International Migration and its Effect on Labor Supply of the Left-Behind
Household Members: Evidence from Nepal

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Abstract

This paper analyzes the differential impact of migration on labor supply of the left-behind household members in Nepal, where international migration for employment, predominantly a male phenomenon, increased substantially between 2001 and 2011. Using the NLSS III data, this paper extends the analysis further by incorporating the impacts on both extensive and intensive margins and answering the question of if they are not wage-employed, what the remaining members in the household engaging in instead. The paper finds that, in response to outmigration of some family members, women realign their priorities and reallocate their time from market employment to self-employment and home production, possibly filling in the roles vacated by the migrants. In contrast, the income effect dominates the impact of migration on the left-behind men; that is, men value their leisure more because of the remittances from abroad and decrease their overall supply of labor.

Keywords: International Migration, Migration, Labor Supply
JEL Codes: F220, O150, J220

1 Introduction

International migration can be both beneficial and costly to sending households and communities. Migrant sending households in the home country can gain through remittances, which increase household assets, relax credit constraints, and enable them to smooth consumption. Additionally, the income transfers allow non-migrating members to engage in economic activities that are more risky but possibly yield higher profits (Yang, 2008). Similarly, other community members may benefit from positive spillovers.[1] However, international migration is risky and is of concern over a number of potential costs. It requires higher levels pre-departure investments on travel, food, lodging and preparation of travel documents. It involves information and search costs, time, and effort to identify and obtain a job at the destination. Similarly, there are concerns of human trafficking and abuse of migrant rights. Households also incur emotional costs from sending members abroad (Massey, 1988). Equally important, communities might lose their able and productive members. With the recent sharp rise in international migration worldwide,[2] there is increasing interest on the topic among economists and policy makers alike in identifying problems related to migration, its impact on development, and mitigating some of these potential costs.

Migration can alter households' economic behavior. A direct and obvious effect is that it decreases households' stock of labor hours for both wage employment and home production. In contrast, remittances received from abroad indirectly affect labor supply decisions by increasing the household's unearned income. Neoclassical theory of labor supply suggests labor market participation by the remaining household members is affected through cross-substitution and income effects. Under the standard assumptions of the labor supply theory, remittances received from abroad increase the reservation wages of the non-migrating members, which in turn, discourage the members from participating in labor market and increase their leisure consumption assuming leisure as a "normal good". Hence, the added exogenous income is expected to negatively impact labor force participation. Meanwhile, the cross-substitution effect - which has two components, direct and indirect - is ambiguous; its sign depends on whether members' non-labor time are substitutes or complements. Migration's direct cross-substitution effect depends on substitutability between the migrating

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[1]For example Amuedo-Dorantes et al. (2010) find that children in communities with migrants have greater school attendance, while McKenzie and Rapoport (2007) find that migration reduces inequality in sending communities in the long run.

[2]International migrants, mostly from south to north, reached all-time highs at 232 million in 2013, which is a substantial increase from 175 and 154 million in 2000 and 1990 respectively (United Nations, 2013)

and non-migrating members' home-production time. The indirect effect through remittances depends on substitutability of non-labor time of the non-migrating members. The effects not only depend on the characteristics of the migrants but the composition of the remaining family members as well. Moreover, the effect might be heterogeneous within a household depending on the bargaining power of each family member. Therefore, the net effect may vary in magnitude and sign depending on these effects, and the question of migration's impact on economic behavior of the household's remaining members is an empirical problem.

This paper investigates the topic by analyzing the left-behind household male and female members' time allocation between labor markets, self-employment, and home-production in both extensive and intensive margins in Nepal. The topic is of importance for Nepal, where 1 out of every 13 of its citizens were living abroad in 2011 and the inflow of remittances were valued at 30% of its GDP in 2013 (Ministry of Finance, 2014). Numbers of emigrants increased from about 1 million in 2010 to 2 million in 2013 (World Bank, 2015). With the opening of new destinations and economically alluring opportunities abroad, the country is likely to continue to face high levels of net out-migration and its diaspora is likely to continue to play an important role in its economic development. However, the level of positive impact of migration might not be equal on all of the left-behind members and some may even become worse off. Given the traditional roles of rearing children and household chores women assume within the household and society, the left-behind female members are expected to be affected differently than their male counterparts. One of the most salient features of the employment related emigration in Nepal is that it is predominantly a male phenomenon. With males migrating abroad, the authority over household decision making may shift to women. However, the shift may be accompanied by extra responsibilities requiring extra hours of work or it might compel women to give up their jobs to assume the new roles. Due to decrease in the stock of household labor time and increase in unearned income, a household might choose to simply abandon the tasks the migrants were involved in or realign its priorities and redistribute the remaining stock of labor time. Alternatively, the remaining members may choose to add the role vacated by the migrants onto their own workload. Whichever alternative the household chooses, the question of what kind of differential impact it may have on its members is of interest to economists and might have important policy relevance.

The majority of the literature on the topic has explored welfare gains through remittances

- reducing poverty, increasing equality, and fostering economic growth.[3] Relatively less attention has been given to the impact of migration on economic behavior of the remaining household members. Among those studies, Funkhouser (1992) examines migration from and remittances to Managua, capital city of Nicaragua, and finds remittances decrease labor force participation and increase self-employment of both the left-behind men and women household members. Rodriguez and Tiongson (2001) estimates the propensity to participate in labor-employment of left-behind members in the urban Philippines and finds negative impact on both men and women but more so on women. While informative, both the papers do not consider the fact that migration and remittances might change only the hours of work without changing employment rate. At the same time, the studies do not account for endogeneity between remittances and labor supply, which is of concern while establishing a causal relationship between them.

Amuedo-Dorantes and Pozo (2006) addresses these concerns by using observed worked hours as the outcome variable and by instrumenting remittances with per capita count of Western Union offices in a state in Mexico. They find no change in overall labor supply of men but find significant shifts from formal wage-employment hours to informal wage-employment. Additionally, they find an overall reduction in the employment hours of only rural-women. As discussed earlier, there are direct effects, reduction in household's total labor time due to migrant moving abroad, and indirect effects through income transfers. Modeling only remittances might underestimate the total impact. Yang (2008) investigates the topic by exploiting the variation in exchange rates during the 1997 Asian financial crisis and finds that the positive migrant shocks increase the amount of hours in self-employment while decreasing child labor among non-migrating members of Philippine households. Similarly, Binzel and Assaad (2011), Mu and van de Walle (2011), and Mendola and Carletto (2012) explore the impact of male migration on left-behind female members in Egypt, China and Albania respectively. All three studies find a decrease in female paid labor supply and increase in female unpaid work. Antman (2011) investigates the short-term effects of paternal migration to the US from Mexico on intergenerational outcomes, mainly child education and labor.[4] She finds paternal migration to decrease children's total hours of study and

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[3]See for example McKenzie and Rapoport (2007), Gibson and McKenzie (2014)

[4]Migration has different effects in the short-term than in the long-term. In the short term migrants incur search costs and may require assistance from their families at the country of origin. This may require non-migrating household members to work more, which might increase child labor.

increase labor time.

To my knowledge, Lokshin and Glinskaya (2009), which investigates the effect of male migration on female wage-employment, is the only other study that explores this topic in the Nepalese setting. Lokshin and Glinskaya (2009) uses the 2003-2004 round of Nepal Living Standard Survey (NLSS II) data and find male migration negatively affecting women's decisions to participate in wage-employment. NLSS II did not collect data on time allocation for wage-employment, self-employment and other household activities, hence, Lokshin and Glinskaya (2009) only explore the left-behind female members' labor supply exclusively on the extensive margins. They are also unable to answer what activities women from migrant sending households engage in instead of wage employment.

In contrast, this paper uses the latest round of Nepal Living Standard Survey (NLSS III), which the Central Bureau of Statistics (CBS) Nepal collected between February 2010 and February 2011. An advantage over the NLSS II is that the NLSS III collected detailed information on the time use in labor market, self-employment and household activities of each household member. At the same time, the NLSS III provides a greater number of work-related international migrants from Nepal than the NLSS II. International labor treaties that Nepal signed between 2005 and 2010 and the end of the Maoist insurgency in 2006 made international migration more accessible. During the insurgency, mobility within the country was severely restrained and government offices were destroyed making it difficult to obtain travel documents. These may be the reasons that the majority of increased international migration is for labor-employment to Malaysia, Saudi Arabia, Qatar, and Kuwait; countries that Nepal signed treaties with.

This study contributes to the existing literature in the following ways. First, it complements Lokshin and Glinskaya (2009) by extending the analysis of women's wage-employment on both extensive and intensive margins. Second, the paper also includes males' labor supply to investigate the presence of differential impact between men and women in Nepal. The most important contribution of the paper is that it analyses the time allocation of left-behind members beyond their time in self-employment and market work. That is, it answers the question of if they are not employed, what do members of migrants sending household do instead. This is an important question that the literature, including the studies in other

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country settings, has mostly ignored. Furthermore, by adding the total time spent in the market, self-employment and household activities, the paper investigates whether migration and remittances increase the consumption of leisure as the microeconomic theory predicts. The answer may have important implications towards the effect on an individual's welfare gains, which have been rarely explored in previous studies. By dissecting the analysis in these multiple ways, this study provides one of the most complete pictures of migration's impact on labor supply of the remaining family members.

The decisions to migrate and work are selective processes, which depend on observed and unobserved household and individual level characteristics. Cross-sectional analysis of migration's effect on labor supply is of concern when interpreting the causal relationship because of endogeneity. Thus, to address the potential endogeneity bias this paper exploits a very popular instrument in the literature, the local level historical migration network, as an instrumental variable (IV) for household's decisions to send members abroad. Specifically, using the 2001 Nepal Census, I compute the percentage of international migrants from a Village Development Committee (VDC) as an instrument for migration in 2010-2011. A decade lagged migration shares are unlikely to affect local economic conditions and hence, labor supply decisions. Furthermore, this paper uses GDP growth between 2001 and 2011 of the most popular destination countries interacted with the local level decade lagged migration shares as an additional instrument (more on the endogeniety problem and instrument is discussed in the later section). Using the IV strategy, this paper explores migration's impact on labor supply of the left-behind household members in wage-employment, self-employment and other household activities. It also examines the impact on child labor and which adult members in the family (male, female, young, old) are affected the most by the migration.

