 64 years).

// Table 2 about here //

Table 2 (Panel B) shows that migrant households, on average, were slightly less educated than were local households. Among remittance non-recipient households, the education level, on average, was lower for migrant households than for local households; in contrast among remittance-recipient households, the education level of migrant

households was higher than that of local households. The average number of children attending school was similar for both local and migrant households. However, migrant households were more likely to send their children to private schools than were local households, because remittance-recipient migrant households mostly sent their children to private schools. These results, consistent with those of Acharya and Leon-Gonzalez (2014), suggest that migrant households, particularly those that receive remittances, were more concerned about private schooling for their children than were local households.

Table 3 shows the differences in household income and consumption between migrant and local households. Migrant households had lower level of welfare measured by average per capita household income (Panel A) as well as average per capita household consumption (Panel C) in comparison to local households. These results also generally hold true for the subsamples of households categorized based on receiving remittances: remittance-recipient households generally had higher income than did non-recipient households, regardless of whether they were local households or migrant households. However, these remittance-recipient households had similar consumption in comparison to non-recipient households. This implies that remittance-recipient households saved or invested more in physical assets than did non-recipient households.

// Table 3 about here //

Among sample households, there was heterogeneity in the distribution of income by source (Table 3, Panel B). The share of foreign remittances was approximately 30 percent for migrant households but only 14 percent for local households. Wages, enterprise profits, and assets rent constituted the major sources of income for local households, while enterprise profits and wages were important sources of income among migrant households, particularly non-recipient ones. In the subsample of remittance-recipient households, remittance inflows constituted approximately 40 percent of income for local households and 63 percent of income for migrant households. These figures prove that remittances were a major source of income for migrant households.

Table 3 (Panel E) shows the distribution of consumption by categories. Food expenditure share was larger for migrant households than for local households, in the full sample and the subsamples categorized based on receipt of international remittances. Local households had a higher average propensity to spend on non-food items than did migrant households. Most importantly, migrant households allocated a far larger share of their budgets to education than did local households. The results also hold true in the subsample categorized based on international remittances, although the gap is far larger in the

subsample of remittance-recipient households. The level of expenditure on education also was higher for migrant households than for local households, despite migrant households' lower level of household income and total consumption. This was due to the higher spending on education of migrant households that receive international remittances. These results are consistent with the pattern of school attendance (Table 2) and the findings of Adams and Cuecuecha (2010), who showed that, in Guatemala, remittance-recipient households had extremely high marginal spending on education, compared to non-recipient households. These results further suggest that migrant households, particularly those that received remittances, largely invest in human capital.

IV. Empirical Specifications

To investigate the human capital investment behavior of rural-urban migrant households in Nepal, we propose empirical models for comparing migrant households and local households in terms of (i) expenditure on education and its share of budget (household level), (ii) expenditure on education (child level), and (iii) time that children spend studying at home (child level). We employ a traditional Engel curve method using ordinary least squares (OLS) to estimate expenditure on education and its budget share, at the household level, as follows:

$$\text{HEDU}_i = \beta_0 + \beta_1 M_i + \beta_2 \text{EXP}_i + \beta_3 H_i + \beta_4 C_i + \beta_5 D_i + \varepsilon_{hi} \quad (1)$$

where the dependent variable, HEDU_i , is the natural logarithm of household expenditure on education (EDUEXP_i)¹³ for school-age children (aged 5–24 years) or its share (EDUSHARE_i) of the household's total consumption. ε_{hi} is an error term with zero mean. The model is estimated for the subsample of households that have at least one school-age child, for the full sample and separately for households that did or did not receive international remittances during the survey year. The estimates are reported in Tables 4 and 5 (Specifications (1) through (3)).

//Table 4 and 5 about here//

Among the explanatory variables, M_i , the variable of interest in this study, is a dummy variable for migrant households, equal to one if a household arrived in the PSU after 2001 and zero otherwise. EXP_i is the natural logarithm of household consumption, used as a proxy for household permanent income, as does the literature on the estimation of Engel curves.¹⁴

H_i is a vector of household characteristics, including human capital measured by the years of schooling of the most educated member of the household who is at least 25 years old¹⁵ and household demographics measured by household size and composition. C_i , composed of a set of caste–ethnicity dummy variables (Brahmin–Hills, Brahmin–Tarai, Chhetri, Newar, Ethnic–Hills, Dalit, and Ethnic–Tarai and minorities), is used to control for differences in human and physical asset endowments and preferences with regard to schooling among castes and ethnic groups. Finally, D_i , a set of dummies for development regions (Eastern, Central, Western, and Mid-western, and Far-western), is used to control for spatial differences in access to and preference regarding education.

The estimation of education expenditure could be corner solution outcome. Some households did not send their children to school at all, took their children out of school when they had completed a certain level, or did not have any expenditure on education for children currently attending school. In those cases, the OLS estimates may be inconsistent (Wooldridge, 2002, p. 524). The OLS estimates may also be biased downward when a large proportion of sample households have a corner solution at zero (Deaton, 1997). However, we can consistently estimate the Engel curve using a Tobit model based on the assumption that the same mechanism drives both the “participation decision” (i.e. having zero expenditure on education) and the “amount decision” (i.e., the level of expenditure on education):

$$HEDU_i^* = \beta_0 + \beta HX_i + \varepsilon_{hi} \quad (2)$$

$$HEDU_i = HEDU_i^* \text{ if } HEDU_i^* > 0 \text{ and}$$

$$HEDU_i = 0 \text{ otherwise} \quad (3)$$

where $HEDU^*$ is a latent variable of the observed counterpart variable $HEDU$, and ε_{hi} is the error term. HX_i is a set of explanatory variables (M_i , EXP_i , H_i , C_i , and D_i), which are the same as in Model (1). Following Wooldridge’s approach (2002, p. 522-523), the conditional marginal effect of an explanatory variable, for instance HX_j , is as follows:

$$\frac{\partial E(HEDU | HX, HEDU > 0)}{\partial HX_j} = \beta_j \{ (1 - \lambda(c)) [c + \lambda(c)] \} \quad (4)$$

where $\lambda(c) = \phi(c) / \Phi(c)$ is the inverse Mills ratio, $c = HX\beta / \sigma_h$, $\phi(\cdot)$ and $\Phi(\cdot)$ are the probability and cumulative density functions, respectively, and σ_h is the standard deviation of the error term ε_{hi} . The conditional marginal effects of the Tobit estimates for specifications (4) through (6) are shown in Tables 4 and 5.

The Tobit model is too restrictive, because it assumes that the same mechanism to determine both the “participation decision” and the “amount decision.” In other words, it assumes that the effect of an explanatory variable both on the probability of positive expenditure and the amount of expenditure has the same sign. However, zero outcomes may occur due to, for example, a lack of preference with regard to education, while variation in the amount of positive expenditure may occur due to budget constraints. Therefore, we also use a hurdle model (Cameron & Trivedi, 2005; Kingdon, 2005; Wooldridge, 2002), which allows participation in education expenditure and the amount of education expenditure to be determined by different processes or sets of variables. If the participation condition in equation (5) is satisfied, then the amount of education expenditure is determined by equation (6):

$$\text{HAVEHEDU}_i^* = \beta_0 + \beta \text{HZ}_i + u_{hi} \quad (5)$$

$$\text{HEDU}_i = 1[\text{HAVEHEDU}_i^* > 0](\beta_0 + \Gamma \text{HS}_i + v_{hi}) \quad (6)$$

where equation (5) is a probit model with latent dependent variable HAVEHEDU. Equation (6) is estimated via linear regression truncated at zero (i.e., it is estimated using households that had expenditure on education). The dependent variable HEDU in equation (6) is the natural logarithm of education expenditure. The explanatory variables HZ and HS are specified in the same way as HX in Model (3), but their coefficients in equations (5) and (6) are allowed to enter with different coefficients in equations (5) or (6). β and Γ are the vectors of parameters to be estimated. The error terms u_{hi} and v_{hi} are independent of each other as well as independent of HZ and HS. The hurdle estimates are reported in Table 4 and 5 (Specification 7-12).

At child level, we estimate the following human capital investment model:

$$\text{CEDU}_j = \gamma_0 + \gamma_1 M_j + \gamma_2 \text{EXP}_j + \gamma_3 \text{CP}_j + \gamma_4 \text{CH}_j + \gamma_5 C_j + \gamma_6 D_j + \varepsilon_{cj} \quad (7)$$

where CEDU_j , the dependent variable, is (i) CEDUEXP_j , the natural logarithm of expenditure on the education of child j ¹⁶ or (ii) CTIME_j , the number of hours that child j spent studying home during the past seven days. We estimate this model similar to the household-level models, using OLS, Tobit, and two-part (hurdle) models for the full sample of children (aged 5–24 years) and separately for subsamples of those children categorized based on whether their household received international remittances during the survey year. ε_{cj} is the error term. The estimation results are presented in Tables 6 and 7.

