

**LABOR MIGRATION, REMITTANCES, AND HUMAN CAPITAL
ACCUMUATION IN NEPAL**

By

KHAN, Viktoriya

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF PUBLIC POLICY

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Committee in charge:

Professor Hee-Seung YANG, Supervisor



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ABSTRACT

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By

Viktoriya Khan

Labor migration in Nepal is perpetuated by the existence of a porous border between Nepal and India, which is the gate to the outer world for Nepalese formal and informal labor migrants. For decades Nepal has continuously been one of the countries with the highest inflow of remittances as a percentage of GDP, reaching 31% in 2016 (World Bank, 2018). This paper investigates the impact of remittances on human capital accumulation in recipient households in Nepal, using a comprehensive nationwide Nepal Living Standards Survey of 1996, 2003 and 2010. The study addresses the endogeneity of remittances and human capital by adopting instrumental variable two-stage least squares methodology. International remittances are predicted by historical migration rates, which are extracted from Nepal Population Census of 1991. The main results show that there is a statistically significant, positive impact of remittances on educational expenditures, private schooling and private tuition.

Keywords: international remittances, human capital, historical migration network

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Introduction

Remittances are important financial injections especially for developing economies, since they serve as a source of stable external funding for consumption and investment in recipient households (Nguyen & Nguyen, 2015)¹. The amount of international remittances reached 581 billion USD in 2015, 75% of which were sent to low and middle income countries (IOM, 2017). Despite global economic fluctuations, the remittance flow has been steadily increasing for the past three decades, compared to other sources of foreign funding, such as ODA, FDI and private philanthropy flows. In least developed countries, which are the major recipients of foreign aid, remittances comprised 186% of GNI, whereas ODA and FDI amounted to 9.2% and 1% of GNI, respectively (World Bank, 2015). Therefore, there is an ongoing debate about the effectiveness of ODA and FDI for development purposes, while remittances prove to be a better cushion for economic uncertainties on individual and macro levels.

The impact of remittances on household behavior and budget allocation has been rigorously studied. Numerous empirical studies pointed out the positive impact of remittances on investment in education and school enrollment for remittance-receiving households (Guarcello et al., 2003). Additionally, there has also been recorded positive impact on health, children welfare, and reduction of child labor (Dehejia & Ghatti, 2005). However, in some cases labor migration does not lead to human capital accumulation, as remittances may provide disincentives to study, because of high return to labor intensive work (Farrington & Slater, 2006). Alternatively, migration of parents may lead to worse educational outcomes of children through less attention of adults on children or

¹ The International Organization for Migration defines remittances as “personal, cash or in-kind transfers from a migrant worker or immigrant to a relative in the country of origin” (IOM, 2011).

reallocation of housework to children (Bansak & Chezum, 2009). Some studies find economically insignificant relationship between remittances and education of children (Borraz, 2005; Nguyen & Purnamasari, 2011).

This study focuses on Nepal, a low-income country in South Asia, where remittances constitute around 30% of the total GDP. The larger proportion of all Nepali domestic and overseas migrant workers choose Kathmandu valley, India, Malaysia and Gulf Cooperation Council² as destination countries, while leaving their families in districts of origin for long periods of time (Clewet, 2015). In recent years, the trend has been increasing steadily, amounting to US\$ 3.5 billion annually at the end of 2011 (Singh, 2012). If migrants' remittances do not impact human capital accumulation within households, but increase immediate consumption, there might be negligible long-term social return. The previous studies on the pattern of remittances in Nepal used unrepresentative samples with which findings might be difficult to generalize over the whole population of 15 ecological zones. By taking advantage of considerable international migration networks in Nepal, studying the Nepalese case of remittance income allocation on education may provide more insights on the topic and contribute to the general literature for low-income countries. The empirical analysis in this paper tackles the problem of endogeneity of remittances and human capital by employing instrumental variable two-stage least squares specification. Remittances are instrumented by historical migration rates that is a widely used proxy for migration networks and especially relevant in the case of widespread informal migration in Nepal. The main

² The Gulf Cooperation Council (GCC) was established in an agreement concluded on 25 May 1981 in Riyadh, Saudi Arabia among member countries Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE (The World Bank, 2017).

results show that remittances have a strong significant impact on educational expenditure and private schooling in remittance-receiving households. The structure of this paper is as follows: Section 1 introduces Nepalese background and empirical literature review. Section 2 provides information on the dataset and methodology. Section 3 presents the description of main findings and additional outcomes. Section 4 concludes the paper, acknowledging some limitations of the current study.