The analysis has four major findings. First, solely on extensive margin, having international migrants in the family discouraged the left-behind members from participating in wage-employment. This is true for both male and female members. However, female members increase their participation in self-employment, almost entirely through subsistence farming. Whereas, having migrants in the household does not affect male members' decisions to participate in self-employment. Given the dominance of men in international migration and the traditional roles women assume within the household and society in Nepal, it is not surprising that women increase their contribution to household farm-labor in response

to outmigration of household members. Second, both self-employed and wage-employed adults decrease their weekly hours of labor supply when some household members migrate for work. Third, girls (6 to 17) and female adult members in the migrant-household decrease their time allocation in less productive household activities while increasing (more than proportionally) their time in more productive household activities. These findings suggest that male-dominated migration either increases women's workload, potentially overburdening them, or forces women to realign their priorities and fill the roles in home production and family farm that are vacated by the migrants. In order to investigate these hypotheses, I analyze the aggregate labor supply (wage work + self-employment + household activities) of the left-behind household members. I finds 0 effect of migration on women's overall labor supply while significantly negative effect on men's. Therefore, it can be inferred that, in response to outmigration of some family members, women realign their priorities and reallocate their time. In contrast, income effect dominates the impact of migration on the left-behind men; that is, men value their leisure more because of the remittances from abroad and decrease their overall supply of labor. These are reasonable findings in a country with the traditional household norms and social culture that is likely to see women as subordinate to men. Fourth, migration has heterogeneous effects on labor supply of non-migrating household members varying by skill level and household head status, but not by age. Unlike other household members, household heads are less likely to participate in wage-employment, but do not increase their participation in self-employment. This may be because household heads are more likely to receive remittances sent by the migrant, which in turn, might increase bargaining power within the household.

The results presented in the paper have important policy implications. They highlight the need for tailored policy initiatives targeting specific subpopulations. Male-dominated migration pushes females to give up wage-employment and increase labor supply in their own farms. Labor markets in rural Nepal tend to be incomplete and not fully integrated due to information asymmetry, lack of mobility, and lack of strong institutional implementations. Policy initiatives should be focused on these aspects to improve the rural wage labor markets thus allowing households to hire workers to replace those who migrate.

The rest of the paper is organized as follows. Section 2 provides background of out-bound migration from Nepal, brief scenario of current labor market in Nepal, and the motivation

for the paper. The theoretical framework, discrete occupational choice model, is discussed in section 3. Section 4 describes the data set used for the analysis while empirical strategy and identification is discussed in section 5. The findings of the analysis are presented in section 6 and section 7 concludes the paper.

2 Background and Motivation

2.1 Emigration from and Remittances to Nepal

With 25.2% of its population earning less than US\$ 1.25 per day (World Bank, 2014b), Nepal is one of the least-economically-developed nations in the world. However, with recent international labor treaties, Nepal has been experiencing large outflows of migrants and hence, remittance inflows from abroad. Figure (1) presents the historical international migration trend from Nepal. Close to 2 million Nepalese, 7.3% of the population, were living abroad during the census in 2011. This is a substantial increase compared to earlier decades. Only 3.2% (0.76 million), and 3.4% (0.66 million) of the population was living abroad in 2001 and 1991 respectively. The rise in numbers of Nepalese living abroad in the last decade is mainly due to low skilled employment related migration. The Foreign Employment Act of 2007 - which was designed to provide security, protect the welfare of migrants, provide migrants with education and training before leaving the country, and monitor the businesses that facilitate migration processes - along with the bilateral labor treaties that Nepal signed[5] have facilitated the migration process. The end of the Maoist insurgency, during which mobility within the country was severely restrained and government offices were destroyed, making it difficult to obtain travel documents, also helped improve conditions to migrate internationally.

Figure (A.1) shows migration trends to the top five destination countries for labor employment.[6] Malaysia, Qatar, and UAE, countries Nepal signed treaties with, are among the most favored destinations for work. India, not shown in the figure, is the largest recipient

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[5]Nepal signed major international labor treaties in last decade, with Qatar (2005), UAE and Korea (2007), Bahrain (2008), Japan (2009), and Malaysia (started process in 2007), with the aim to protect migrants and facilitate the migration process.

[6] Workers going abroad are required to obtain labor-permits from the Department of Foreign Employment. Migrants can apply on their own or can apply through foreign-employment recruiting agencies. The numbers reported in Figure (A.1) are those who opted to apply through the recruiting agencies and were issued the permit. Many of the females migrating abroad from Nepal tend to migrate along with their male household members and not necessarily for employment purposes. Therefore, NLSS, which asks if the household has members abroad, is likely to have a higher percentage of female migrants in the sample than reported here.

country of Nepalese workers. Due to the open border the two countries share, it is difficult to track migrants and most workers migrating to India do not report to the Department of Foreign Employment, which keeps the records. Additionally, many workers migrating to countries other than India travel through India, so labor-related migration might be significantly higher than is officially reported. With these outflows of workers, it is not surprising that remittances have become major financial flows to Nepal.

Remittance income has become a major factor in the economic development of Nepal. According to the Ministry of Finance (2014), Nepalese households received 430 and 560 billion rupees accounting for 25.7% and 29.1% of the GDP in fiscal years 2012-13 and 2013-14 respectively. About 32% of Nepalese households received remittances in 2004 (World Bank, 2006). At a country level, remittances have helped sustain balance of payments covering 169.5% of imports and are equivalent to 82.9% of the foreign reserves in 2013 (World Bank, 2014a). This trend is likely to continue in the near future as the growth in outflows of migrant workers is on the rise. Migrant outflow grew by 16% between 2012 and 2013 (World Bank, 2014a). Remittances sent through unofficial channels could be as large. Thus, resource inflows from abroad are becoming an increasingly larger share of household budgets to growing number of families in Nepal.

2.2 Employment

International migration and paid-employment are male-dominated phenomena in Nepal. The labor migration trend by gender is presented in Figure (A.2).[6] Among labor-related migrants, only 6.0% (about 23 thousand), 6.2% (about 28 thousand) and 5.6% (about 30 thousand) of migrants were female in 2011, 2012 and 2013 respectively. In my sample, 15.6% of migrants are female.[6] Similarly, there is a variation in labor market participation across gender. Among working age (18 - 60 years) males, 49.8% of them reported to be paid employees and 70.9% of them reported participating in self-employment, mostly subsistence farming. Among females, only 23.1% reported to be paid employees while 66.3% of them reported participating in self-employment. This is not surprising given the strong social and traditional family norms in Nepal, which discourage women from participating in paid-work, and where women mostly engage in taking care of children and household chores (CEDAW,

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2003). However, with males migrating abroad, the authority over household consumption and investment might shift to female members. Women might become more involved in making decisions on labor market participation as well. Besides continuing to care for children and engaging in household chores, women in Nepal often take up men's roles in family farming and enterprises when male members are abroad (Nandini, 1999). Similarly, women play key roles in deciding the use of remittances and running bazaar economics when husbands are away (Brown and Conneil, 1993). The male-dominated international migration in Nepal may affect non-migrant male and female members in the household differently.

3 Theoretical Framework

This paper uses a discrete occupational choice model (Killingsworth and Heckman, 1986; Moffitt, 1999; Blundell and MaCurdy, 1999). Consider a unitary household as in Rosenzweig (1980) and Killingsworth and Heckman (1986) with n members that faces a monotonic, twice-continuously differentiable and quasiconcave preference utility function as in (1).

$$U = U(\mathbf{C}, L_1, ..., L_n, \mathbf{X}) \tag{1}$$

where L_i is a leisure time of family member i, and $\mathbf{C}$ is the household consumption of both market goods and home production. $\mathbf{X}$ is the vector of community level, household and members characteristics such as community labor market conditions, household size, education level. Assume home production technology is represented by a continuous, twice-differentiable and strictly concave function as in (2) which uses only household members' time as input.[7]

$$Q = Q(h_1, ..., h_n) \tag{2}$$

where h_i is time of member i used in the household production. Then the full income budget constraint (FIBC) of the household is given by (3).

$$T \sum_{i=1}^{n} w_i + Q(h_1, ..., h_n) - \sum_{i=1}^{n} w_i h_i + R \geq \sum_{i=1}^{n} w_i L_i + C \tag{3}$$

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[7]Households can hire outside labor and use other inputs for their household productions. Here, I assume outside hiring is too expensive and not an option. Even when households are allowed to hire outside labor and use other inputs, under competitive markets, the comparative statics are the same as discussed in my model (see Rosenzweig, 1980).

where T is the total time available for each member of the household, w_i is the market wage of member i and R is unearned "exogenous" household income (wealth). Assume price of C equal to one. Replacing $T = H_i + L_i + h_i$ (3) reduces to (4); where H_i is the hours spent in wage-employment work by member i of the household.

$$\sum_{i=1}^{n} w_i H_i + Q(h_1, ..., h_n) - C \geq 0 \tag{4}$$

Following are the first order conditions of a maximum of (1) subject to (4).

$$U_C - \lambda = 0 \tag{5}$$

$$U_{H_i} - \lambda w_i \geq 0 \tag{6}$$

$$U_{h_i} - \lambda Q_{h_i} \geq 0 \tag{7}$$

$$\sum_{i=1}^{n} w_i H_i + Q(h_1, ..., h_n) - C = 0 \tag{8}$$

where λ is a marginal utility of income to the family, U_C is a partial derivative of U with respect to C, U_{H_i} with respect to H_i, U_{h_i} with respect to h_i, and Q_{h_i} is with respect to h_i. Labor supply can be derived using Roy's Identity. Assuming that member's market wages are exogenous to members' labor supply and with the structure on the direct (hence indirect) utility function the resulting labor supply for the above maximization problem has the following form Lokshin and Glinskaya (2009).

$$H_i = H_i(w_i, R, X) \tag{9}$$

First order conditions (6) and (7) allows for both corner (extensive margin) and interior solutions (intensive margin). At the corner solution for equation (6), member i of the household allocates her time between leisure and home production. At the interior solution, she allocates her time between wage work, home production, and leisure. Similar conclusions can be deduced for corner and interior solutions for equation (7).