//Table 6 and 7 about here//

The explanatory variables (M_j , EXP_j , C_j , and D_j) are the same as in Model (1). CP_j is a vector of child characteristics, such as age cohort (the base cohort, primary, consists of children aged 5–10 years, secondary consists of children aged 11–16 years, and tertiary consists of children aged 17–24 years), sex (a dummy variable equal to one for male children and zero otherwise), and birth order.¹⁷ CP_j also includes dummy variables for the maximum educational level of the child’s parents (the base category, no formal schooling, followed by not completed primary, completed primary, completed lower secondary, and completed secondary or higher). CH_j is the natural logarithm of household size.

V. Estimation Results

Determinants of financial investment in children’s education

In this subsection, we present the results of the estimation of education expenditure and its share of budget. Table 4 summarizes the OLS, Tobit, and hurdle estimates for the natural logarithm of household expenditure on education. The coefficients of the OLS estimates (specifications (1) through (3)) and the conditional marginal effects of the Tobit estimates (specifications (4) through (6)) indicate that migrant households spend more on education than do local households. However, the estimates are significant for full sample and the subsample of remittance-recipient households but not for the subsample of non-recipient households. For instance, based on OLS estimates for the full sample, migrant households spend 125 percent more than do local households, and for the subsample of remittance-recipient households, migrant households spend 209 percent more than do local households. The Tobit estimates are greater than the OLS estimates suggesting that the OLS estimates are biased downward.

The estimates for the hurdle models (Table 4, specifications (7) through (12)) also support the OLS and Tobit estimates. The probability of having positive expenditure on education is higher for migrant households in the full sample and the subsample of remittance-recipient households but not in the subsample of non-recipient households. However, the coefficient for the full sample is not statistically significant, because the coefficient for the subsample of remittance-recipient households is positive and statistically significant but the coefficient for the subsample of non-recipient households is negative and statistically significant. The education expenditure conditional on the household with positive education expenditure is higher for migrant households in all specifications and statistically significant for all except the subsample of remittance non-

recipient households. These results suggest that the higher level of investment in education by migrant households than by local households is due to both a greater likelihood of spending on education and a higher level of expenditure on the education of children from remittance-recipient migrant households.

Table 5 summarizes the estimates for the education expenditure share of budget at the household level. The OLS, Tobit, and hurdle model estimation results are qualitatively similar to the estimates on expenditure amount (Table 4), in terms of both sign and statistical significance. This implies that particularly remittance-recipient migrant households spend a larger amount on education and also allocate larger budget share on education than do local households and non-recipient migrant households. These findings are consistent with the findings of Adams and Cuecuecha (2010) for Guatemala and Yang (2008) for the Philippines.

Regarding other covariates, income elasticity (consumption as a proxy) is statistically significant for all estimates for education expenditure (Table 4, specifications (1) through (12)). However, the estimates are positive but not statistically significant for education's share of budget (Table 5), which implies that, although they spend more on education, rich households may not allocate a larger share of their budgets on education than do poor households. In other words, poor households strive to provide for their children's education, despite their lower level of asset endowments, earnings, and current consumption. The education of the household member has a positive (always) and statistically significant (in most cases) effect on education expenditure and its share of budget, with larger effects in the subsample of remittance-recipient households. Household size has a positive but statistically insignificant effect on education expenditure and its share of budget. Education expenditure and its share of budget increase with the proportion of school-age children, as expected.

We do not find strong evidence that upper caste (Brahmin–Hill and Chhetri) households spend more on education than do households of other castes. However, Dalit families spend significantly more on education than did Ethnic–Tarai families and families of other castes or ethnic groups, all else equal. However, when we do not control for education level and income, Dalit households spend far less on education than do households of upper castes and Ethnic–Hill households.¹⁸ This result reveals a higher level of motivation among Dalit parents with regard to their children's schooling. Recent provisions for affirmative action such as reservation or quota for women and deprived groups (Dalit, Madheshi, and Janajati people, people with disabilities, and people from

remote areas) in the public sector may have increased those groups' expected returns to education.

Table 6 summarizes the estimates of education expenditure at the child level. The OLS and Tobit estimates for the full sample (specifications (1) and (4)) and subsample of remittance-recipient households (specifications (3) and (6)) show that children from migrant households have a statistically significant higher level of education expenditure than do children from local households. In the full sample, children from migrant households spend 106 percent more on education than do children from non-migrant households (specification (1)). In the subsample of children from remittance-recipient households, children from migrant households spend 236 percent more on education than do children from non-migrant households (specification (3)). The coefficients of the double-hurdle models suggest that the differences in education expenditure arise from the higher likelihood of education expenditure among migrant households, in particular remittance-recipient ones, than among local households (specifications (7) and (11)). This implies that children from migrant households, in particular from those that receive international remittances, are more likely to be enrolled in school than are children from local households (similar to the results shown in Table 2, Panel B).

Table 6 also shows that children of the primary age cohort (aged 5–10 years) have a higher level of expenditure on education than do children of the secondary (aged 11–16 years) and tertiary (aged 17–24 years) age cohorts. This is due to higher school attendance and a greater likelihood of enrollment at private schools (specifications (7) and (8)). This also implies increasing recognition of the value of and the returns to education among parents over time. There are huge gender differences in education expenditure. On average, education expenditure for boys is higher than for girls: 107 percent higher in the full sample and 127 percent higher in the subsample of children of remittance-recipient households. Children of more educated parents have much higher education expenditure. The effect of parental education is stronger and greater for children of remittance-recipient households than for children of non-recipient households, but the income effect is smaller for children of remittance-recipient households than for children of non-recipient households.

In summary, our results—regardless of the model specification—show that differences in education expenditure of rural-urban migrant households and local households in Nepal are driven by remittance-recipient migrant households' large investments in education. However, this education expenditure is caused not only by

migration to urban areas but also by a greater effect of parental education (Table 6) regardless of whether the households are remittance recipients (Table 5). The findings are further supported by the higher enrollment in private schools of children of remittance-recipient migrant households. Therefore, among remittance-recipient households, the major motivation for migration is improving the quality of their children's education, which is found possible by the international remittances.

Determinants of time allocation for children's education

In this subsection, we present the results of the estimation of time that children spend studying at home and mothers' supervision of children's study at home. Table 7 summarizes the OLS, Tobit, and hurdle model estimates of weekly hours spent studying at home by children aged 5 to 24 years. The coefficients of the OLS estimates (specifications (1) through (3)) and the conditional marginal effects of the Tobit estimates (specifications (4) through (6)) indicate that children from migrant households spend more time studying at home than do children from local households. However, those estimates are statistically significant only for the full sample and the subsample of remittance-recipient households. According to the OLS estimates, in the full sample, children from migrant households spend 2.37 hours more time studying at home than do children from local households, while in the subsample of remittance-recipient households, children from migrant households spend 3.48 more hours studying at home than do children from local households.

The hurdle model estimates (Table 7, specifications (7) through (12)) also support the OLS and Tobit estimates. The probability of spending time studying at home is significantly higher for children from migrant households than for children from local households, in both the full sample and the subsample of remittance-recipient households, but insignificant in the subsample of non-recipient households. The number of hours that children spend studying at home, conditional on time being allocated to it, is greater for migrant households in all specifications but statistically significant only for the full sample. These results contradict Antman's (2011) findings for Mexico, where the labor market was imperfect and remittances could not compensate for lost labor.

Table 7 also shows that children from affluent households spend more time studying at home than do children from poor households, in most of the specifications. Children from large households generally spend less time studying at home than do

children from small households, possibly because parents of small families place greater importance on education. Secondary school-age cohort children spend more time studying at home than do primary school-age cohort children. However, tertiary school-age cohort children spend less time studying at home than do primary school-age cohort children, possibly due to having left school or engaging in work. Boys spend more time studying at home than do girls, which reveals discrimination in intra-household labor allocation. More educated parents allow their children to spend more time studying, in full sample and subsample of remittance-recipient children.

Robustness of the findings

There are three major potential concerns about the validity of our results. First, it may be argued that a rural-urban migrant household may not be completely integrated in an urban area even a decade after arrival. Second, it is unclear whether migration of rural families to urban areas for the purpose of schooling is an increasing trend. Third, during the decade-long Maoist conflict (1996–2006), many rural individuals and families had to forcibly migrate to other rural and urban areas of Nepal or abroad (Bohra-Mishra & Massey, 2011; Martinez, 2002). Regarding this third concern, although our data suggest that only negligible fractions of migrant individuals aged 5 years and above (2.44%) and migrant household heads (3.57%) explicitly reported conflict as their primary reason for migrating from rural areas to urban areas, we cannot completely disregard the presence of conflict as one of the factors affecting the migration decision. Indeed, it would be misleading to assume that migrant households escaping from conflict migrated in search of better schooling for their children.

To address these three concerns—the definition of a migrant household, the dynamics of parental investment in quality education, and forced migration during the decade-long Maoist insurgency—we estimate less restrictive specifications by excluding the migration dummy variable (M) and simultaneously including the three dummy variables as: prior-conflict migrant households (those that arrived in the urban area between 1991 and 1995), in-conflict migrant households (those that arrived in the urban area between 1996 and 2006), and post-conflict migrant households (those that arrived in the urban area after 2006). The dummy variable for local households (households that were urban natives or arrived in the urban area before 1991) serves as the base category. The resulting estimates are reported in Table 8.