Background on Nepal

Migration has always played an important role in the Nepalese economy. Nepal is a landlocked country, lying between China to the north and India to the south, east, and west. Labor migration to India through the open border between the two countries has been a common practice for centuries. (Thieme & Wyss, 2005) Beginning from 2000, Nepal has become more heavily reliant on remittances. Currently, it is the first in the world in terms of remittances as a percentage of the GDP, amounting to 31.3% as of 2016 (World Bank, 2018). Remittances are reported to alleviate from one-third to one-half of the overall poverty rate and is one of the main contributors to the reduction of absolute poverty, which declined to 15% in 2010 (World Bank, 2015). In some regions of Nepal, more than half of all households were reported to receive remittances, which became a significant financial relief after a devastating earthquake in April 2015. Due to the large remittance flow, Nepal manages to offset the trade deficit and maintain the current account surplus (Mohapatra et al., 2010). The major destination countries for Nepali migrants are the Middle-east countries (United Arab Emirates, Qatar and Saudi Arabia), Malaysia, and India. The number of overseas migrants doubled from 2001, especially fueled up by a decade-long internal armed conflict called the Maoist insurgency of 1996-

2006. During the conflict, economic growth and investment fell, having a negative impact on industrial sector and employment (Malla & Rosenbaum, 2017). Labor migrant flows are mostly male-dominated, as there are strict regulations for female migrants who seek employment in the Gulf States and other foreign destinations.

The cost of remittance transfer through the official banking services is unaffordable or inaccessible for labor migrants who remit smaller amounts of money. This affects especially those migrants who work in India, as their incomes are considerably lower compared to migrants in Middle-eastern economies. As a consequence, some of the remitters use Hundi and other informal money transfer systems, which are unsafe and unprotected from fraud and losses (Thieme & Wyss, 2005; World Bank, 2018). According to the Money Transfer Operators Association in Nepal, 35% of the total amount of remittances is regularly transferred through informal channels (Thieme, 2006). Given that, remittances are thought to contribute much more than official 32% to the Nepalese economy.

On the other hand, international Nepalese labor migrants in India tend to be from lower-income households compared to those who travel to higher income destinations, such as the Gulf countries. Richer households can afford to finance higher recruitment agency commission fees and transportation costs to farther distances, unlike poorer households for whom the proximity and lower entry costs become crucial factors in the choice of India as a destination country (Bohidar et al., 2017).

In terms of culture, Nepal inherited the social Caste System from Hindu religion. The Nepalese society is stratified among four castes: Brahman (priests and academicians) at the top, Kshatriya (soldiers) and Vaisya (traders) in the middle, and Sudra or Dalit

(untouchables) at the lowest caste. The lowest caste is the most marginalized and stigmatized with the lowest paid manual jobs (Sunam, 2014). Most caste members have particular designated occupation within the society, as well as limited access to electricity and water supply. Thus, Sudra caste is highly attracted to migrate and work in places where their caste is unknown, so they face less discrimination and have access to better occupations. This explains the pattern of migration from western Nepal to New Delhi, India. However, as they are the lowest income group by the social status, the probability to migrate and the amount they remit is the smallest among all the four castes (Thapa & Acharya, 2017).

As a heavily remittance-reliant economy, Nepal provides a great setting to study the link which is historically and geographically formed among migration, remittances, investment and human capital.

Empirical Literature Review

Remittances are one of the most widely used resources to improve living conditions, socio-economic outcomes and subjective well-being, especially for lower income households (Bouoiyour & Miftah, 2015). Emigrants' families are able to expand their consumption of household utilities and accessories, purchase new property, and enrich household wealth deposits (Khan et al., 2009). Likewise, remittances help relax credit constraints for sending families, as it is one of the ways households diversify risks to stabilize income and overcome market constraints of obtaining investment capital (Abdelmoneim & Litchfield, 2016). However, the empirical literature does not provide a consistent answer to whether remittances do lead to human capital accumulation. Remittances might affect expenditure behavior and investment decisions in households in different directions.