From the comparative statics, increase in unearned income, R, increases leisure time and home production time of i considering non-wage labor time of i as a "normal" good.

The cross-substitution effects are ambiguous in sign. They depend on whether the leisure (home production) time of one household member is a substitute or complement to that of another member (Killingsworth and Heckman, 1986). Under the above assumptions, if the inputs of migrating and non-migrating members for household production are complements, migration decreases non-migrating members productivity in home production, which results in ambiguous net effect of migration on wage-employment. Whereas, if the inputs are substitutes, home production becomes more valuable which in turn, reduces non-migrating members wage-employment (Lokshin and Glinskaya, 2009). Since large share of household production in Nepal is from subsistence farming the latter is the likely scenario.

4 Data and Descriptive Analysis

For this study I use the 2010-2011 round of Nepal Living Standard Survey (NLSS III) as the primary data source. It is a nationally representative survey of households and communities that is conducted by the Central Bureau of Statistics (CBS) Nepal, with assistance from the World Bank. It was administered between February 2010 and February 2011. It has a panel component of 1,128 households. Half of the households were followed from the first round and the other half from the second round. Unfortunately, I do not observe enough migrant sending households in this sample to base the analysis on. The cross-sectional sample has 5,988 households, which was selected in three stages.[8] It collected detailed information on multiple topics related to household welfare. The survey provides rich information on household consumption, sociodemographic composition of households, health and education attainment of the members, labor market outcomes of the household members, and the source of a wide range of household incomes. It contains detailed information on time-allocation for wage-employment and household production of every household members. Households were also asked to provide information on remittances received by the households in the previous 12 months and identified the age, gender, educational attainment, and the destination country of the remittance sender.

The study uses 7,108 households that have complete information on the variables used in the analysis. 33.1% (2,212) of the households in the sample reported having at least a member abroad in 2010-11. Characteristics of migrants are reported in table (A.1). Migrants

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[8]For detailed description of the sample design and the methodology, see http://cbs.gov.np/

tend to be young (mean age of 28), dominated by males (84.4%) and mostly composed of the daughters/sons of the household head. They tend to have achieved some grade level of education, 53.7% have completed 1 to 10 grade while 20.3% have completed grade 10 (School Leaving Certificate) and intermediate level (high school). India and the Middle East seem to be the favored destinations for most of the migrants, 44.4% and 24.7% respectively. Although, remittances coming from abroad tend to be relatively large, there are very little difference in total and non-wage household incomes (Figure 2); households with migrant have a slightly higher total and non-wage incomes.

A total of 16,879 working age adults (ages 18-60) are used for the analysis. 4,985 boys and 5,195 girls (both ages 6-17) are added in the sample for the analysis of time alloca-tion in household activities. Adults from households with and without migrants differ on demographics, household composition, their labor market outcomes, and communities they reside in. Table 1 reports the descriptive statistics of the 16,879 adults used in the analysis. Adults from migrating families, both male and female, are less likely to be employed in wage-employment but are more likely to be involved in self-employment activities compared to the adults from non-migrating families. Consistent with the theory, (for bottom 70% of the houseeholds) adults decrease wage-employment with household non-wage income (Figure 3). Migration seems to have a disincentive effect on wage-employment; adults from migrating families are less likely to have wage-work over all of non-wage household income distribution.[9]

Adults from migrating families are older by a year and have achieved a year less education than those in households with no migrants. When comparing only female members, females from families with a migrant are more likely to be married and head the household when compared to females from families with no migrants. This is the opposite when comparing male members. Adults from families with at least one member abroad have larger household sizes and are more likely to come from a family with a female head. Most of the agriculture in Nepal is subsistence farming, so households own small amounts of land. Migrating families tend to own more land compared to non-migrating families. At the community level, migrant-sending families live areas with sightly lower unemployment rates, literacy rates, and higher poverty rates.

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[9]These results are suggestive, they do not not account for the fact that the adult most likely to be the wage earner in the family might be more likely to migrate, leaving adults that are intrinsically less likely to have wage employment behind.

5 Empirical Specification and Identification Strategy

The goal of the analysis is to evaluate the impact of migration on the labor market outcomes of the left-behind household members. The simplest strategy is to estimate the following equation.

$$y_{ij} = \beta_0 + \beta_1 M_j + \boldsymbol{X'_{ij}}\boldsymbol{\beta_2} + \epsilon_{ij} \tag{10}$$

where $y_{i,j}$ is a outcome variable of individual i in household j. It is either employment status, or total hours spent in paid work, household production or other household activities. $\boldsymbol{X_{ij}}$ is a vector of controls - individual and household characteristics that influence individual i's productivity and local labor market conditions. M_j is an endogenous binary variable that takes the value of 1 if household j has at least one migrant - 0 otherwise, and ϵ_{ij} is the unobserved error term.

5.1 Identification

The decisions to migrate and work are selective processes which depend on observed and unobserved household and individual characteristics such as asset level, taste for work, human capital level, opportunities at home and abroad etc. Cross-sectional analysis of migration's effect on labor supply cannot identify a causal relationship because of the endogeneity of migration and household labor supply. Unobserved household and individual characteristics that influence labor supply are likely to influence the decision to migrate as well. Similarly, households may endogenize labor supply decisions and hence, earned income while making migration decisions. Thus, estimated effects of migration on labor supply will be biased using the OLS strategy. To address the potential endogeneity bias, this paper exploits a very popular instrument in the literature: the local historical migrant network serves as an instrumental variable (IV) for the current migration decision. Specifically, using the 2001 Nepal Census I compute the percentage of international migrants from a Village Development Committee (VDC)[10] as an instrument for migration in 2010-2011 as in (12). Following is

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[10]Village Development Committee (VDC) is the lowest level of administrative unit. Similar to a municipality, it is responsible for the proper use and distribution of state funds and local level service delivery. Depending on the size, it may represent a single community or multiple communities. It is divided into 9 subdivisions called wards and currently there are 3,276 VDCs in Nepal.

the equation for migration decisions.

$$M_{ijc} = \alpha_0 + \boldsymbol{X'_{ijc}}\boldsymbol{\alpha_1} + \alpha_2 Z_{ijc} + \nu_{ijc} \tag{11}$$

where $M_{i,j}$ is an identifier that individual i lives in household j with or without a migrant, $\boldsymbol{X_{ijc}}$ is a vector of controls as defined in equation (10). Z_{ijc}, defined in (12), is an exogenous instrumental variable that must satisfy as good as randomly assigned, the first stage, and the exclusion criteria conditions. The 2001 migration decisions are likely to be random to the 2011 labor supply and migration decisions as migrants from a community in 2001 would not have anticipated the community's labor market conditions in 2011, which satisfies as good as randomly assigned condition. However, migration networks provide information about the economic opportunities at the destination, potential costs, and might reveal migrations' impact on their family's wellbeings to the community, which might influence other community members' migration decisions (first stage). Similarly, as long as a decade lagged unobserved community characteristics do not influence individual's labor supply in 2011, the 2001 community level migration shares are unlikely to feature in the 2011 labor supply equations. Hence, the instrument is likely to affect the outcome only through the endogenous variable, satisfying the exclusion criteria condition. Following is the instrument.

$$IV_1 = \frac{MIG_{2001,c}}{POP_{2001,c}} \tag{12}$$

where $MIG_{2001,c}$ is the total number of people living abroad in 2001 from a VDC c and $POP_{2001,c}$ is the population of the VDC c in 2001. It is important to note that the IV estimates are likely to be greater than the OLS estimates as the instrumental variable approach identifies the causal impact of treatment on outcome only on the compliers; that is, IV can recover only the local treatment effect (LATE) (Angrist, 1991).[11]

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[11] OLS assumes treatment to have homogeneous effect. It estimates an average slope, which, in reality, might not be true as there are likely to be heterogeneous responses to the treatment. Let y be a potential outcome, d be a potential treatment and z be an instrument, then under the assumptions of independence, exclusion and monotonicity IV is a LATE. Independence assumption states that difference in outcome (y) and difference in treatment (d) between $z_i = 0$ and $z_i = 1$ should capture the causal effect of the instrument on outcome and treatment. This is satisfied when as good as randomly assigned condition in IV is fulfilled. The exclusion assumption, $y(d_i, z_i = 0) = y(d_i, z_i = 1)$ for $d_i = 0, 1$, is same as the exclusion criteria condition in IV. Whereas, the monotonicity assumption states that the instrument, if it has any effect, should affect everyone in the same direction i.e. $d_{1i} \geq d_{0i}$ or $d_{1i} \leq d_{0i}$. Given these assumptions, $IV = LATE = \frac{E(y_i|z_i=1)-E(y_i|z_i=0)}{E(d_i|z_i=1)-E(d_i|z_i=0)} = E(y_{1i} - y_{0i} \mid d_{1i} > d_{0i})$. Notice that the denominator is just the shares of compliers i.e. the percentage of the sample that participate in the treatment only because of the instrument. So, when there is treatment effect heterogeneity, IV estimates the casual effect of treatment on outcome only among compliers. In our case, compliers are those who decide to migrate due to the higher share of migrants in the community in the past. Since all three assumptions are likely to be satisfied, the estimated IVs in the paper are LATEs. Contrarily , under the homogeneity assumption or the perfect compliance, the denominator would be 1 and hence, LATE = IV = ITT (intention to treatment effect), which is what OLS assumes. Since share of compliance is always less than or equal to 1,

The historical migrant networks are extensively used in the literature to estimate current levels of migration. Migrant networks, which are ties between migrants, former migrants, and non-migrants at the origin through bonds of kinship, friendship, and shared community origins, might be the most important mechanism for international migration (Massey, 1988). Sociologists and anthropologists have been studying the role of networks on migration for a long-time (Tilly and Brown, 1967; Mitchell, 1969; Choldin, 1973; Hugo, 1981) and economists have also found that networks play an important role in migration decisions (Hägerstrand, 1957; Greenwood, 1969; McKenzie and Rapoport, 2007; Woodruff and Zenteno, 2007; Foged and Peri, 2013). This is because migrant networks reduce the potential hazards at both the destination and the origin and decrease the cost of relocation (Massey, 1988; McKenzie and Rapoport, 2007).