//Table 8 about here//

The household-level results for both education expenditure and its share of budget are congruent with the main findings of this study. Pre-conflict migrant households spend less on education than do local households, but in-conflict and post-conflict migrant households spend more (although statistically insignificant) on education than do local households (Panel A, specification (1)). Moreover, only post-conflict migrant households spend a significantly higher share of budget on education than do local households (Panel B, specification (1)). At the child level, in the full sample, children from migrant households, on average, have higher education expenditure, but the coefficients are statistically significant only for children from in-conflict and post-conflict migrant households (Panel C, specification (1)). The estimates for the subsamples show that, among remittance-recipient households, children from in-conflict and post-conflict migrant households have significantly higher education expenditure and budget share than do children from local households (Panels A and B, specifications (3), (6), (11), and (12)). For the subsample of children from non-recipient households, the coefficients of in-conflict and post-conflict migrant household dummy variables are generally positive but statistically insignificant.

We further check whether expenditure on private schooling reflects the intent to invest in higher-quality education. The questionnaire used in this study asked household heads for their opinions about private school and the reasons for sending their children to private school. Of the 164 sample households that were sending at least one child to private school, quality was the primary reason for doing so. The main reason given by 61 percent of the households that chose private schools was one of the following, all of which pertain to quality: teachers make more effort in teaching (32%), classes are regular in school (19%), and children put forth more effort (10%) in private school. The offering of English medium classes (23%) was the next most common reason given. However, as expected, the demonstration effect (11%)—following the advice of relatives, neighbors and friends—was not so important in the decision to send children to private school. These views are well-supported by the differences between the SLC examination results of public schools and private schools (see section II of this paper). In addition, the popularity of private schooling was greater for the primary school-age cohort than for the secondary school-age cohort, which implies a growing trend. Thus, despite uncertainty in the domestic environment, parents are increasingly investing in education in an effort to obtain higher quality for their children, possibly anticipating a high return on education in the

global labor market. These findings are consistent with brain drain hypothesis mentioned earlier in this paper, which is amplified among migrant households by information acquisition and remittance-financed rural-urban migration.

VI. Conclusions

This paper has investigated the effect of international migration and remittances on internal rural-urban migration of families in Nepal that choose to migrate in search of higher-quality education for their children. The analysis using data from recently developed urban areas in Nepal, has shown how international migration and the resulting remittances have become instrumental in financing the costly rural-urban family migration process in Nepal. The human capital investment behavior of migrant households has been analyzed by estimating the money and time spent on education.

According to the descriptive statistics, migrant households spend more on education—in terms of both amount and share of budget—than do local households, despite having lower levels of income and consumption. The econometric analysis also showed that these migrant households, on average, spend three times more on education and allocate a larger share of their budgets to education than do their counterpart local households. In addition, children from these migrant households spend more time studying at home than do children from local households. These findings suggest that the human capital investment motive is stronger than the urban life motive particularly among recent migrant households. Meanwhile, international remittances have contributed to making the costly rural-urban household migration possible, by providing funds to cover the costs of migration, settlement in urban areas, and education expenses.

We also found that recently arrived migrant households invest more in their children's education than do old migrant households or local households. These results support that the migration of rural households to urban areas in Nepal in an effort to provide better-quality education for their children is a growing practice, particularly after increased opportunities in global labor market. The results also suggest that the quality of children's education is an increasingly major concern in contemporary transitional Nepalese society.

Supply-side interventions aimed at improving access to quality education in rural areas (e.g., incentive packages, such as school vouchers for private schools, vocational schools, and colleges, and upgrades of public schools) may result in more equitable or

even optimal outcomes. Increased rural infrastructure, particularly roads, communication, and electricity, may attract the educated talent required for providing quality schooling in rural areas. Policies to provide information about the costs of and returns to education in local and global labor markets may be crucial for determining the optimal level of investment in children's schooling.

¹ Domestic migration figures are from Lall, Selod, and Shalizi (2006), while international figures are based on the *International Migration Report 2013* published by the United Nations.

² Figures are based on the *Migration and Development Brief 25* (2015), published by the World Bank.

³ See Hachhethu, Kumar, and Subedi (2008) for a discussion of recent political developments in Nepal.

⁴ Ethno-linguistic figures are based on the Population Census (2011), published by the Central Bureau of Statistics (CBS), Nepal.

⁵ Data are from the Department of Foreign Employment, Government of Nepal (2015). Under a reciprocal agreement between Nepal and India, Nepalese can enter into India through an open border and work there without a visa. Therefore, estimating the annual flow of Nepalese people to India is difficult. It is estimated that more than 2 million Nepalese migrants live in India.

⁶ Figures are based on the *Migration and Development Brief 24* (2015), published by the World Bank.

⁷ Figures are from *Nepal in Figures, 2003*, published by the CBS and *Nepal Education in Figures 2015* published by Ministry of Education, Government of Nepal.

⁸ Calculations are based on *Nepal Education in Figures 2015* published by the Ministry of Education, Government of Nepal.

⁹ Figures are based on Nepal's population censuses for 1991, 2001, and 2011.

¹⁰ The GoN's declaration was not operationalized immediately. Rather, in July 2014 the GoN declared 72 new municipalities including 41 urban areas surveyed in this study. Additional 61 municipalities were declared in December 2014 and 28 municipalities in 2015.

¹¹ Geographically, Nepal is divided into three regions: the Mountain region in the north (altitude 4,877–8,848 meters), the Hill region in the middle (altitude 610–4,876 meters), and the Tarai region (altitude 70–4,875 meters) in the south.

¹² During the survey, CBS had released the preliminary results of the population census, 2011 only up to the district level; therefore, we could not obtain data at the local administrative (village development committee or municipality) level. Instead, we used data from the population census 2001 to prepare the primary sampling frame.

¹³ We use the natural logarithm of one plus EDUEXP as a dependent variable to avoid missing value while taking log.

¹⁴ Following Deaton and Zaidi (2002), we calculate household income and consumption (see the notes to Table 3). We allowed for the nonlinearity of consumption by including its squared and cubed terms, but those did not generate statistically significant coefficients. Therefore, we proceeded with a linear Engel curve.

¹⁵ We assume that school-age children (aged 5–24 years) are less likely to engage in activities from which income is earned. Accordingly, their education level should not directly affect the household's current income but may affect the household's future income. Therefore, in calculating the years of schooling of the most educated adult member of the household, we exclude school-age children. Results using the years of schooling of the most educated member of the household aged 17 or above (not reported here) are robust to our main results shown in Table 4, but the R^2 is drastically smaller.

¹⁶ We use the natural logarithm of one plus CEDU as a dependent variable to avoid the problem of missing value while taking log.

¹⁷ Following the approach of Booth and Kee (2005), birth order is defined as: $Birth\ order = \frac{2 \times Order\ of\ child}{(1 + No\ of\ siblings)}$.

¹⁸ There are drastic differences in education among castes and ethnic groups. The years of schooling of the most educated adult household members aged 25 and above are lowest for Dalit (4.98); the highest are for Brahmin–Tarai (11.08), followed by Brahmin–Hills (9.35), Newar (9.05), Chhetri (8.64), Ethnic–Hills (8.27), and Ethnic–Tarai, minorities, and others (8.19).

References

- Acharya, C.P. and Leon-Gonzalez, R. (2014). How do Migration and Remittances Affect Human Capital Investment? The Effects of Relaxing Information and Liquidity Constraints. *Journal of Development Studies*, 50(3): 444-460.
- Adams, R.H., and Cuecuecha, A. (2010). Remittances, household expenditure and investment in Guatemala. *World Development*, 38(11): 1626–1641.
- Antman, F.M. (2011). The intergenerational effects of paternal migration on schooling and work: What can we learn from children's time allocations? *Journal of Development Economics*, 96(2): 200-208.
- Barro, R. (1992). Human capital and economic growth. In *Policies for Long Run Economic Growth*, Federal Reserve Bank of Kansas City. Retrieved on 12 February 2011 from [ww.kc.frb.org](http://www.kc.frb.org).
- Becker, G.S. (1993). *A theoretical and empirical analysis with special reference to education*. 3rd ed. The University of Chicago Press: Chicago and London.
- Beine, M., Docquier, F. & Rapoport, H. (2001). Brain drain and economic growth: Theory and evidence. *Journal of Development Economics*, 64: 275–289.
- Bohra-Mishra, P., and Massey, D.S. (2011). Individual decisions to migrate during civil conflict. *Demography*, 48: 401–424.
- Booth, A., and Kee, H.J. (2005). Birth Order Matters: The Effect of Family Size and Birth Order on Educational Attainment. The Australian National University Centre for Economic Policy Research Discussion Paper 506.
- Calero, C., Bedi, A., and Sparrow, R. (2009). Remittances, liquidity constraints and human capital investments in Ecuador. *World Development*, 37(6): 1143–1154.
- Cameron, A.C. and Trivedi, P.K. (2005). *Microeconometrics: Methods and applications*. Cambridge: Cambridge University Press.
- Central Bureau of Statistics (2011). *Nepal living standards survey 2009/10*, Vol. 1 and 2. Kathmandu: The Author.
- de Haas, H. (2010). Migration and development: A theoretical perspective. *International Migration Review*, 44(1): 227–264.
- Deaton, A. (1997). *The analysis of household surveys: A microeconomic approach to development policy*. Baltimore, MD: Johns Hopkins University Press.
- Deaton, A. and Zaidi, S. (2002). Guidelines for constructing consumption aggregates for welfare analysis. Living Standards Measurement Study Working Paper 135. World Bank: Washington, DC.
- Department of Foreign Employment, Government of Nepal (2014). *Annual Progress Report 2013/14 (Nepali)*. Retrieved on 29 April 2015 from <http://www.dofe.gov.np>.
- Fafchamps, M. and Shilpi, F. (2013). Determinants of the choice of migration destination. *Oxford Bulletin of Economics and Statistics*, 75(3):388–409.
- Hachhethu, K., Kumar, S. and Subedi, J. (2008). *Nepal in transition: A study on the state of democracy*. Kathmandu: International IDEA.