If remittances are treated as a transitory (temporary) source of income due to labor migration shocks, the propensity to invest in physical and human capital is much higher compared to other sources of income. According to Yang's (2008) study of remittance shocks in the Philippines, using quasi-experimental data confirmed that a 10% increase in migrant exchange rate shocks resulted in a 5.5% increase in educational expenditures. Likewise, the findings from the cross-country study by Osili (2004) illustrated that a 10% rise in migrant household's income led to a 3% increase in investment in housing in the country of origin. The study of Egyptian labor migrants found a strong positive impact of remittances on probability of school enrollment for children between 6 and 18 years old. In addition, in remittance-receiving households the likelihood of labor force participation fell and the age at which children enter labor force

was significantly higher (Koska et al., 2013). Similarly, Salas (2014) pointed out that among Peruvian remittance-receiving households the impact is significant on the intensive margin of educational choices. Families with remittance income were more likely to send their children to better-quality private educational institutions rather than public schools.

A study of mining employment shocks in Malawi found that the migrant-sending communities accumulated greater human capital during the temporary increase in labor migration, relative to those cohorts who were not exposed to the labor migration shock (Dinkelman & Mariotti, 2016). Furthermore, in twenty years after migration opportunities disappeared, the gap between the treated and non-treated households still persisted in a form of higher stocks of human capital in society and in the next generation's educational outcomes. If the positive impact of remittances brings about long-run social returns, policymakers should facilitate the intergenerational transmission of human capital gains.

Remittances also contribute to human capital accumulation through investment in healthcare and nutrition, which could positively influence the return from investment in children from an early age (Hoddinott et al., 2011; Ratha et al., 2007). Rivera (2005) disaggregated the positive impact of remittances into contributions of domestic and overseas transfers in rural Mexico under extended consumer model. The results demonstrate that whereas domestic remittances increase human capital investment, such as education and health, international remittances stimulate physical capital accumulation, such as acquisition of durables.

The empirical papers mentioned above advocate for a positive causal relationship between remittances and human capital accumulation in remittance-receiving households. In contrast, a significant body of literature also provides some evidence of the negative impact of remittance income on investment in human capital. Meins (2007) and Bridi (2005)'s claim that labor migration provokes a moral hazard in migrant-sending households by discouraging family members from working and promoting dependency on remittance transfers as a substitute of other sources of income. Family members who are left behind tend to reduce labor supply along with their working effort in the workplace while becoming idle (Ang et al., 2009). Such a kind of impact of labor migration would not lead to improvement of living standards and long-run economic growth.

Bansak and Chezum (2009) have observed that in Nepal, the absence of parents in the household due to labor migration negatively affected children's health and educational outcomes through the disruption of household roles and allocation of more household duties to children. Boys in migrant families were affected by household disruption in terms of educational outcomes, whereas girls' probability to be enrolled in school significantly fell. The positive gains of education are statistically significant only for primary school age children. Hence, these studies pose some doubt on generalizability of the positive impact on education in different settings, if the gains occur only in primary school and fade out in higher level of education.

Another block of literature has found no relationship between remittances and human capital formation in migrant-sending households. The results of a study in Bangladesh illustrate that remittance income increase marginal consumption of food and

housing, whereas the investment in human and physical capital remains on the same level. The same relationship was observed in Egypt – that there was no significant increase in human capital investment (Elbadawy & Roushdy, 2010). Some societies have an inclination to invest remittance income into “status-oriented” luxury goods. Investment in jewelry, housing and land assets are not considered productive resources of an economy, accumulation of which does not lead to rebalancing of economic growth nor does it boost productive capacity (Chami et al., 2003). Finally, Castaldo and Reilly (2007) found that the consumption behavior of both remittance receiving and non-remittance receiving families were mostly similar with a slight difference in the purchase of durable assets for households with remittance.