Historically inernational migration networks are region specific in Nepal. For example, most of the people joining Indian and British armies in the 1930's (and up to the present day) were Gorkhas from the Pokhara region when the recruitment started. Similarly, people from the southern plains migrated after the beginning of the extensive cultivation of tea in northern India (Seddon et al., 2001). People from Far-Western villages in Nepal tend to migrate to a same destination in India as their co-villagers (Thieme, 2006). Figure (A.3) shows the top ten origin districts for labor-employment migration at present. These top districts, which are located mostly in South-Eastern Terai, account for 36.5% of the total labor-related migration from Nepal between 2008 and 2014.

In order to investigate the role of past community level migration on current levels of migration in the community, I calculate the shares of migrants in 2001 and 2011 to a particular destination country from a VDC using the 2001 and 2011 Nepal Censuses. Then, for each destination country, I regress the share of migrants to the destination from a VDC in 2011 on the share of migrants from the same VDC to the same destination in 2001.[12] Estimated correlations for the top four destination countries are presented in Figure (4). There is a strong correlation between historical and current level migration shares. Coefficients are either closer to 1 or greater than 1 and are highly significant.[13] Additionally, I

the LATE is always greater than the ITT.

[12] For detailed calculations of shares of migrants and regression equations see the notes of the figures and tables.

[13] These results hold for other destination countries as well.

regress the number of migrants from a VDC to a particular destination country in 2011 on shares of migrants from the VDC that went to the same destination in 2001. Estimations are presented in Table (2). Again, the 2011 migration levels are highly correlated with the 2001 destination specific propensity scores to migrate.

A potential complication with the instrument is that, although lagged by a decade, lagged unobserved VDC characteristics can influence labor supply decisions. Historically, migrant sending communities might be systematically different to those less migrant sending communities on economic and labor market characteristics. High historical migration might be linked to bad economic conditions at the origin or remittances might have improved the local economic conditions over time. Depending on these conditions, IV estimates might be biased downward or upward. To address this problem, I control for a host of community level economic characteristics such as poverty rate, illiteracy rate, unemployment, and inequality within a VDC.[14] Even so, I cannot claim with certainty that the instrument captures no unobserved VDC characteristics that triggered the past migration and influenced the present labor supply. However, the identification is at least as valid as those used in previous studies. Furthermore, I create an additional instrument, average GDP growth between 2001 and 2011 of the top 8 destination countries in 2011 and interact it with the share of migrants to those destinations from a VDC in 2001 as in (13).

$$IV_2 = \frac{\sum\limits_{i=1}^{8} MIG_{2001,i,c}}{POP_{2001,c}} X \text{ GDP Growth}_{01-11} \tag{13}$$

where $MIG_{2001,i,c}$ is international migrants in 2001 from a VDC c to destination i and $POP_{2001,c}$ is the population of a VDC c in 2001. The top eight destination countries in 2011 are India, Malaysia, Saudi Arabia, Qatar, Kuwait, the UAE, the UK, and the USA. GDP Growth$_{01-11}$ is the average GDP growth of the top 8 countries between 2001 and 2011. Since the GDP growth of the destination countries is exogenous to the local labor market conditions the interacted term is likely to be exogenous as well. I report results from both IV_1 and IV_2 in the main specification. Despite the binary endogenous variable, I use the linear 2SLS estimation strategy as suggested by Angrist and Pischke (2009). Because of the binary endogenous variable, the conditional expectation function (CEF) associated with the

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[14]It is more appropriate to control the community level characteristics at the baseline, but due to the data limitation I use the 2011 community conditions as the controls.

first-stage might be nonlinear. One can use a nonlinear first-stage and use the predicted probabilities as an instrument in a garden-variety 2SLS as suggested by Angrist and Pischke (2009) and Wooldridge (2010) to avoid ''forbidden regression'' in the second step. However, this requires making distributional assumption of the first-stage CEF. In contrast, with the linear 2SLS, one need not worry whether the first-stage is linear (Angrist and Pischke, 2009).[15]

6   Results

A linear estimation of equation (11) using IV_1 (equation 12), and IV_2 (equation 13), are presented in Table (A.2) columns (1) and (2) respectively.[15] Coefficients on both the instruments are highly correlated with the household's migration decisions. Adults in VDCs with higher proportions of migrants in 2001 were more likely to live in a household with at least one international migrant in 2011. Interestingly, there is a positive relationship between local unemployment rate and illiteracy rate. The negative correlation between the migrant outflows and the local market conditions results in downward biased OLS estimates of the impact on the labor market outcomes (Foged and Peri, 2013).

The OLS estimates of specification (10) are presented in columns (3) and (4), the 2SLS using IV_1 are presented in columns (5) and (6) and IV_2 are presented in columns (7) and (8) of table (A.2). The dependent variables are weekly hours supplied for wage-employment and self-employment. I use all the adults, both employed and non-employed in wage and self-employment. Since 0 hours are observed for non-employees, there is no problem of sample selection. The estimated effects are a combination of intensive and extensive margins. Columns (3), (5) and (7) are estimated wage labor supply equations while (4), (6) and (8) are self-employment labor supply equations.

Overall, the estimates of β_2s, coefficients on X's in equation (10), are comparable across the estimation strategies. $\hat{\beta}_2$'s direction corresponds well with the economic intuitions. Individual characteristics, age, and household head status strongly determine the level of labor supply for both the wage and self-employment. It is not surprising that women, in Nepal,

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[15]With a linear estimation, one would be worried about predicted probabilities from the first-stage not being within 0 and 1. I performed the check and all the predicted values in the estimated models are within the range.

are less likely to work outside their homes, and the supply of wage-hours increases with years of schooling. Similarly, household characteristics, and land ownership decrease wage-hours and increases time spent in self-employment. Owning a home and being from a higher social caste, Brahman/Chhetri, discourage adults from working.

The coefficient of interest, $\hat{\beta}_1$, which is the coefficient on migration decision in equation (10) is statistically significant across all the econometric techniques used for time spent in wage employment. While comparable with each other, IV estimates are significantly greater in magnitude than the OLS estimate. As discussed earlier, OLS suffers from selection bias and the negative correlation between the local market conditions and the migration flows is likely to bias the effects downward. Furthermore, the 2SLS can recover the impact only on the compliers i.e. local average treatment effect (LATE), which is always less than the intention to treat effect (ITT).[11] Both the instruments are reasonably strong, with a high correlation between the endogenous variable and the instruments. F-statistics of the first stage are always above 60, which are greater than the threshold value of 10 researchers usually consider below which one might run into the problem of weak instrument (Stock and Yogo, 2005).

Results from the IV regressions suggest that having a migrant in the household discourage the left-behind members from working in wage-employment. Adults from migrant-families decrease their weekly hours of labor supply for wage-employment by about 8 hours when compare to the adults from the non-migrant households. This is a decrease of almost one official work day. The direction of the effect is consistent with the prediction of the theoretical model. The income transfers through remittances increase the reservation wages and since most of the home production is subsistence farming, members' time-inputs are likely to be substitutes, both of which reduce non-migrating household members' hours of work in market employment. Contrary to the prediction of the theoretical model, migration has a negative effect on self-employment. However, both the IV results are small in magnitude and statistically not different from 0. As discussed earlier, these IV results are combinations of intensive and extensive margins. Separating these effects provides better insight into the economic behavior of the left-behind members and may assist better in policy design.

I apply the following strategy to separate out these effects. I use a binary employment

status, 1 for employed - 0 otherwise, as the dependent variable instead of hours supplied to estimate the impact on extensive margins. To examine the impact on intensive margins, I analyze the hours supplied for a particular employment by limiting the sample to those who are engaged in that employment. That is, depending on the left-hand side outcome variable, the analyzed sample is conditioned on being employed in that particular sector.

Tables (3) and (4) reports 2SLS estimates of the impact of migration on wage employment and self employment outcomes, respectively, by sex using IV_1 as the instrument. Panel A of the tables shows the impacts on extensive margins while panel B shows the effects on intensive margins. Again, the instrument is reasonably strong with all F-statistics from the first stage above the threshold value of 10 except for the hours supplied for non-agricultural wage employment, which is at 7.1. Both male and female adults from the migrant sending families have smaller involvement in wage-employment, both on extensive and intensive margins when compared to adults from families without migrants. Meanwhile, migration has greater negative effect on left-behind men's propensity to participate in market employment than women's, 31.1% vs 20.5%, (Table 3, Panel A). However, among working adults, left-behind women supply fewer hours in wage-employment than the left-behind men (Table 3, Panel B), which could be a result of Nepali women, if employed outside their homes, having mostly part-time jobs. At the same time, having migrants in the family affects left-behind women's self-employment decisions on both extensive and intensive margins, but not men's. Compared to women from households without migrants, women in households with migrants are 28.0% more likely to be engaged in self-employment, mostly working in their own farms. However, among those employed, women decrease weekly hours worked by 13 hours (Table 4). Overall, migration has negative effect on all the left-behind household adults' involvement in wage-employment but it is only women who increase their involvement in self-employment. In a country with traditional household norms and social culture, where women tend to be subordinate to men, it is not surprising that only women redistribute their time allocation in response to sending some family members abroad.

Table (5) presents the 2SLS estimates of the impacts of migration on the time spent in household production and other activities by the left-behind adults and children using IV_1 as the instrument.[16] Sending some members abroad has 0 effect on time allocation in household

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[16]Fetching water, collecting firewood and dung, taking care of animals, making mats, knitting, weaving, tailoring and

activities of left-behind male adults and boys. Women and girls, on the contrary, significantly decreased their weekly hours, 7.8% and 4.1% respectively, in less productive activities and increase their weekly hours in more productive activities more than proportionally, 8.2% and 5.5% respectively.