- Halliday, T. (2006). Migration, risk and liquidity constraints in El Salvador. *Economic Development and Cultural Change*, 54(4), pp. 893–925.
- Hanushek, E.A., and Woessmann, L. (2008). The role of cognitive skills in economic development, *Journal of Economic Literature*, 46(3): 607–668.
- Harris, J. and Todaro M. (1970). Migration, unemployment and development: A two-sector analysis. *American Economic Review*, 60: 126–142.
- Henderson, V., Shalizi, Z. and Venables, A.J. (2001). Geography and development. *Journal of Economic Geography*, 1: 81–105.
- Kingdon, G.G. (2005). Where has all the bias gone? Detecting gender bias in the intrahousehold allocation of educational expenditure. *Economic Development and Cultural Change*, 53: 409–451.
- Lall, S.V., Selod, H. and Shalizi, Z. (2006). Rural-urban migration in developing countries: A survey of theoretical predictions and empirical findings. World Bank Policy Research Working Paper 3915. World Bank: Washington, DC.
- Lucas R. (1997). Internal migration in developing countries. In M.R. Rosenzweig and O. Stark (Eds.), *Handbook of Population and Family Economics*, Volume 1B (721–798). Amsterdam: Elsevier–North-Holland.
- Martinez, E. (2002). *Conflict-related displacement in Nepal*. Geneva, Switzerland: Internal Displacement Monitoring Centre.
- Ministry of Education (MOE). (2014). *Nepal education figures 20141: At a glance*. Kathmandu: The author.
- Osili, U. (2004). Migrants and housing investments: Theory and evidence from Nigeria. *Economic Development and Cultural Change*, 52(4): 821–849.
- Shrestha, S. A. (2015). *No Man Left Behind: Effects of Emigration Prospects on Educational and Labor Outcomes of Non-migrants*, Working Paper. Retrieved on 22 April 2015 from <http://staffpages.nus.edu.sg/fas/ecssas/Home.html>.
- Skeldon, R. (2006). Interlinkages between internal and international migration and development in the Asian Region. *Population, Space and Place*, 12: 15–30.
- Skeldon, R. (2008). International migration as a tool in development policy: A passing phase? *Population and Development Review*, 34(1): 1–18.
- Stark, O. (1991). *The migration of labor*. Cambridge, Massachusetts: Blackwell.
- Stark, O., and Bloom, D.E. (1985). The new economics of labor migration. *American Economic Review*, 75(2): 173–78.
- Stark O. and Wang, Y. (2002). Inducing human capital formation: Migration as a substitute for subsidies. *Journal of Public Economics*, 86: 29–46.
- United Nations, Population Division. (2011). *Trends in international migrant stock: Migrants by age and sex* (United Nations database, POP/DB/MIG/Stock/Rev.2011). New York: UN Department of Economic and Social Affairs.
- Williams, A.M. and Baláž, V. (2008). *International Migration and Knowledge*. Oxon: Routledge.
- Wooldridge, J.M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Massachusetts: MIT Press.
- World Bank (2015). *Migration and Development Brief 23*. Retrieved on 2 April 2015 from <http://siteresources.worldbank.org>.
- Yang, D. (2008). International migration, remittances and household investment: Evidence from Philippine migrants' exchange rate shocks. *Economic Journal*, 118(528): 591–630.



Figure 1. The Study Area of NERIUS (2011).
Spatial data source: The Survey Department of the Government of Nepal.

Table 1
Sampling Distribution of Households

	Local Households		Migrant households	
	Having members abroad	Not having member abroad	Having members abroad	Not having member abroad
<i>A. Full study area</i>				
No of households in sampling frame	1,728	4,520	640	1,808
No of sample households	64	113	53	58
Percent of sample households in sampling frame	19.87	51.98	7.36	20.79
<i>B. Ecological Belt (Distribution by household types)</i>				
Mountains	13.36	81.23	1.08	4.33
Hills	21.05	47.65	7.25	24.05
Tarai	19.60	52.25	8.31	19.85
<i>C. Development Region (Distribution by household types)</i>				
Eastern	18.95	50.83	6.77	23.46
Central	16.86	55.97	7.12	20.05
Western	25.28	39.06	11.66	24.00
Mid-Western	13.34	56.61	5.99	24.06
Far-Western	26.45	67.15	0.62	5.79

Note. If a household arrived in the PSU (primary sampling unit) after 2001, it is defined as Migrant household (M). Otherwise it is defined as local household. The sampling frame is the household roster prepared at PSU level and includes 8,696 households.

Table 2
Household Composition and Education by Migration and International Remittances

Variable	All households		International remittances non-recipient households		International remittances recipient households	
	Local	Migrant	Local	Migrant	Local	Migrant
Years Since Migration (YSM)	n.a.	4.95	n.a.	5.28	n.a.	4.58
<i>A. Household size and composition</i>						
Household size	4.95	4.08	5.23	3.97	4.45	4.21
Household size [§]	6.15	5.27	6.11	4.55	6.23	6.06
Proportion of children						
aged 0-4	0.08	0.09	0.08	0.09	0.08	0.08
aged 5-10	0.11	0.17	0.11	0.16	0.10	0.17
aged 11-16	0.13	0.11	0.15	0.10	0.11	0.12
aged 17-24	0.19	0.18	0.19	0.18	0.19	0.17
Proportion of adult men aged 25-64	0.22	0.25	0.19	0.25	0.27	0.24
Proportion of adult women aged 25-64	0.22	0.19	0.23	0.19	0.21	0.19
Proportion of elderly (64+)	0.05	0.02	0.06	0.03	0.05	0.02
<i>B. Education</i>						
Years of schooling of the most educated adult member (aged 25 and above)	8.84	8.73	8.87	8.16	8.80	9.36
No of children (aged 5-24) in						
school	1.70	1.70	1.88	1.52	1.39	1.91
public/community school	0.88	0.65	1.04	0.71	0.59	0.58
private school	0.82	1.05	0.84	0.81	0.80	1.32
No of households (N)	177	111	113	58	64	53

Note. If a household arrived in the PSU (primary sampling unit) after 2001, it is called Migrant household (M). Otherwise it is called local household. [§] Including absent members also.

Table 3
Household Income and Consumption by Migration and Remittances

Variable	All households		International remittance non-recipient households		International remittance recipient households	
	Local	Migrant	Local	Migrant	Local	Migrant
<i>A: Income (NPR thousand)</i>						
Household income	380.46	301.69	340.18	251.42	451.57	356.69
Per capita income	92.65	82.26	74.45	76.95	124.78	88.08
<i>B: Distribution of household income by sources (%)</i>						
Wage	23.01	18.25	26.63	28.22	16.63	7.35
Farm	15.69	11.08	17.25	13.27	12.93	8.68
Enterprises	19.72	20.56	25.37	32.92	9.74	7.05
Assets use/rent	20.80	13.30	23.29	14.96	16.41	11.48
Domestic remittance	2.27	4.71	3.03	8.53	0.92	0.53
Foreign remittance	13.99	30.13	0.00	0.00	38.69	63.11
Pension and others	4.53	1.96	4.43	2.11	4.69	1.80
<i>C: Consumption (NPR Thousand)</i>						
Household consumption	260.22	212.61	266.36	203.42	249.38	222.67
Per capita consumption	62.16	55.69	60.41	55.46	65.23	55.95
<i>D: Distribution of household consumption by categories (NPR Thousand)</i>						
Food	99.65	89.67	101.62	84.70	96.18	95.11
Non-food	0.13	0.09	0.13	0.09	0.12	0.09
Durable services	10.76	8.30	12.00	9.75	8.58	6.72
Education	21.02	23.64	21.77	19.32	19.71	28.37
<i>E: Distribution of household consumption by categories (%)</i>						
Share of food	41.33	44.78	40.56	43.65	42.70	46.02
Share of non-food	47.78	41.08	47.90	42.88	47.57	39.12
Share of durable services	3.30	3.54	3.72	4.34	2.56	2.67
Share of education	7.59	10.59	7.83	9.13	7.17	12.19
No of households (N)	177	111	113	58	64	53

Note. If a household arrived in the PSU (primary sampling unit) after 2001, it is called Migrant household (M). Otherwise it is called local household.