In conclusion, this section of literature review provided empirical support for the core research question as to whether international labor migration benefits the migrant-sending communities. It is therefore meaningful to study the investment behavior in remittance receiving households using a comprehensive Nepal dataset and determine the magnitude and direction of the social impact (if any) of labor migration.

Data

The data in this study were retrieved from “Nepal Living Standards Survey”, which is conducted by the Nepal Central Bureau of Statistics. Up to present, the survey consists of three waves collected in 1995/96, 2003/04 and 2010/11. The survey follows the methodology of Living Standards Measurement Survey developed and recommended by World Bank. Waves I-III enumerate 3,373, 5,081 and 7,020 households, respectively. The dataset provides demographic, socio-economic, employment and financial information on household and individual levels across all geographical regions, which makes the sample nationally representative. The observations are weighted based on household size and population in strata. The survey contains migration and remittance module that provides detailed information on whether the household receives remittances, the amount of remittances, mode (official and unofficial) and form of remittances (cash or in-kind). There are separate modules for children’s educational and demographic characteristics as well. The panel structure of the sample does not allow for powerful statistical inference, due to the small number of households that were followed up in all three waves. Hence, this paper utilizes a pooled cross-sectional sample for empirical estimation. The information about international historical migration rates was obtained from Nepal Population Census 1991.

The following two paragraphs summarize the descriptive statistics of the pooled sample. Table 1 presents the mean values of the outcome variables in remittance receiving and non-remittance receiving households. The number of school-age children attending any school, private schools and private tutoring is considerably higher in remittance households. Analogously, similar difference can be observed in educational

expenditures in two household groups. In contrast, the visual comparison of health expenditures does not illustrate any significant difference between the groups.

“*Remittances_i*” indicate the total amount of international remittances received during the past 12 months both in-kind and cash by household *i*.

Control variables include household, household head and area specific variables. From Table 2 Panel A it is seen that in households with remittances the outstanding debt is considerably higher, the yearly consumption is higher and the size of the dwelling is slightly smaller. The average household size in the whole sample is five people. The pattern of household head characteristics in Panel B is consistent with expectations; the head of remittance households reports a higher fraction of females as the labor migrant flows are male-dominated. Although the age of household heads is the same on average, household heads in remitters’ families seem less educated. Panel C illustrates that half of all international migrants work in India. Ecological regions, geographical belts and religions seem to be evenly represented.

Table 1. *Statistics on outcome variables*

	(1) Non-remittance households				(2) Remittance households			
	mean	sd	min	max	mean	sd	min	max
Number of school-age children attending school	1.47	1.31	0	10	1.71	1.33	0	12
Number of school-age children attending a private school	.29	.72	0	5	.42	.80	0	7
Number of school-age children attending private classes apart from school	.18	.54	0	5	.39	.74	0	6
Educational expenditures during the past 12 months	8099.7	22697.3	0	666335.1	11311.6	32792.9	0	850000
Health expenditures during the past 30 days	743.05	6093.09	0	331510	768.46	4206.11	0	170000
Remittances	0	0	0	0	28053.23	129731.3	0	5159959
Observations	8602				3144			

***All the expenditure variables are CPI adjusted with a base year of 2010. CPI is retrieved from World Bank micro indicators database.

Table 2. *Descriptive statistics on control variables*

	(1) Non-remittance households				(2) Remittance households			
	mean	sd	min	max	mean	sd	min	max
Panel A. Household characteristics								
Amount of debt a household incurred during the past 12 months	64025.23	387311.2	0	2.49e+07	178156.2	3681723	0	2.00e+08
Consumption expenditure incurred during the last 12 months	22391.25	23977.74	944.27	1514618	24427.52	15094.17	1633.13	180202.2
Number of rooms per household member	1.84	1.41	.08	13	1.41	1.06	.13	9
Household size	5.25	2.61	1	32	4.97	2.59	1	26
Panel B. Household head's characteristics								
Sex of household head	.84		0	1	.56		0	1
Age of household head	46.06	14.18	11	97	46.93	14.55	11	93
Household head ever attended school	.45		0	1	.39		0	1
Panel C. Geographic factors								
The destination country is India	0		0	0	.50		0	1
Household resides in urban area	.26		0	1	.23		0	1
region==EASTERN	.23		0	1	.21		0	1
region==CENTRAL	.39		0	1	.27		0	1
region==WESTERN	.17		0	1	.29		0	1
region==MIDWEST	.11		0	1	.12		0	1
region==FARWEST	.08		0	1	.11		0	1
belt==MOUNTAIN	.11		0	1	.06		0	1
belt==HILL	.49		0	1	.50		0	1
belt==TERAI	.38		0	1	.44		0	1
Religion==Hindu	.83		0	1	.84		0	1
Religion==Budhist	.09		0	1	.08		0	1
Religion==Muslim	.03		0	1	.05		0	1
Religion==Other	.04		0	1	.038486		0	1
Observations	8602				3144			