When a household sends some of its members aboard, there are several pathways through which non-migrating member's labor supply is affected. First, the income transfers through remittances increase the valuation of leisure of left-behind members making leisure more appealing. Second, because of the decrease in the household's stock of labor hours, left-behind members might overburden themselves by adding the role vacated by the migrants onto their own workload. Third, households might realign their priorities and redistribute the remaining stock of labor time once they send members abroad. In order to distinguish the later two pathways, I add weekly hours supplied by the left-behind household members across all activities. The results are presented in table (A.3). The second scenario is true neither for the left-behind women nor men. As a matter of fact, non-migrating male members increase their weekly leisure consumption by 18 hours by cutting their involvement in all forms of employment (wage + self-employment). This fits well with the first scenario rather than the later two. To isolate the first path, of impacts through income transfers, one has to model migrants' decision to send back remittances, which requires a new identification strategy and potentially a new instrument. Due to limitations in the data, I believe the analysis is beyond this papers' scope. Meanwhile, the aggregate effect is statistically 0 for the left-behind women members, which corresponds well with the third scenario. In Nepal, while left-behind males increase their leisure consumption in response to sending members abroad, women realign their priorities and assume the roles in home production and self-employment - roles likely to have been vacated by the migrants.

The differential impacts between the left-behind male and female members are most likely to be a result of differential bargaining power male and female members have within a household. Bargaining heterogeneity, however, is not limited to gender differences. Even within a gender group, members might have different levels of bargaining, creating heterogeneous

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processing preserved food are classified as household production activities. Whereas, minor house repair, cooking food, cleaning, laundry, dishes, babysitting, and taking care of the elderly are categorized as other household activities. They are classified as such because the CBS takes into account only the time spent on former activities while calculating unemployment. Male and females are ages between 18 and 60 while boys and girls are ages between 6 to 17.

responses to migration within the group. Among female members, older females and household heads are likely to have a higher level of bargaining than other female members in the family. Table (A.4) presents 2SLS results of the impact of migration on total labor supply by women's age (Panel A) and women's household head status (Panel B). Consistent with the hypothesis, older women from migrant-household supply substantially less overall labor hours (16) mostly by reducing their hours in wage and self employment (13). In contrary, migration has no effect on younger women. At the same time, when a household sends its members abroad, it negatively affects overall labor supply of women who are head of the household but has no effect on other female members's labor supply (Table A.4, Panel B). It is plausible that depending on each member's bargaining power within a household, the decision to send members aboard have differential impacts on each left-behind member' labor supply decision.

6.1 Heterogeneous Effects

As with the sex of the left-behind members, household's migration decisions are likely to affect different groups within the household differently. I divide the sample by skill level, age, and the household head status to analyze the potential treatment effect heterogeneity. Table (6) presents the 2SLS estimates by skill level. Adults with school leaving certificate (SLC) or more are defined as high skilled.[17] It is only the low skilled left-behind members that are affected by the migration. There is statistically zero effect on labor supply of high skilled adults. While less likely to participate in market jobs, low skilled adults are more likely to be involved in self employment activities. At the same time, low skilled adults, if employed, supply less weekly hours for both wage-employment and self-employment. The differential impact by skill level is reasonable as high skilled workers are likely to be already involved in more formal and permanent jobs that have higher opportunity costs of switching.

Tables (7), and (8) present the effect of migration on labor supply from the 2SLS estimation using IV_1 as an instrument by age and household head status respectively. Adults with ages between 18 to 40 are defined as young adults. Irrespective of age, migration affect the left-behind members similarly, both younger and older adults decrease their participation in

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[17]All the students whether in private or public schools that follow Nepali education system, have to take the school leaving certificate (SLC) exam at the end of tenth grade. All schools in the country follow the system with very few exceptions, which follow the Indian or American system. It is mandatory that students pass the exam to continue their studies further within the country and qualify for most of the government and private jobs.

wage employment while increase participation in self-employment. Likewise, both type of adults have similar responses in their intensive margins - lower weekly labor supply (Table 7).

Although outmigration of some family members has similar effect on the intensive margins for wage-work and own work, there is a significantly different effect on the participation rate by household head status. The left-behind household heads are 41.4% less likely to participate in paid work compared to 23.1% of the other household members. Concurrently, outmigration of family members does not affect the household head's decision to participate in self-employment activities but significantly increases other members' involvement, 29.8% (Table 8). This corresponds well with the intuition that the household heads are likely to have higher bargaining power within the household and are likely to receive remittances sent by the migrants, which in turn, may further increase their bargaining power.

7   Discussion and Conclusions

In this paper I use a unique source of nationally representative data during the period that Nepal experienced a boom in outmigration. The data set contains detailed information on time allocation of every individual in the household, which allows me to extend the analysis further and answer the question that previous studies on the topic could not answer in Nepal. Using the NLSS III data set, this paper explores the impact of migration on labor supply of the left-behind household members both on extensive and intensive margins for wage-employment, self-employment, and household activities. The paper also provides an answer to the question, what are the remaining members in the households engage in instead of work employment?

Consistent with the predictions from the theoretical labor supply model, the paper finds having an international migrant in the family discouraged the left-behind members from participating in wage-employment. This is true for both male and female members. However, female members increase their participation in self-employment, almost entirely through subsistence farming. The paper also finds that both self-employed and wage-employed adults decrease their weekly hours of labor supply when some household members migrate. Similarly, only girls (Aged 6 to 17) and female adult members in the migrant-sending household decrease their time allocation in less productive household activities but increase their time

in more productive household activities more than proportionally. These findings suggest that male-dominated migration either increases women's workload, potentially overburdening them, or forces them to realign their priorities and switch to the roles that are vacated by the migrants. Looking at the aggregate labor supply (wage work + self-employment + household activities) the paper finds 0 effect of migration on women's labor supply while finds significantly negative effect on men's. Thus it can be inferred that, in response to out-migration of some family members, women realign their priorities and reallocate their time. In contrast, because of the income transfers, men now value their leisure more and decrease their overall labor supply. These are reasonable findings in a country where the traditional household norms and social culture see women as subordinate to men.

The question of the impact of outmigration on the well-being of the left-behind members is of importance for Nepal, which already has high levels of outmigration and the trend for outmigration is on the rise. Neoclassical micro theory identifies wage and employment opportunity differentials between the place of origin and the place of destination as the main cause of migration. Therefore, women switching from the formal labor market to self-employment should speed-up the process of equalization of wages and opportunities between the two places (Lokshin and Glinskaya, 2009). However, with the opening of new destinations, economic incentives abroad, and increasingly simpler migration processes, outmigration from Nepal will not decline anytime soon. International migration for labor-employment from Nepal, however, is risky.[18] Many Nepali emigrant laborers find themselves working in hazardous conditions, work long hours, face delays in getting paid, and some even lose their lives (Kaphle, 2014). It is imperative that Nepal put in place a broad set of policies that protect the welfare of migrants, many of which are breadwinners in their families, and safeguard the wellbeing of the left-behind members.[19]

The results presented in the paper may play an important role in designing some of these policies, especially in protecting the wellbeing of the remaining household members. They highlight the need for tailored policy initiatives that target specific subpopulations. Male-

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[18]International migration from Nepal, especially for labor, is costly and required an extensive planning ahead. It requires obtaining passport and visa, purchasing ticket and saving up or borrowing for the associated costs. Similarly, most of the international work-related migration involves migration brokers who charge high fees for their services and there are contractual agreements in place between migrants and hiring agency ahead of migration and reversing the decision once made can be very costly (Bhattarai, 2005).

[19]See McKenzie and Yang (2015) for reviews of different policies about migrations.

dominated outmigration pushes left-behind women to withdraw from wage-employment and increase the labor supply in their own farms. Policy initiatives should be focused on improving the rural wage labor markets, which would allow households to hire workers to replace those who migrate. Additionally, these policies may help in insuring households against the negative migrant-related shocks if they can encourage the left-behind members to remain in the formal wage-employment, which may have higher returns than self-employment.

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8 Tables and Figures

Figure 1: International Migration Trend from Nepal
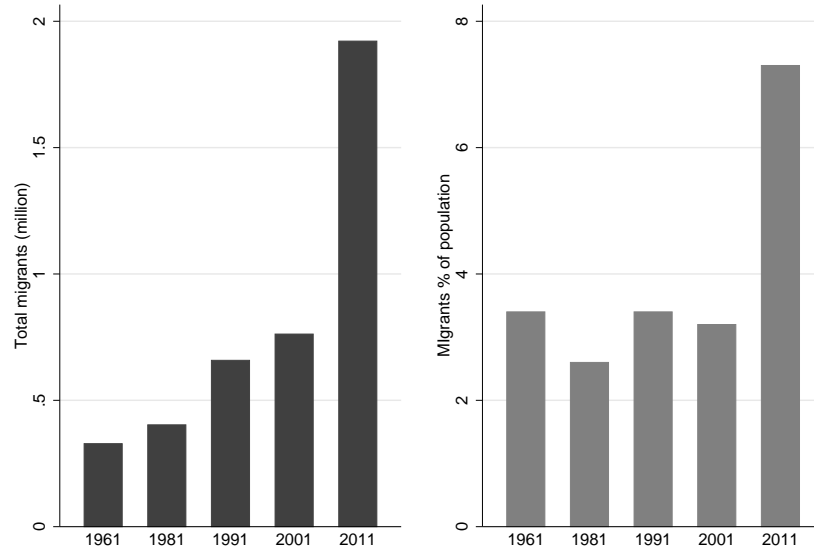
Source: Department of Foreign Employment Nepal