Following Deaton and Zaidi (2002), we include earnings from wage/salary job, farm, enterprise and renting out assets, user value owner occupied housing and durable assets, remittance received from members staying out of their home town, and pension and other income (excluding the sale of assets such as land, house, etc.) in household income. We include expenses on purchased food, consumption of own-produced food, spending on non-food, consumption of services from durables holding prior to the survey year and expenses on schooling of children aged 5 to 24 in household expenditure. We exclude expenses on health, festivals, marriage and dowry as well as purchase of land, housing, durable assets, jewelry, etc.

During survey year, the exchange rate was about Nepalese Rupees (NPR) 80 for a US dollar.

Table 4
OLS, Tobit and Two-Part Estimates of Natural Logarithm of Household Expenditure on Education (Household Level)

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient		Remittance recipient		
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Migrant household (M)	0.873** (0.340)	0.431 (0.482)	1.326** (0.634)	0.958** (0.396)	0.471 (0.486)	1.465** (0.631)	0.013 (0.028)	0.284*** (0.096)	-0.050* (0.027)	0.225 (0.155)	0.275** (0.119)	0.211* (0.120)
Log of household expenditure	2.047*** (0.465)	1.900*** (0.721)	2.261*** (0.702)	2.173*** (0.463)	1.956*** (0.594)	2.453*** (0.726)	0.119*** (0.038)	0.998*** (0.122)	0.180*** (0.057)	0.965*** (0.196)	0.254** (0.100)	1.004*** (0.164)
Years of schooling of the most educated adult aged 25	0.117*** (0.043)	0.042 (0.056)	0.198** (0.085)	0.130*** (0.046)	0.045 (0.051)	0.225** (0.085)	0.004 (0.003)	0.034*** (0.010)	-0.000 (0.003)	0.026* (0.014)	0.016** (0.007)	0.056*** (0.018)
Log of household size	0.493 (0.483)	0.206 (0.744)	0.169 (0.790)	0.572 (0.501)	0.268 (0.619)	0.230 (0.798)	-0.041 (0.042)	0.031 (0.133)	-0.104* (0.054)	-0.065 (0.209)	-0.093 (0.077)	-0.014 (0.168)
Proportion of children aged 0-4	-4.483 (2.838)	-5.775 (3.955)	-0.606 (4.133)	-5.235** (2.648)	-6.550** (3.066)	-1.172 (4.513)	-0.205 (0.164)	-0.163 (0.736)	0.235 (0.191)	-0.676 (1.102)		1.130 (0.989)
Proportion of children aged 5-10	8.188*** (2.665)	4.768 (3.973)	13.162*** (3.253)	8.859*** (2.596)	4.957 (3.105)	14.570*** (3.974)	1.423*** (0.304)	1.598** (0.694)	1.748*** (0.502)	0.986 (1.048)		3.015*** (0.891)
Proportion of children aged 11-16	3.867 (2.616)	2.350 (3.945)	6.801** (3.104)	4.100* (2.408)	2.375 (2.916)	7.374** (3.702)	0.279* (0.165)	1.238* (0.650)	0.453** (0.185)	0.683 (1.002)	-0.369** (0.162)	2.561*** (0.826)
Proportion of children aged 17-24	3.070 (2.405)	1.630 (3.689)	3.685 (3.059)	3.276 (2.452)	1.570 (2.966)	4.153 (3.672)	0.174 (0.178)	1.187* (0.649)	0.549** (0.215)	0.654 (1.003)	-0.925*** (0.209)	2.231*** (0.799)
Proportion of working age men (25-64)	0.470 (2.874)	2.199 (3.956)	1.300 (4.235)	0.611 (2.692)	2.508 (3.295)	1.530 (4.043)	0.042 (0.190)	-0.437 (0.724)	0.467** (0.210)	-1.075 (1.102)	-1.086*** (0.320)	0.238 (0.917)
Proportion of working age women (25-64)	3.826 (2.440)	5.457 (3.392)	-0.287 (3.862)	4.225 (2.849)	5.845* (3.359)	-0.306 (4.569)	0.162 (0.188)	0.401 (0.736)	1.169*** (0.399)	-0.139 (1.106)	-0.256 (0.345)	1.686* (0.975)
<i>Caste/Ethnicity</i>												
Brahmin-Hills	0.447 (0.567)	-0.412 (0.630)	0.639 (0.839)	0.528 (0.636)	-0.426 (0.765)	0.755 (0.998)	0.022 (0.033)	-0.066 (0.116)	-0.001 (0.032)	0.003 (0.175)		-0.022 (0.157)
Brahmin-Tarai	0.133 (0.622)	-0.303 (0.722)	1.861 (1.351)	0.147 (0.923)	-0.353 (0.978)	2.081 (1.932)						
Chhetri	0.272 (0.489)	-0.033 (0.473)	-0.312 (0.909)	0.314 (0.596)	-0.025 (0.745)	-0.315 (0.901)	0.017 (0.031)	0.117 (0.105)	-0.015 (0.032)	0.202 (0.162)	-0.042 (0.051)	0.155 (0.140)
Newar	0.018 (1.007)	0.362 (0.509)	-0.433 (2.461)	0.062 (0.977)	0.381 (1.095)	-0.370 (1.750)						

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient		Remittance recipient		
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ethnic Groups -Hills	-0.979 (0.629)	-2.007** (0.927)	-1.053 (0.978)	-1.082 (0.691)	-2.259** (0.921)	-1.103 (0.956)					-0.276** (0.113)	
Dalit	1.525** (0.726)	0.995 (0.720)	0.772 (1.276)	1.757** (0.767)	1.101 (0.917)	1.076 (1.263)						
<i>Development Regions</i>												
Eastern	0.502 (0.575)	0.846 (0.599)	-2.257* (1.295)	0.501 (0.656)	0.878 (0.702)	-2.491* (1.386)	0.074 (0.046)	0.226* (0.130)		0.428** (0.184)		-0.187 (0.198)
Central	0.176 (0.623)	-0.191 (0.772)	-1.076 (0.993)	0.152 (0.615)	-0.241 (0.663)	-1.210 (1.250)	0.016 (0.034)	0.281** (0.121)	-0.019 (0.030)	0.434** (0.180)		-0.005 (0.155)
Western	-0.661 (0.587)	0.049 (0.720)	-2.818*** (1.054)	-0.785 (0.601)	0.006 (0.675)	-3.120*** (1.201)	-0.074** (0.037)	0.150 (0.129)	-0.131*** (0.046)	0.286 (0.195)	-0.179*** (0.062)	-0.247 (0.171)
Mid-western	-0.425 (0.692)	0.289 (0.660)	-2.699** (1.321)	-0.488 (0.601)	0.289 (0.674)	-2.979** (1.186)					-0.159*** (0.043)	
Constant	-21.328*** (5.940)	-17.567* (9.326)	-23.104*** (7.724)	-23.476*** (5.812)	-18.549** (7.555)	-26.218*** (8.760)		-3.606** (1.547)		-2.622 (2.492)		-4.503** (1.996)
Observations	247	145	102	247	145	102	247	225	145	135	102	90
Left censored observations				22	10	12						
R ² /Pseudo-R ²	0.42	0.42	0.59	0.11	0.12	0.17	0.56	0.44	0.65	0.35	0.63	0.66
Log likelihood				-551.2	-308.5	-220.8	-32.79		-12.62		-13.56	

Note. The dependent variable is natural logarithm of one plus household expenditure on education to avoid missing values. The sample includes only the households which have children aged 5 to 24. Ethnic-Tarai and minorities is base category for caste/ethnicity and Far-western is that for development regions.

Standard errors in parentheses are robust to heteroskedasticity.

*, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively.

Table 5

OLS, Tobit and Two-Part Estimates of Budget Share (%) of Expenditure on Education (Household Level)