***All the expenditure variables are CPI adjusted with a base year of 2010. CPI is retrieved from World Bank microindicators database.

Methodology

To estimate the effect of international remittances on human capital accumulation in migrants' households, this paper uses instrumental variable two-stage least squares approach. The baseline model follows the notation:

$$1^{\text{st}} \text{ stage: } Remittances_i = \alpha_0 + \alpha_1 Hist_rates_i + \alpha_2 X_i + v_i$$

$$2^{\text{nd}} \text{ stage: } Dep_var_i = \beta_0 + \beta_1 Remittances_i + \beta_2 X_i + u_i$$

Dependent variables in the second stage include educational expenditures, school attendance, private or public school enrollment, private tuition and health expenditures. Educational expenditure includes exam fee, uniform, textbooks, transportation, private tuition and school meals. School attendance, private school enrollment and private tutoring account only for school-age children, aged 6 to 20. Age 20 is included as an upper limit despite conventional 18 years as defined by World Bank, due to the multiple cases when children pause and enroll to school again after a one or two years break. The main reasons for the interruption of studies are financial difficulties and necessity to help with the household chores, according to NLSS responses. Health expenditures represent diagnostic, medicine and service cost during the past 30 days.

The chosen empirical approach is motivated by the endogenous relationship of remittances and human capital that pose significant concern about the estimation of causal relationship between dependent and independent variables. First, labor migrants are self-selected into migration abroad, thus, the average socio-economic conditions in migrants' households are different from those without migrants. Second, there are other unobservable omitted factors linked both to labor migration and human capital of the

second generation, such as subjective value of education, ability and ambitions (Ambrosius & Cuecuecha, 2016). Third, remittances and human capital accumulation suffer from reverse causality (Ambrosius & Cuecuecha, 2014). For example, high education and healthcare costs may drive parents to migrate elsewhere. Instrumental variable approach addresses the three abovementioned issues to obtain unbiased estimates.

In the first stage, current labor migration is instrumented by historical migration rates, which have a strong theoretical justification based on Nepal's geographical and social characteristics. Historical rates is a well-known instrument for labor migration in remittance literature (Hanson & Woodruff, 2003; McKenzie & Rapoport, 2011; Bouoiyour & Miftah, 2016). The identification assumption is that historical migration rates on sub-region level indicate the current labor migration trend and remittance amount through the historical migration networks formed by labor migrants. However, historical migration rates do not affect current schooling decisions and expenditures of migrants' households (Salas, 2014).

International historical migration rates were calculated using formula:

$$IV_i = \frac{M_i^k}{M^k}$$

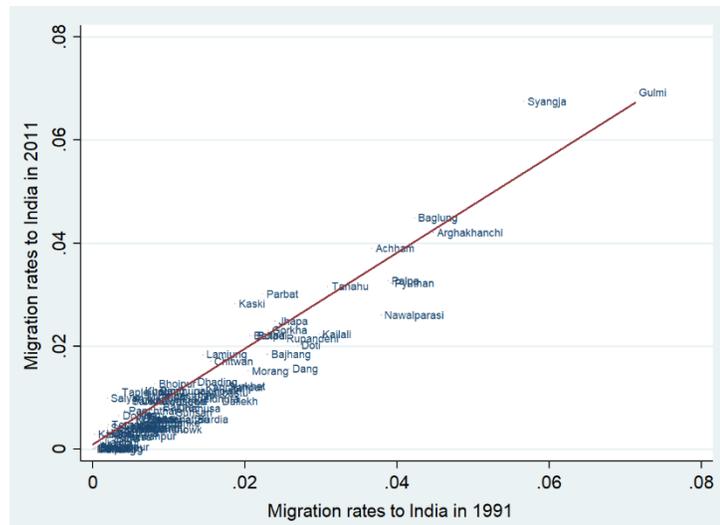
M_i^k - Nepalese emigrants from region i residing in destination country/region k in 1991