Figure 2: Household Income- Kernel Density
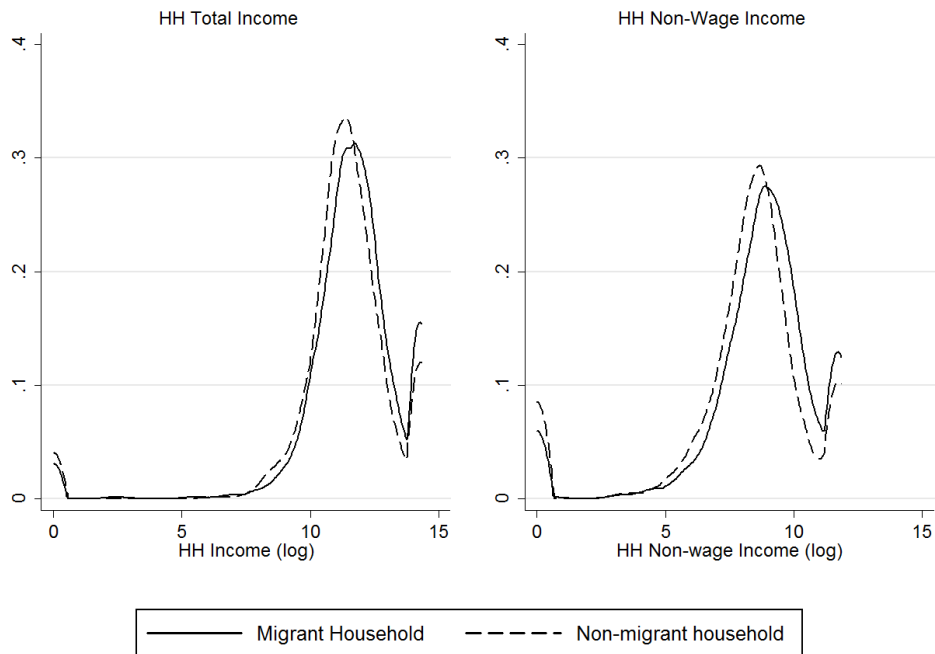
Figure 3: Rate of Labor Market Participation - All Adults
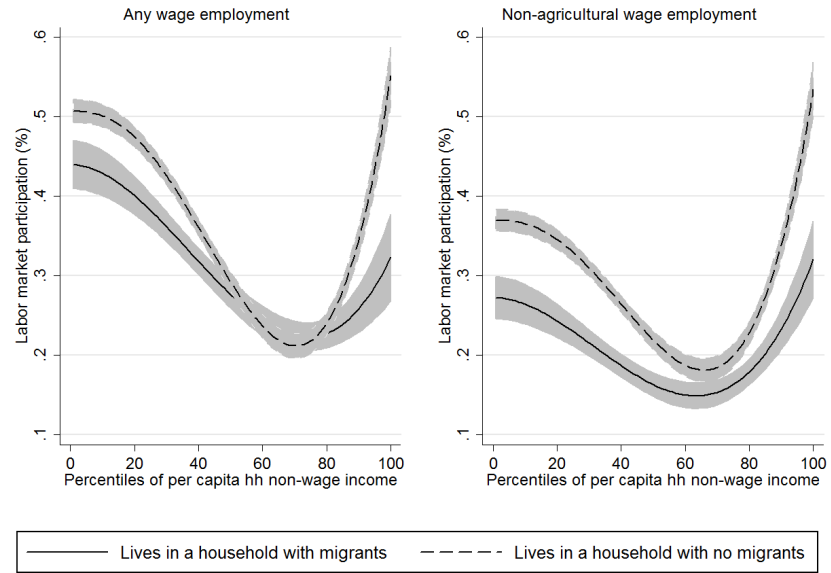
Note: Sample is limited to working-age (18 to 60) population. Figures are created using fractional polynomial regression. Non-wage income is monthly per-capita.

Figure 4: Correlation Between 2001 and 2011 Proportions of Migrants by Major Destination Countries.
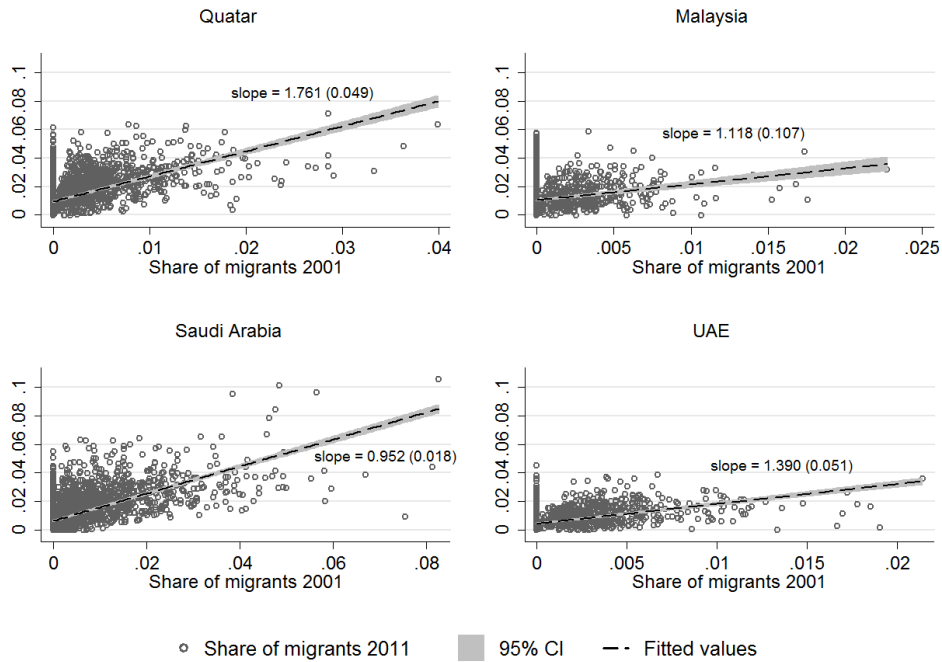
Data Source: 2001 and 2011 Nepal Census.
Note: Linear fit is $Y_{j,d,11} = \alpha_0 + \alpha_1 Y_{j,d,01}$, where $Y_{j,d,11}$, and $Y_{j,d,01}$ are share of migrants to destination d from VDC j in 2011 and 2001 respectively. Share of migrants is calculated as $Y_{j,d,t} = \frac{M_{j,d,t}}{POP_{j,t}}$, where $M_{j,d,t}$ is number of migrants from VDC j to destination d in year t. $POP_{j,t}$ is the population of VDC j in year t.

Table 1: Descriptive Statistics

	All Adults		Female		Male	
	Nonmigrant (Mean)	Migrant-Nonmigrant (Difference)	Nonmigrant (Mean)	Migrant-Nonmigrant (Difference)	Nonmigrant (Mean)	Migrant-Nonmigrant (Difference)
Wage employment	0.370	-0.079 ***	0.239	-0.021 **	0.517	-0.084 ***
Self employment	0.670	0.044 ***	0.644	0.055 ***	0.699	0.044 ***
Individual Characteristics						
Age	35.699	0.915 ***	35.046	0.454 *	36.436	2.337 ***
Years of education	5.303	-0.912 ***	4.025	-0.495 ***	6.744	-0.686 ***
Married	0.793	0.005	0.798	0.040 ***	0.786	-0.067 ***
Household head	0.340	0.010	0.113	0.154 ***	0.596	-0.085 ***
Household Characteristics						
Female household head	0.131	0.163 ***	0.170	0.201 ***	0.087	0.059 ***
Household size (AE)	5.217	0.251 ***	5.175	0.139 **	5.265	0.502 ***
Share of children 0-7	0.122	0.020 ***	0.125	0.028 ***	0.118	0.002
Share of children 8-15	0.186	-0.005	0.189	0.006	0.184	-0.028 ***
Share of female adult	0.310	0.048 ***	0.341	0.038 ***	0.274	0.041 ***
Share of male adult	0.286	-0.073 ***	0.243	-0.080 ***	0.334	-0.024 ***
Share of elderly	0.055	0.010 ***	0.060	0.008 ***	0.049	0.009 ***
Landless household	0.298	-0.092 ***	0.285	-0.083 ***	0.313	-0.099 ***
Own less than 1 acres	0.316	0.011	0.319	0.019 *	0.313	-0.008
Own 1-2 acres	0.184	0.024 ***	0.192	0.021 **	0.174	0.024 **
Own 2-5 acres	0.152	0.057 ***	0.154	0.047 ***	0.150	0.075 ***
Own 5 or more acres	0.049	0.000	0.049	-0.004	0.050	0.009
Own a house	0.854	0.072 ***	0.868	0.057 ***	0.839	0.091 ***
VDC and Region Characteristics						
Unemployment rate	0.083	-0.005 ***	0.082	-0.005 ***	0.084	-0.005 **
Illiteracy rate	0.395	0.039 ***	0.400	0.039 ***	0.389	0.036 ***
VDC inequality (Gini)	0.469	0.001	0.471	0.002	0.466	-0.002
District poverty rate	0.212	0.011 ***	0.215	0.011 ***	0.209	0.008 **
Rural	0.615	0.105 ***	0.629	0.101 ***	0.599	0.100 ***
Observations		16879		9597		7282

Note: Sample is working age (18 to 60) adults.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Migration Network: Dependent Variable - Number of Migrants in 2011 (1,000)

	All VDCs in Nepal		NLSS VDCs	
	(1)	(2)	(3)	(4)
Share of migrants 2001	3.758***	3.779***	6.606***	6.714***
	(0.101)	(0.101)	(0.676)	(0.678)
Constant	0.013***	0.001	0.037***	-0.005***
	(0.001)	(0.001)	(0.006)	(0.002)
District Fixed Effect		X		X
Observations	100880	100880	11648	11648
R^2	0.145	0.161	0.060	0.097

Data Source: 2001 and 2011 Nepal Census.

Note: Standard errors in parentheses.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are clustered at VDC level. Estimated model is $M_{j,d,11} = \beta_0 + \beta_1 Y_{j,d,01}$, where $M_{j,d,11}$ is number of migrants, in 1,000, to destination country d from a VDC j in 2011. $Y_{j,d,01}$ is share of migrants to destination d from a VDC j in 2001. Share of migrants is calculated as $Y_{i,d,t} = \frac{M_{j,d,t}}{POP_{j,t}}$, where $M_{j,d,t}$ is number of migrants from VDC j to destination d in year t. $POP_{j,t}$ is the population of VDC j in year t.