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All		Remittance Non-recipient		Remittance Recipient	
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Migrant household (M)	2.270** (0.991)	1.383 (1.448)	2.533 (1.645)	2.159*** (0.805)	1.322 (1.104)	2.661** (1.245)	0.013 (0.028)	2.538*** (0.897)	-0.050* (0.027)	1.678 (1.344)	0.275** (0.119)	2.086 (1.313)
Log of household expenditure	0.373 (1.293)	0.344 (2.028)	0.748 (1.947)	0.682 (0.942)	0.488 (1.342)	0.987 (1.439)	0.119*** (0.038)	-0.505 (1.147)	0.180*** (0.057)	-0.709 (1.700)	0.254** (0.100)	-0.919 (1.796)
Years of schooling of the most educated adult aged 25	0.329*** (0.110)	0.188 (0.151)	0.481** (0.221)	0.303*** (0.093)	0.154 (0.116)	0.533*** (0.172)	0.004 (0.003)	0.313*** (0.098)	-0.000 (0.003)	0.230* (0.118)	0.016** (0.007)	0.585*** (0.201)
Log of household size	0.832 (1.211)	-0.530 (1.632)	-0.356 (2.228)	0.919 (1.017)	-0.169 (1.400)	-0.065 (1.574)	-0.041 (0.042)	0.215 (1.249)	-0.104* (0.054)	-0.942 (1.809)	-0.093 (0.077)	0.142 (1.847)
Proportion of children aged 0-4	-4.574 (5.724)	-8.171 (8.335)	9.806 (7.463)	-5.789 (5.430)	-8.946 (7.002)	6.741 (9.055)	-0.205 (0.164)	-0.578 (6.904)	0.235 (0.191)	-2.277 (9.538)		9.440 (10.845)
Proportion of children aged 5-10	22.773*** (6.057)	15.378* (8.619)	38.193*** (8.000)	20.510*** (5.294)	12.857* (7.029)	37.947*** (7.927)	1.423*** (0.304)	18.226*** (6.514)	1.748*** (0.502)	13.040 (9.070)		32.193*** (9.768)
Proportion of children aged 11-16	15.864*** (5.471)	10.785 (8.002)	28.205*** (7.332)	13.565*** (4.911)	8.638 (6.607)	26.986*** (7.383)	0.279* (0.165)	14.707** (6.101)	0.453** (0.185)	10.467 (8.676)	-0.369** (0.162)	27.312*** (9.057)
Proportion of children aged 17-24	14.045** (5.552)	10.160 (8.346)	18.740*** (6.469)	12.014** (4.987)	7.866 (6.713)	18.194** (7.293)	0.174 (0.178)	13.529** (6.091)	0.549** (0.215)	10.346 (8.686)	-0.925*** (0.209)	21.941** (8.762)
Proportion of working age men (25-64)	-2.609 (6.294)	-4.263 (8.605)	2.514 (8.874)	-1.944 (5.482)	-2.449 (7.444)	2.306 (8.063)	0.042 (0.190)	-4.528 (6.796)	0.467** (0.210)	-9.105 (9.542)	-1.086*** (0.320)	0.965 (10.059)
Proportion of working age women (25-64)	8.885 (5.648)	6.861 (8.319)	13.712* (7.939)	8.402 (5.767)	7.032 (7.563)	12.045 (9.026)	0.162 (0.188)	6.167 (6.911)	1.169*** (0.399)	0.974 (9.577)	-0.256 (0.345)	19.130* (10.689)
<i>Caste/Ethnicity</i>												
Brahmin-Hills	-0.360 (1.341)	-0.499 (2.054)	-0.910 (1.861)	0.042 (1.290)	-0.419 (1.719)	-0.242 (1.970)	0.022 (0.033)	-0.813 (1.087)	-0.001 (0.032)	0.002 (1.515)		-0.979 (1.723)
Brahmin-Tarai	0.664 (2.039)	-0.179 (2.686)	6.630 (4.300)	0.680 (1.866)	-0.299 (2.195)	7.575* (3.821)						
Chhetri	1.533 (1.426)	1.784 (2.216)	0.255 (2.000)	1.459 (1.209)	1.449 (1.672)	0.553 (1.794)	0.017 (0.031)	1.344 (0.981)	-0.015 (0.032)	2.014 (1.400)	-0.042 (0.051)	1.755 (1.534)
Newar	-0.830 (1.579)	0.325 (2.145)	-4.048 (2.870)	-0.471 (1.988)	0.336 (2.456)	-2.913 (3.557)						

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All		Remittance Non-recipient		Remittance Recipient	
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ethnic -Hills	0.251 (1.694)	-0.478 (2.765)	-0.901 (2.043)	-0.105 (1.410)	-1.312 (2.096)	-0.773 (1.905)					-0.276** (0.113)	
Dalit	0.991 (1.798)	0.819 (2.591)	-2.842 (2.997)	1.640 (1.563)	1.059 (2.059)	-1.249 (2.538)						
<i>Development Regions</i>												
Eastern	3.019** (1.433)	4.238** (1.705)	-4.821 (2.947)	2.499* (1.327)	3.697** (1.578)	-4.696* (2.743)	0.074 (0.046)	1.666 (1.223)		3.963** (1.589)		-2.999 (2.168)
Central	3.799*** (1.458)	3.817** (1.876)	-0.843 (2.405)	3.125** (1.245)	2.961** (1.493)	-1.117 (2.457)	0.016 (0.034)	3.140*** (1.134)	-0.019 (0.030)	4.889*** (1.559)		-0.008 (1.699)
Western	1.623 (1.465)	2.909 (1.953)	-4.897* (2.534)	0.970 (1.218)	2.275 (1.520)	-4.900** (2.368)	-0.074** (0.037)	1.388 (1.210)	-0.131*** (0.046)	3.234* (1.687)	-0.179*** (0.062)	-3.158* (1.870)
Mid-western	1.661 (1.445)	0.571 (1.699)	-1.391 (2.455)	1.119 (1.222)	0.393 (1.523)	-2.106 (2.343)					-0.159*** (0.043)	
Constant	-11.412 (15.606)	-4.456 (25.583)	-16.427 (19.834)	-15.939 (11.853)	-7.348 (17.093)	-21.416 (17.363)		3.990 (14.524)		11.398 (21.572)		0.769 (21.886)
Observations	247	145	102	247	145	102	247	225	145	135	102	90
Left censored observations				22	10	12						
R ² /Pseudo-R ²	0.29	0.22	0.52	0.06	0.04	0.12	0.56	0.23	0.65	0.24	0.63	0.37
Log likelihood				-750.0	-445.7	-288.4	-32.79		-12.62		-13.56	

Note. The sample includes only the households which have children aged between 5 and 24. Ethnic-Tarai and minorities is base category for caste/ethnicity and Far-western is that for development regions. Standard errors in parentheses are robust to heteroskedasticity.

*, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively.

Table 6
OLS, Tobit and Two-Part Estimates of Natural Logarithm of Expenditure on Education (Children aged 5-24)

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient		Remittance recipient		
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Migrant household (M)	0.772** (0.301)	0.343 (0.430)	1.355*** (0.482)	0.837** (0.327)	0.400 (0.454)	1.503*** (0.522)	0.079** (0.031)	0.122 (0.079)	0.049 (0.041)	-0.040 (0.112)	0.137*** (0.044)	0.126 (0.109)
Log of household expenditure	2.747*** (0.354)	3.060*** (0.508)	2.258*** (0.540)	2.913*** (0.378)	3.233*** (0.535)	2.463*** (0.610)	0.231*** (0.032)	0.692*** (0.095)	0.255*** (0.041)	0.717*** (0.138)	0.170*** (0.045)	0.744*** (0.128)
Log of household size	-1.814*** (0.373)	-2.526*** (0.536)	-1.405** (0.618)	-1.904*** (0.399)	-2.639*** (0.569)	-1.458** (0.676)	-0.162*** (0.035)	-0.403*** (0.097)	-0.232*** (0.049)	-0.557*** (0.142)	-0.092* (0.056)	-0.609*** (0.142)
<i>Child characteristics</i>												
Secondary school age cohort	-0.450** (0.224)	-0.143 (0.288)	-0.796* (0.415)	-0.463 (0.330)	-0.149 (0.434)	-0.825 (0.519)	-0.088** (0.041)	-0.040 (0.075)	-0.023 (0.051)	0.021 (0.101)	-0.175** (0.070)	0.017 (0.103)
Tertiary school age cohort	-3.390*** (0.358)	-2.759*** (0.477)	-4.073*** (0.570)	-3.490*** (0.355)	-2.904*** (0.479)	-4.169*** (0.571)	-0.352*** (0.034)	0.390*** (0.090)	-0.309*** (0.039)	0.595*** (0.123)	-0.389*** (0.059)	0.009 (0.126)
Male	0.756*** (0.251)	0.671** (0.323)	0.886** (0.405)	0.818*** (0.268)	0.703** (0.343)	1.005** (0.437)	0.052** (0.024)	0.144** (0.065)	0.052* (0.030)	0.224*** (0.084)	0.072** (0.035)	0.026 (0.092)
Birth order	-0.207 (0.328)	-0.453 (0.433)	0.566 (0.524)	-0.205 (0.338)	-0.482 (0.431)	0.665 (0.566)	-0.014 (0.033)	-0.269*** (0.082)	-0.036 (0.040)	-0.273** (0.108)	0.060 (0.051)	-0.129 (0.118)
<i>Maximum education level of parents</i>												
Not completed primary	0.100 (0.589)	-0.107 (0.773)	0.829 (0.957)	0.197 (0.543)	-0.090 (0.708)	1.065 (0.925)	-0.045 (0.041)	0.272* (0.142)	-0.071 (0.055)	0.312* (0.188)	0.014 (0.062)	0.292 (0.210)
Completed primary	1.468*** (0.512)	1.330** (0.669)	1.538* (0.804)	1.700*** (0.477)	1.492** (0.639)	1.889*** (0.725)	0.077** (0.038)	0.408*** (0.121)	0.086 (0.053)	0.271* (0.162)	0.067 (0.053)	0.674*** (0.163)
Completed lower secondary	1.343*** (0.459)	0.919 (0.655)	1.777*** (0.645)	1.510*** (0.470)	0.971 (0.654)	2.119*** (0.716)	0.078** (0.037)	0.468*** (0.118)	0.056 (0.052)	0.456*** (0.166)	0.119** (0.048)	0.317** (0.155)
Completed secondary and above	1.474*** (0.447)	1.224** (0.594)	2.092*** (0.726)	1.598*** (0.418)	1.289** (0.533)	2.388*** (0.745)	0.085** (0.038)	0.513*** (0.106)	0.089** (0.045)	0.457*** (0.138)	0.118** (0.053)	0.588*** (0.160)
<i>Caste/Ethnicity</i>												
Brahmin-Hills	0.058 (0.502)	-0.391 (0.665)	0.363 (0.818)	0.045 (0.543)	-0.472 (0.742)	0.377 (0.877)	-0.002 (0.053)	0.181 (0.131)	-0.000 (0.064)	0.078 (0.186)	-0.017 (0.070)	0.385** (0.180)
Brahmin-Tarai	0.394	0.200	0.946	0.398	0.198	0.901	0.076	0.091		-0.005		0.487