M^k - total Nepalese emigrants residing in destination country k in 1991

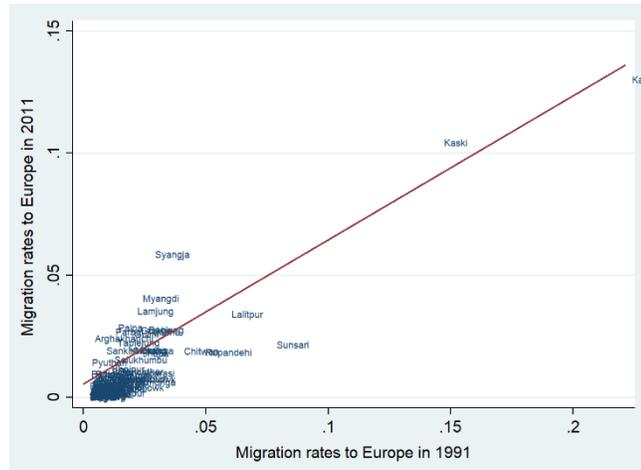
Instrument Validity

Graphs 1-5 illustrate a strong positive correlation between labour migrant destinations in 1991 and 2011, which justifies the predictive power of the instrument. The share of labor migrants from different regions of Nepal in foreign destinations in 1991 proportionally corresponds to the share of migrants residing there in 2011. For example, in both 1991 and 2011 the fraction of migrants from Syangja and Gulmi in India were about 6% and 7%, respectively [Graph 1]. The correspondence is consistent for historical and current migration rates from other regions to India, South Asia, Other Asia, Europe and Arab countries as well [Graphs 2-5].

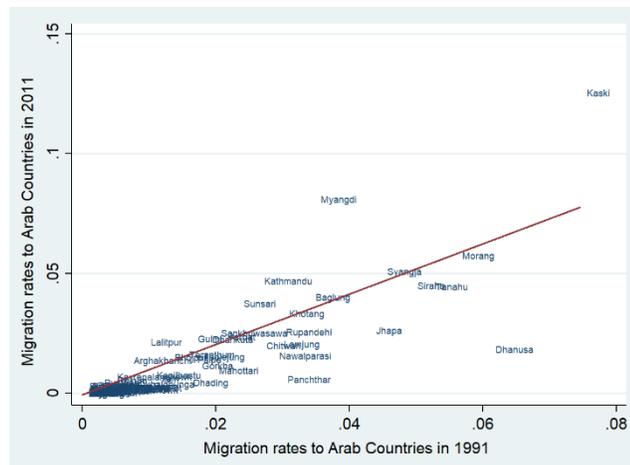
Graph 1. *Historical and current migration rates to India*



Graph 4. *Historical and current migration rates to Europe*



Graph 5. *Historical and current migration rates to Arab countries*



Results

Table 3 reports the main findings of the impact of remittances on educational expenditures. Columns 1 and 2 report OLS and region fixed effect models with control variables. The coefficients for both models are similar – 15.8 rupees of educational expenses per 1,000 rupee of remittances, which is indicative that there are no region specific trends that confound the estimators. Columns 3 and 4 show the first and second stage results of 2SLS specification. The remittance variable is still significant at 1 percent level; however, the magnitude is considerably higher than ones in the first two columns. On average, 1,000 rupees of international remittances increase educational expenditures by 75 rupees, *ceteris paribus*. Given that the mean amount of remittances received by households in the sample is 28,053 rupees [Table 1], the educational expenditures are expected increase by 2104 rupees (28 USD) in remittance-receiving households compared with non-receiving households on average, which represents 25.97% ($2104\text{rupees}/8099\text{rupees}\times 100\%$) difference in investment in education.