Table 3: 2SLS Estimation of Labor Supply by Gender- *Wage Employment*

	Female			Male		
	(1) Any Wage Employment	(2) Agricultural	(3) Non Agricultural	(4) Any Wage Employment	(5) Agricultural	(6) Non-Agricultural
Panel A: Labor market participation						
Household with migrant	-0.205*	-0.049	-0.221**	-0.311*	0.027	-0.371**
	(0.104)	(0.083)	(0.088)	(0.175)	(0.114)	(0.185)
Observations	9597	9597	9597	7282	7282	7282
Wald χ^2	1236.455	576.071	1744.580	941.219	476.251	858.504
F-test 1stage	70.938	70.938	70.938	41.195	41.195	41.195
Panel B: Hours supplied						
Household with migrant	-15.219**	7.292	-26.255*	-13.564*	2.955	-13.505*
	(6.826)	(6.134)	(13.613)	(7.066)	(4.996)	(7.730)
Observations	2222	1069	1264	3623	773	3189
Wald χ^2	2004.359	205.487	920.637	1538.916	314.929	1475.447
F-test 1stage	18.791	16.894	7.140	37.343	20.071	31.814
Controls						
Individual characteristics	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X
VDC characteristics	X	X	X	X	X	X
Region Fixed Effect	X	X	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Share of international migrants in a VDC in 2001 is used as an instrument for the estimations. Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, marital status, and household head identifier. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai.

Note2: Sample in Panel B is conditioned on being employed in that particular sector. Log of hourly wages is added as an extra individual control.

Table 4: 2SLS Estimation of Labor Supply by Sex- *Self Employment*

	Female			Male		
	(1) Any Self Employment	(2) Agricultural	(3) Non Agricultural	(4) Any Self Employment	(5) Agricultural	(6) Non-Agricultural
Panel A: Labor market participation						
Household with migrant	0.280***	0.308***	-0.098	0.141	0.205	-0.179
	(0.089)	(0.113)	(0.087)	(0.120)	(0.148)	(0.166)
Observations	9597	9597	9597	7282	7282	7282
Wald χ^2	8883.913	15715.418	703.258	7294.166	18469.293	841.418
F-test 1stage	70.938	70.938	70.938	41.195	41.195	41.195
Panel B: Hours supplied						
Household with migrant	-13.030***	-6.460*	-24.345	-10.252	-5.819	4.337
	(4.559)	(3.787)	(16.457)	(6.781)	(4.098)	(15.669)
Observations	6358	5550	1557	5160	4006	2109
Wald χ^2	525.033	434.614	504.186	2193.401	662.555	863.127
F-test 1stage	61.724	58.076	10.609	42.797	35.274	11.702
Controls						
Individual characteristics	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X
VDC characteristics	X	X	X	X	X	X
Region Fixed Effect	X	X	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Share of international migrants in a VDC in 2001 is used as an instrument for the estimations. Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, marital status, and household head identifier. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai.
Note2: Sample in Panel B is conditioned on being employed in that particular sector.

Table 5: 2SLS Estimation of Labor Supply for Household Activities

	Household production				Other household activities			
	(1) Adult-Male	(2) Adult-Female	(3) Boys	(4) Girls	(5) Adult-Male	(6) Adult-Female	(7) Boys	(8) Girls
Household with migrant	1.034	8.184**	2.006	5.541**	-2.409	-7.776**	0.366	-4.107*
	(4.456)	(3.810)	(2.326)	(2.354)	(2.361)	(3.218)	(0.970)	(2.151)
Observations	7282	9597	4985	5195	7282	9597	4985	5195
Wald χ^2	1805.517	3126.243	755.167	1678.898	1055.533	1854.033	583.091	1950.024
F-test 1stage	41.195	70.938	55.647	47.598	41.195	70.938	55.647	47.598
Coefficient 1stage	1.611***	1.913***	1.976***	1.815***	1.611***	1.913***	1.976***	1.815***
Controls								
Individual characteristics	X	X	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X	X	X
VDC characteristics	X	X	X	X	X	X	X	X
Region Fixed Effect	X	X	X	X	X	X	X	X

Note 1: Fetching water, collecting firewood and dung, taking care of animals, making mats, knitting, weaving, tailoring and processing preserved food are classified as household production activities. Whereas, minor house repair, cooking food, cleaning, laundry dishes, babysitting and taking care of elderly are categorized as other household activities.

Note 2: 2SLS estimates are reported in the table. Share of international migrants in a VDC in 2001 is used as an instrument for the estimations. Male and female samples are working age,18 to 60, adults while boys and girls samples are restricted to ages between 6 and 17. Standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Individual controls are age age^2, years of education, marital status, and household head identifier. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai. Coefficient 1stage is the estimated coefficient on the exogenous instrument in the first-stage.

Table 6: 2SLS Estimation of Labor Supply by Skill Level

	Wage Employment		Self Employment	
	(1) Low Skilled	(2) High Skilled	(3) Low Skilled	(4) High Skilled
Panel A: Labor market participation				
Household with migrant	-0.205**	-0.486	0.199***	0.324
	(0.098)	(0.305)	(0.069)	(0.346)
Observations	14054	2825	14054	2825
Wald χ^2	3577.578	997.890	3864.717	2175.469
F-test 1stage	68.765	8.179	68.765	8.179
Coefficient 1stage	1.925***	1.460***	1.925***	1.460***
Panel B: Hours supply				
Household with migrant	-15.028***	1.032	-13.064***	5.048
	(5.754)	(11.830)	(4.454)	(14.563)
Observations	4714	1131	10319	1199
Wald χ^2	2170.635	505.787	1130.111	1815.099
F-test 1stage	33.235	7.061	63.906	6.082
Coefficient 1stage	1.820***	1.665***	1.921***	1.503**
Controls				
Individual characteristics	X	X	X	X
Household characteristics	X	X	X	X
VDC characteristics	X	X	X	X
Region Fixed Effect	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Instrument used for 2SLS is share of international migrants in a VDC in 2001 (IV1). Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, gender, household head identifier, and marital status. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai. Coefficient 1stage is the estimated coefficient on the exogenous instrument in the first-stage.
Note 2: Sample in Panel B is conditioned on being employed in that particular sector. Log of hourly wage is added as an extra individual control for column (1) and (2).
Note 3: High skilled adults are defined as adults with 11 years or more of education.

Table 7: 2SLS Estimation of Labor Supply by Age

	Wage Employment		Self Employment	
	(1) Young Adults	(2) Old Adult	(3) Young Adults	(4) Old Adults
Panel A: Labor market participation				
Household with migrant	-0.292***	-0.260**	0.252**	0.236***
	(0.113)	(0.122)	(0.103)	(0.085)
Observations	10861	6018	10861	6018
Wald χ^2	2028.588	1552.717	15778.586	3651.974
F-test 1stage	58.207	50.061	58.207	50.061
Coefficient 1stage	1.836***	1.937***	1.836***	1.937***
Panel B: Hours supply				
Household with migrant	-13.546*	-13.516**	-8.632*	-14.457**
	(7.380)	(5.618)	(5.037)	(5.925)
Observations	3913	1932	6901	4617
Wald χ^2	2379.303	1482.415	2401.545	545.837
F-test 1stage	31.766	24.765	52.713	43.511
Coefficient 1stage	1.645***	2.078***	1.804***	1.957***
Controls				
Individual characteristics	X	X	X	X
Household characteristics	X	X	X	X
VDC characteristics	X	X	X	X
Region Fixed Effect	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Instrument used for 2SLS is share of international migrants in a VDC in 2001 (IV1). Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, gender, household head identifier, and marital status. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai. Coefficient 1stage is the estimated coefficient on the exogenous instrument in the first-stage.
Note 2: Sample in Panel B is conditioned on being employed in that particular sector. Log of hourly wage is added as an extra individual control for column (1) and (2).
Note 3: Young adults are ages between 18 and 40 while old adults are ages between 41 and 60.

Table 8: 2SLS Estimates of Labor Supply by Household Head Status

	Wage Employment		Self Employment	
	(1) Household Head	(2) Other Members	(3) Household Head	(4) Other Members

Panel A: Labor market participation

Household with migrant	-0.414***	-0.231**	0.125	0.298***
	(0.147)	(0.100)	(0.098)	(0.091)
Observations	5791	11088	5791	11088
Wald χ^2	906.861	1882.340	6353.722	8786.879
F-test 1stage	53.309	62.508	53.309	62.508
Coefficient 1stage	1.633***	2.030***	1.633***	2.030***

Panel B: Hours supply

Household with migrant	-17.642**	-11.559*	-11.369*	-10.493**
	(7.434)	(6.610)	(6.662)	(4.285)
Observations	2772	3073	4450	7068
Wald χ^2	2009.570	2551.071	943.402	1107.469
F-test 1stage	24.419	30.862	50.477	57.718
Coefficient 1stage	1.515***	2.032***	1.647***	2.036***

Controls				
Individual characteristics	X	X	X	X
Household characteristics	X	X	X	X
VDC characteristics	X	X	X	X
Region Fixed Effect	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Instrument used for 2SLS is share of international migrants in a VDC in 2001 (IV1). Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, gender, household head identifier, and marital status. Household controls are female HH head, share of male and female adults, share of elderly, share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, inequality (Gini), and urban/rural location. Regions are Kathmandu, other urban areas, Western hills, Eastern hills, Western Terai, and Eastern Terai. Coefficient 1stage is the estimated coefficient on the exogenous instrument in the first-stage.

Note 2: Sample in Panel B is conditioned on being employed in that particular sector. Log of hourly wage is added as an extra individual control for column (1) and (2).