Variables	A. OLS Model			B. Tobit Model			C. Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient		Remittance recipient		
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Chhetri	(0.555)	(0.688)	(0.933)	(0.803)	(0.966)	(1.612)	(0.087)	(0.183)		(0.226)		(0.311)
	-0.301	-0.547	-0.634	-0.371	-0.625	-0.771	-0.068	0.350***	-0.084	0.277*	-0.077	0.301*
	(0.436)	(0.565)	(0.700)	(0.485)	(0.686)	(0.726)	(0.049)	(0.117)	(0.059)	(0.166)	(0.054)	(0.154)
Newar	-0.204	-0.370	-0.375	-0.234	-0.455	-0.372	-0.017	0.478**	-0.022	0.615**	0.008	-0.185
	(0.857)	(1.137)	(1.333)	(0.863)	(1.158)	(1.371)	(0.076)	(0.216)	(0.113)	(0.285)	(0.092)	(0.313)
Ethnic -Hills	-0.429	-0.886	-0.842	-0.445	-0.948	-0.889	-0.043	0.055	-0.030	0.039	-0.100	-0.117
	(0.516)	(0.908)	(0.745)	(0.573)	(0.940)	(0.788)	(0.061)	(0.138)	(0.080)	(0.236)	(0.067)	(0.164)
Dalit	-0.060	-0.219	-0.117	-0.110	-0.349	0.039	-0.045	0.326**	-0.035	0.392*	-0.017	-0.332
	(0.566)	(0.713)	(1.010)	(0.627)	(0.827)	(1.027)	(0.056)	(0.154)	(0.070)	(0.204)	(0.072)	(0.220)
<i>Development regions</i>												
Eastern	-0.162	-0.147	-0.150	-0.294	-0.304	-0.050	-0.066	0.623***	-0.063	0.735***	-0.001	-0.201
	(0.482)	(0.579)	(1.065)	(0.525)	(0.625)	(1.122)	(0.053)	(0.126)	(0.066)	(0.152)	(0.087)	(0.237)
Central	-0.117	-0.744	0.447	-0.261	-0.926	0.518	-0.086*	0.714***	-0.160***	0.765***	0.042	0.048
	(0.447)	(0.577)	(0.991)	(0.480)	(0.610)	(0.994)	(0.044)	(0.115)	(0.052)	(0.150)	(0.081)	(0.209)
Western	-1.502***	-1.446**	-1.495	-1.721***	-1.629**	-1.634*	-0.221***	0.665***	-0.260***	0.696***	-0.139*	-0.091
	(0.462)	(0.594)	(1.026)	(0.496)	(0.652)	(0.985)	(0.044)	(0.121)	(0.063)	(0.162)	(0.079)	(0.209)
Mid-western	-0.887*	-1.168**	-0.684	-1.080**	-1.325**	-0.764	-0.131***	0.494***	-0.158***	0.353**	-0.081	0.185
	(0.456)	(0.565)	(0.985)	(0.470)	(0.605)	(0.963)	(0.043)	(0.118)	(0.053)	(0.154)	(0.078)	(0.207)
Constant	-22.707***	-24.697***	-18.456***	-25.728***	-27.593***	-22.309***		0.304		0.197		0.790
	(4.034)	(6.119)	(5.819)	(4.308)	(6.363)	(6.564)		(1.083)		(1.633)		(1.385)
Observations	605	364	241	605	364	241	605	484	364	295	241	189
Left censored observations				121	69	52						
R ² /Pseudo-R ²	0.38	0.38	0.50	0.09	0.08	0.13	0.42	0.40	0.41	0.43	0.53	0.55
Log likelihood				-1436	-872.7	-550.7	-174.9		-104.9		-59.71	

Note. Dependent variable is natural logarithm of one plus expenditure on education for children to avoid missing values. Primary school age cohort is base group for age cohort. Non-literate or no formal schooling is base category for parental education. Ethnic-Tarai and minorities is base category for caste/ethnicity and Far-western is that for development regions. Standard errors in parentheses are robust to heteroskedasticity and clustered at residuals within each household. *, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively.

Table 7

OLS, Tobit and Two-Part Estimates of Hours Spent on Study at Home during Last Seven Days (Children aged 5-24)

Variables	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All		Remittance non-recipient		Remittance recipient	
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit	OLS	Probit	OLS	Probit	OLS
				Cond.	Cond.	Cond.	Mar. Effect	Coeff.	Mar. Effect	Coeff.	Mar. Effect	Coeff.
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Migrant household (M)	2.372*** (0.753)	1.057 (1.044)	3.478*** (1.165)	1.926*** (0.628)	0.848 (0.869)	3.008*** (0.994)	0.057* (0.031)	1.705** (0.727)	0.024 (0.040)	0.835 (0.995)	0.129*** (0.044)	1.410 (1.157)
Log of household expenditure	4.776*** (0.900)	6.448*** (1.131)	1.548 (1.538)	4.297*** (0.723)	5.765*** (1.022)	1.792 (1.158)	0.194*** (0.033)	2.298*** (0.850)	0.202*** (0.047)	4.582*** (1.186)	0.143*** (0.044)	-1.770 (1.346)
Log of household size	-2.879*** (1.085)	-5.690*** (1.296)	0.478 (1.922)	-2.607*** (0.766)	-4.988*** (1.091)	0.074 (1.285)	-0.141*** (0.035)	-0.849 (0.893)	-0.185*** (0.048)	-3.669*** (1.251)	-0.082 (0.054)	2.951* (1.504)
<i>Child characteristics</i>												
Secondary school age cohort	2.138*** (0.702)	2.344*** (0.886)	2.126* (1.182)	1.473** (0.631)	1.811** (0.829)	1.338 (0.983)	-0.048 (0.041)	2.557*** (0.692)	0.029 (0.055)	2.214** (0.899)	-0.146** (0.067)	3.917*** (1.087)
Tertiary school age cohort	-3.981*** (0.841)	-4.027*** (1.067)	-3.611** (1.413)	-4.222*** (0.685)	-4.197*** (0.924)	-4.107*** (1.088)	-0.327*** (0.032)	1.808** (0.836)	-0.286*** (0.038)	0.724 (1.101)	-0.364*** (0.055)	3.524*** (1.341)
Male	1.261** (0.616)	1.947** (0.774)	0.087 (0.997)	1.182** (0.514)	1.669** (0.657)	0.434 (0.831)	0.046* (0.024)	0.415 (0.595)	0.051* (0.029)	1.373* (0.752)	0.063* (0.036)	-1.309 (0.962)
Birth order	-0.482 (0.804)	-1.517 (1.016)	1.664 (1.344)	-0.425 (0.649)	-1.414* (0.828)	1.563 (1.080)	-0.016 (0.033)	-0.635 (0.756)	-0.044 (0.040)	-1.409 (0.959)	0.071 (0.050)	0.842 (1.256)
<i>Maximum education level of parents</i>												
Not completed primary	0.371 (1.176)	-0.798 (1.562)	2.786 (1.870)	0.762 (1.040)	-0.385 (1.359)	3.030* (1.764)	-0.002 (0.042)	-0.776 (1.269)	-0.050 (0.054)	-1.372 (1.647)	0.067 (0.062)	0.598 (2.142)
Completed primary	2.397** (1.158)	0.052 (1.378)	5.624*** (1.899)	2.669*** (0.920)	0.651 (1.229)	5.637*** (1.387)	0.085** (0.038)	0.513 (1.117)	0.104** (0.052)	-2.078 (1.444)	0.070 (0.052)	5.126*** (1.724)
Completed lower secondary	2.390** (1.132)	-0.109 (1.425)	6.118*** (1.811)	2.459*** (0.905)	0.154 (1.260)	5.946*** (1.366)	0.079** (0.036)	0.869 (1.089)	0.042 (0.049)	-1.109 (1.490)	0.132*** (0.047)	4.041** (1.639)
Completed secondary and above	3.351*** (1.010)	2.515* (1.337)	5.586*** (1.778)	3.103*** (0.805)	2.256** (1.026)	5.415*** (1.425)	0.087** (0.037)	1.844* (0.977)	0.075 (0.046)	1.421 (1.233)	0.136*** (0.051)	3.665** (1.690)
<i>Caste/Ethnicity</i>												
Brahmin-Hills	-0.848 (1.312)	-0.566 (1.659)	-0.597 (2.164)	-0.513 (1.041)	-0.542 (1.424)	-0.379 (1.665)	0.031 (0.052)	-1.645 (1.203)	0.034 (0.066)	-0.827 (1.632)	0.009 (0.069)	-1.522 (1.914)
Brahmin-Tarai	-2.843* (1.639)	-2.280 (2.097)	-2.063 (2.598)	-1.789 (1.536)	-1.495 (1.849)	-1.458 (3.051)	0.082 (0.086)	-4.026** (1.697)	0.049 (0.097)	-2.723 (2.023)		-4.463 (3.296)