Amount of household debt outstanding turns out to be insignificant across specifications, which rejects the possibility of debt financing of education. Consumption of goods including homegrown, purchased in market, and received in-kind, is used as a proxy of household income. The sign is consistent with expectations since higher consumption expenditure is correlated with higher educational investment, significant at 10 percent level. The number of rooms per household member represents the size of the dwelling, which is negatively correlated with educational expenditure. The possible explanation is that the larger the assets the household owns, the more children stay at home to help with household chores, which is confirmed by high dropout rate due to

housework duties, especially in rural areas. The larger household size is also associated with higher expenditures on education. As for the characteristics of a household head, whether a household head attended school or received any type of formal education turns out to be an important factor. Having an educated household head is correlated with higher educational expenditures by 3,712 rupees. The dummy for India was included as recommended by Sapkota (2013) to account for low cost of migration and border irregularities between India and Nepal. Although half of all labor migrants head to India, they turn out to be from the poorest income quintile of Nepalese population and their remittances are much lower as a share of household income compared to their counterparts from Gulf countries. Households in urban areas spend on education 11,067 rupees more than those in rural areas. Although internal remittances demonstrate strong association with educational expenditures, the coefficients carry no economic meaning. Column 3 in Table 3 reports the first stage results of regression of historical migration rates on remittances sent by labor migrants. The instrument proves to be strongly significant at 1 percent level, with F-statistics for joint significance of 23.5, which empirically confirms instrument relevance.

Table 3. *Impact on Educational expenditures*

	(1) OLS	(2) FE	(3) 1st stage	(4) 2SLS
Remittances	15.82 ^{****} (4.13)	15.69 ^{****} (4.15)		75.09 ^{****} (17.19)
Amount of debt a household incurred during the past 12 months	0.000448 (0.001)	0.000432 (0.001)	2.02 (6.23)	0.000399 (0.001)
Consumption expenditure incurred during the last 12 months	0.0784 [*] (0.04)	0.0753 [*] (0.04)	0.00 [*] (0.00)	0.0573 [*] (0.03)

Number of rooms per household member	-1480.0 ^{****} (158.68)	-1536.6 ^{****} (160.26)	-5.17 ^{****} (0.64)	-1174.0 ^{****} (179.49)
Household size	1066.4 ^{****} (135.41)	1115.7 ^{****} (134.80)	1.57 ^{***} (0.49)	1015.4 ^{****} (129.03)
Household head is male	-3104.8 ^{****} (476.65)	-3151.7 ^{****} (483.41)	-23.41 ^{***} (2.65)	-1311.0 [*] (727.22)
Age of household head	32.26 ^{***} (11.08)	25.91 ^{**} (11.08)	0.18 ^{**} (0.076)	10.85 (11.88)
Household head ever attended school	4439.3 ^{****} (403.85)	4420.6 ^{****} (407.68)	9.92 ^{****} (2.35)	3712.1 ^{****} (459.15)
The destination country is India	-1826.2 ^{****} (374.44)	-1491.6 ^{****} (358.65)	-10 ^{***} (3.32)	-1952.0 ^{****} (417.77)
Household resides in urban area	12892.0 ^{****} (1006.21)	12117.3 ^{****} (962.29)	6.63 (4.07)	11066.6 ^{****} (956.12)
Historical rates			1176.53 ^{****} (12.45)	
Internal remittances	0.61 ^{****} (0.09)	0.64 ^{***} (0.09)	-0.00 (0.00)	0.74 ^{***} (0.15)
Region Fixed effect	No	Yes	Yes	Yes
Belt FE	No	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes	Yes
Observations	11746	11746	11746	11746
R^2	0.115	0.121	0.107	0.035

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Additional Outcomes

As for the extensive margin of education, the receipt of remittances does not show any significant impact on school attendance by school-aged children in the household [Table 4]. On the other hand, Tables 5 and 6 present a strongly significant statistical effect on private school attendance and private tutoring. However, notably small coefficients indicate that only large amounts of remittances make private education more affordable, which particularly makes sense in comparison of remitters from India and richer nations. Health expenditures in the households do not respond to remittances in Table 7.

Table 4. *Impact on School Attendance*

	(1) OLS	(2) FE	(3) 2SLS
Remittances	0.000180* (0.00)	0.000143 (0.00)	0.000774 (0.00)
The destination country is India	0.11*** (0.04)	0.10** (0.04)	0.99** (0.04)
Other controls	Yes	Yes	Yes
Region Fixed effect	No	Yes	Yes
Belt FE	No	Yes	Yes
Religion FE	Yes	Yes	Yes
Observations	9988	9988	9988
R^2	0.187	0.201	0.199

Table 5. *Impact on Private School Attendance*

	(1) OLS	(2) FE	(3) 2SLS
Remittances	0.000789**** (0.00)	0.000766**** (0.00)	0.00170**** (0.00)
The destination country is India	-0.08**** (0.02)	-0.07**** (0.02)	-0.08**** (0.017)
Other controls	Yes	Yes	Yes
Region Fixed effect	No	Yes	Yes
Belt FE	No	Yes	Yes
Religion FE	Yes	Yes	Yes
Observations	9988	9988	9988
R^2	0.167	0.173	0.156

Table 6. *Impact on Private Tutor Attendance*

	(1) OLS	(2) FE	(3) 2SLS
Remittances	0.000422**** (0.00)	0.000404**** (0.00)	0.000970** (0.00)
The destination country is India	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Other controls	Yes	Yes	Yes
Region Fixed effect	No	Yes	Yes
Belt FE	No	Yes	Yes
Religion FE	Yes	Yes	Yes
Observations	5814	5814	5814
R^2	0.075	0.083	0.072

Table 7. *Impact on Health expenditures*

	(1)	(2)	(3)
	OLS	FE	2SLS
Remittances	0.32 (0.00)	0.24 (0.00)	0.96 (0.00)
The destination country is India	-150.2** (68.45)	-108.7 (72.38)	-112.1 (73.15)
Other controls	Yes	Yes	Yes
Region Fixed effect	No	Yes	Yes
Belt FE	No	Yes	Yes
Religion FE	Yes	Yes	Yes
Observations	9715	9715	9715
R^2	0.006	0.008	0.007

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Conclusion

This study examines the impact of remittances on human capital investment in Nepal using a nationally representative sample. The results indicate that higher remittance flows amount to higher investment in education, which is especially important for labor migrant households as the majority of the parents from those households do not have formal education. The average impact of remittances is a 2,104 rupees increase in educational expenditure per household. All the signs of independent and control variables are consistent with expectations and confirmed in previous literature discussed above. The findings are supported by the neoclassical consumption model that considers education as a normal good, of which consumption is increased with relaxed credit constraints. In contrast to educational expenditures, healthcare expenditures do not illustrate any impact from remittances. School attendance does not show significant difference either, as public education in Nepal is free and in 2000, primary education became compulsory in some parts of Nepal. Thus, remittance income mainly contributes to school related direct expenses, such as supplies, transportation and private education. The results on private education take-up are highly consistent with findings in Peru by Salas (2014). Remittances have a positive effect on education decisions, by making private education more affordable. In turn, private education has a long-run impact on improving socio-economic outcomes of children (Blaug, 2014).

Based on the findings, the policy recommendation is to facilitate the inflow of international remittances into Nepal, as it enriches human capital and alleviates poverty, consequently, contributing to long-run growth. The possible ways to do so are reducing

transaction costs, providing more methods to remit, and protecting migrants' rights and interests in foreign countries.

Limitations

There are several challenges that might pose some constraints on validity of results in this study. First, as the panel sample is limited, it does not allow taking advantage of household-specific trends and unobservable characteristics. Second, as the remittances are self-reported, they are subject to measurement error. In addition, huge amount of remittances is transferred through unofficial channels, thus, there is a high probability that the amount received is underreported, which may underestimate the true impact. Third, in Nepal several families share the same household, which makes it hard to count the number of children in a family. There is no information whether remittances are shared equally among family members in the same household. Thus, the dependent variable accounts for all children listed as household members, disregarding whether they are the children of a household head or other family members. However, in the context of this study, the main assumption is that methodological issues mentioned above—household motivations for education, underreporting of the amount of remittances received and spillover of remittances on other household members—pose a downward bias on estimates, while the real effect is expected to be greater.

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