Variables	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient		Remittance recipient		
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit	OLS	Probit	OLS	Probit	OLS
				Condi.	Condi.	Condi.	Mar. Effect	Coeff.	Mar. Effect	Coeff.	Mar. Effect	Coeff.
				(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Chhetri	-1.633 (1.207)	-0.709 (1.533)	-3.332* (1.817)	-1.342 (0.930)	-0.762 (1.317)	-2.681* (1.378)	-0.048 (0.046)	-1.147 (1.077)	-0.054 (0.061)	0.126 (1.482)	-0.064 (0.053)	-2.342 (1.635)
Newar	-3.004* (1.757)	-3.029 (2.158)	-3.571 (3.554)	-2.181 (1.666)	-2.439 (2.234)	-2.454 (2.614)	-0.012 (0.075)	-3.104 (2.002)	-0.042 (0.115)	-2.462 (2.555)	0.008 (0.091)	-4.276 (3.324)
Ethnic -Hills	-2.301* (1.297)	-1.393 (2.124)	-4.343** (1.830)	-1.757 (1.101)	-1.367 (1.809)	-3.282** (1.500)	-0.034 (0.058)	-2.091 (1.276)	-0.014 (0.080)	0.083 (2.114)	-0.081 (0.066)	- (1.737)
Dalit	-0.921 (1.389)	0.803 (1.833)	-1.671 (2.325)	-0.725 (1.203)	0.255 (1.587)	-0.697 (1.946)	-0.019 (0.055)	-1.093 (1.413)	-0.008 (0.066)	1.443 (1.813)	0.034 (0.073)	-3.375 (2.292)
<i>Development regions</i>												
Eastern	0.635 (1.299)	0.626 (1.617)	3.223 (2.559)	0.218 (1.007)	0.154 (1.196)	2.918 (2.141)	-0.042 (0.052)	1.687 (1.160)	-0.032 (0.064)	1.459 (1.356)	0.027 (0.087)	4.358* (2.510)
Central	-3.540*** (1.019)	-4.414*** (1.292)	0.324 (2.185)	-2.642*** (0.921)	-3.552*** (1.172)	0.718 (1.901)	-0.056 (0.044)	-3.217*** (1.055)	-0.114** (0.049)	-3.488*** (1.335)	0.065 (0.081)	0.114 (2.208)
Western	-4.450*** (1.016)	-4.923*** (1.268)	-0.981 (2.150)	-3.689*** (0.950)	-3.895*** (1.243)	-1.132 (1.881)	-0.167*** (0.045)	-2.210** (1.096)	-0.151** (0.062)	-3.385*** (1.398)	-0.120 (0.079)	2.433 (2.215)
Mid-western	-0.311 (1.125)	-1.357 (1.300)	2.679 (2.366)	-0.751 (0.901)	-1.627 (1.163)	1.966 (1.838)	-0.105** (0.042)	1.986* (1.081)	-0.138*** (0.048)	0.983 (1.383)	-0.044 (0.079)	5.240** (2.177)
Constant	-41.281*** (9.928)	-55.061*** (13.821)	-14.217 (15.912)	-39.938*** (8.246)	-51.471*** (12.159)	-20.157 (12.469)		-12.922 (9.745)		-35.128** (14.142)		24.694* (14.619)
Observations	605	364	241	605	364	241	605	489	364	299	241	190
R ² /Pseudo-R ²	0.25	0.30	0.29	0.05	0.06	0.06		0.14		0.21		0.26
Log likelihood				-1848	-1114	-715.4	-174.3		-103.0		-59.37	

Note. Primary school age cohort is base group for age cohort. Non-literate or no formal schooling is base category for parental education. Ethnic-Tarai and minorities is base category for caste/ethnicity and Far-western is that for development regions. Standard errors in parentheses are robust to heteroskedasticity and clustered at residuals within each household. *, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively.

Table 8

OLS, Tobit and Two-Part Estimates of Expenditure on Education (Consideration of alternative definition of migrant households, conflict-induced migration and temporal variation in investment in education)

Variables	OLS Model			Tobit Model			Two-Part Model					
	All	Remittance non-recipient	Remittance recipient	All	Remittance non-recipient	Remittance recipient	All		Remittance non-recipient		Remittance recipient	
	Coeff.	Coeff.	Coeff.	Condi. Mar. Effect	Condi. Mar. Effect	Condi. Mar. Effect	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.	Probit Mar. Effect	OLS Coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>A. Dependent Variable: Natural logarithm of expenditure on education (Household level)</i>												
Prior-conflict migrant household (M16TO20)	-1.474 (1.187)	-1.371 (1.555)	-1.999 (1.333)	-1.625* (0.880)	-1.432 (0.906)	-2.532 (1.989)	-0.133*** (0.046)	-0.124 (0.255)	-1.604** (0.736)	-0.188 (0.324)	-7.676*** (2.732)	0.136 (0.549)
Inter-conflict migrant household (M6TO15)	0.557 (0.366)	0.231 (0.478)	1.810** (0.690)	0.597 (0.444)	0.255 (0.562)	1.966*** (0.714)	0.048 (0.034)	0.147 (0.118)	-0.351 (0.680)	0.112 (0.190)	7.133*** (2.658)	0.223 (0.166)
Post-conflict migrant household (M0TO5)	0.692 (0.438)	0.144 (0.572)	1.423* (0.814)	0.760* (0.459)	0.156 (0.550)	1.572** (0.714)	0.033 (0.029)	0.254** (0.125)	-0.794 (0.570)	0.183 (0.192)	2.174** (0.944)	0.281* (0.166)
Observations	247	145	102	247	145	102	247	225	145	135	102	90
<i>B. Dependent Variable: Budget share (%) of expenditure on education (Household level)</i>												
Prior-conflict migrant household (M16TO20)	0.348 (3.218)	0.791 (3.992)	-1.930 (2.646)	-0.107 (1.805)	0.395 (2.065)	-2.387 (4.138)	-0.133*** (0.046)	2.132 (2.381)	-0.116** (0.053)	2.028 (2.808)	-0.475*** (0.179)	0.263 (5.989)
Inter-conflict migrant household (M6TO15)	1.209 (1.091)	1.280 (1.775)	2.594 (1.905)	1.184 (0.903)	1.150 (1.276)	2.973** (1.431)	0.048 (0.034)	1.061 (1.101)	-0.025 (0.049)	1.024 (1.647)	0.442*** (0.170)	1.586 (1.806)
Post-conflict migrant household (M0TO5)	2.315** (1.135)	0.290 (1.495)	4.090** (2.008)	2.195** (0.939)	0.361 (1.258)	4.260*** (1.427)	0.033 (0.029)	2.186* (1.166)	-0.057 (0.041)	0.697 (1.667)	0.135*** (0.042)	3.196* (1.808)
Observations	247	145	102	247	145	102	247	225	145	135	102	90
<i>C. Dependent Variable: Natural logarithm of expenditure on education (children age 5-24)</i>												
Prior-conflict migrant household (M16TO20)	0.145 (0.822)	0.148 (1.027)	-1.053 (1.807)	0.176 (0.770)	0.174 (0.916)	-1.075 (1.670)	-0.079** (0.031)	0.184 (0.193)	-0.054 (0.043)	0.167 (0.233)	-0.117** (0.050)	0.225 (0.370)
Inter-conflict migrant household (M6TO15)	0.948*** (0.334)	1.136*** (0.421)	1.142** (0.578)	1.026*** (0.375)	1.276** (0.517)	1.190* (0.624)	0.089*** (0.030)	0.056 (0.090)	0.040 (0.026)	-0.025 (0.125)	0.153*** (0.045)	-0.024 (0.132)
Post-conflict migrant household (M0TO5)	0.715** (0.354)	0.166 (0.507)	1.207** (0.570)	0.812** (0.389)	0.212 (0.545)	1.426** (0.602)	0.033* (0.020)	0.138 (0.096)	0.014 (0.023)	-0.052 (0.138)	0.108*** (0.030)	0.151 (0.130)
Observations	605	364	241	605	364	241	605	484	364	295	241	189

Note. The control variables are similar to Table 4, 5 and 6 for results reported in the Panel A, B and C respectively and are not reported for convenience. Standard errors in parentheses are robust to heteroskedasticity in Panel A and B whereas these are robust to heteroskedasticity and clustered at residuals within each household in Panel C. *, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively. *, **, and *** indicate the 10%, 5% and 1% level of statistical significance respectively.