A   Appendix

Figure A.1: Migration Trend for Labor-Employment to Top 5 Destination Countries
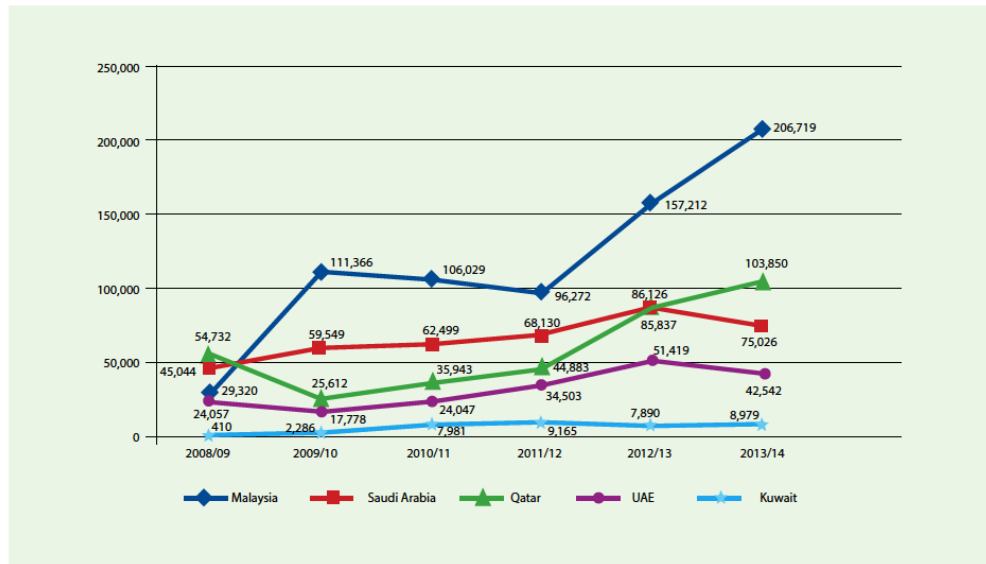
Note: Migrants for labor-employment to foreign countries are required to obtain labor permits from the Department of Foregin Emploment. Migrants can apply on their own or through a recruitment agency. Number reported in the figures are total labor permits issued to migrants who apply through the services of recruitment agencies.

Figure A.2: Migration Trend by gender of Migrants
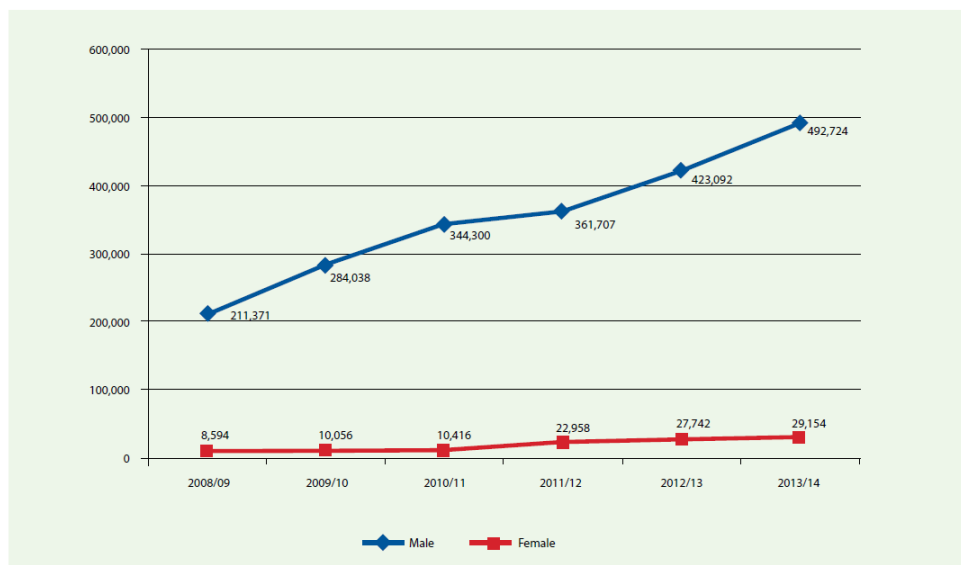
Note: Source is Department of Foreign Employment (2014). Migrants for labor-employment to foreign countries are required to obtain labor permits from the Department of Foregin Emploment. Migrants can apply on their own or through a recruitment agency. Number reported in the figures are total labor permits issued to migrants who apply through the services of recruitment agencies.

Figure A.3: Top-Ten Districts of Origin for Labor Employment Migration

Note:
Source is Department of Foreign Employment (2014). Migrants for labor-employment to foreign countries are required to obtain labor permits from the Department of Foregin Emploment. Migrants can apply on their own or through a recruitment agency. Number reported in the figures are total labor permits issued to migrants who apply th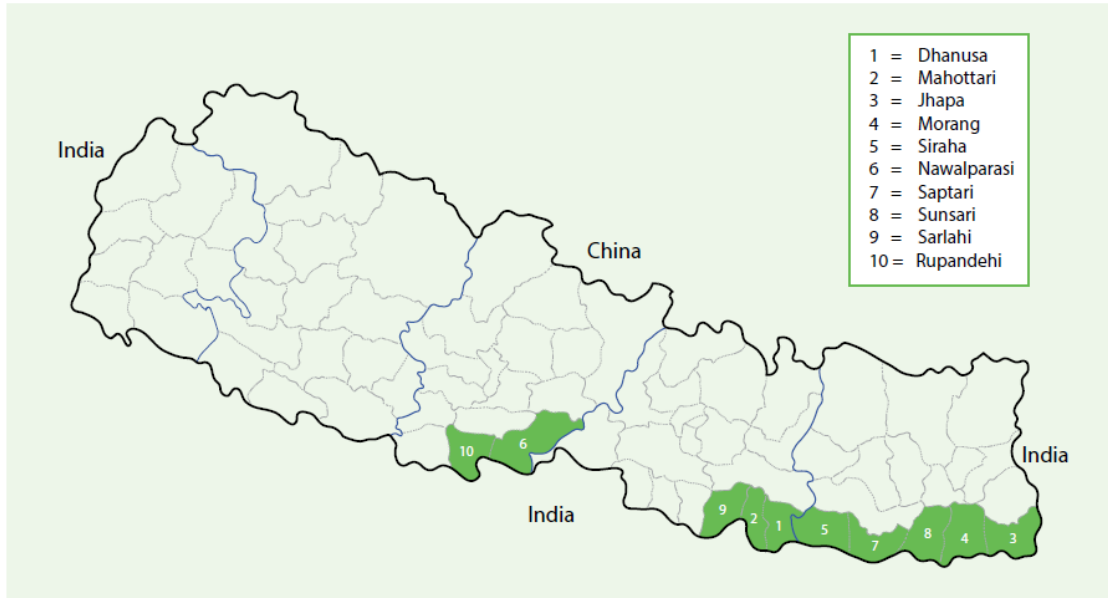rough the services of recruitment agencies. These top ten districts account for 36.5% of the all labor-permits issued between 2008 and 2014.

Table A.1: Characteristics of Migrants

	Mean	Standard Deviation
Age	28.109	11.370
Male	0.844	0.363
Relation to HH head (Son/Daughter)	0.546	0.498
Education level		
Illiterate	0.172	0.377
1 to 10 grade	0.537	0.499
SLC/Intermediate	0.205	0.404
College or more	0.086	0.280
Migration to		
India	0.440	0.496
Malaysia	0.095	0.294
Middle east	0.247	0.432
Households with migrant	2212 (31.1%)	
Total households in the sample	7108	

Table A.2: Migration and Labor Supply - Full Model

	Migration (First-Stage)		OLS		IV1		IV2	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Migrant network 2001 (IV1)	2.088***							
	(0.253)							
Migrant network 2001 * GDP growth (IV2)		1.042***						
		(0.132)						
Household with migrant			-1.604***	-0.833*	-8.106***	-0.542	-7.625***	-0.717
			(0.282)	(0.426)	(2.521)	(3.422)	(2.438)	(3.495)
Age	-0.0250***	-0.0250***	1.152***	1.279***	0.988***	1.286***	1.000***	1.282***
	(0.00240)	(0.00240)	(0.119)	(0.110)	(0.139)	(0.137)	(0.137)	(0.139)
Age squared	0.000335***	0.000334***	-0.0158***	-0.0148***	-0.0136***	-0.0149***	-0.0137***	-0.0148***
	(2.95e-05)	(2.95e-05)	(0.00159)	(0.00141)	(0.00182)	(0.00177)	(0.00180)	(0.00181)
Sex: Female	0.134***	0.134***	-9.444***	-4.697***	-8.536***	-4.737***	-8.603***	-4.713***
	(0.00809)	(0.00812)	(0.409)	(0.598)	(0.518)	(0.781)	(0.516)	(0.801)
Years of education	-1.93e-05	4.40e-05	0.180***	-0.0878	0.180***	-0.0878	0.180***	-0.0878
	(0.00162)	(0.00162)	(0.0459)	(0.0642)	(0.0458)	(0.0644)	(0.0457)	(0.0642)
Married	-0.000824	-0.00157	-0.0914	4.051***	-0.114	4.052***	-0.112	4.051***
	(0.0112)	(0.0112)	(0.390)	(0.384)	(0.415)	(0.383)	(0.413)	(0.383)
HH head	0.0865***	0.0863***	1.835***	1.658***	2.422***	1.632***	2.379***	1.648***
	(0.00944)	(0.00944)	(0.430)	(0.381)	(0.489)	(0.474)	(0.486)	(0.487)
Share of children 0 to 6	0.141***	0.143***	-1.010	0.460	-0.0579	0.417	-0.128	0.443
	(0.0443)	(0.0443)	(1.190)	(1.220)	(1.278)	(1.320)	(1.264)	(1.319)
Share of children 7 to 15	-0.0341	-0.0337	-0.284	0.838	-0.472	0.846	-0.458	0.841
	(0.0309)	(0.0309)	(1.061)	(1.100)	(1.090)	(1.102)	(1.086)	(1.104)
Land own (Acres)	0.00676**	0.00669**	-0.519***	0.346***	-0.476***	0.344***	-0.479***	0.345***
	(0.00279)	(0.00279)	(0.0909)	(0.0770)	(0.0911)	(0.0819)	(0.0909)	(0.0822)
Owns a house	0.0878***	0.0838***	-3.403***	-2.119**	-2.844***	-2.144**	-2.885***	-2.129**
	(0.0163)	(0.0166)	(0.520)	(0.928)	(0.589)	(1.001)	(0.579)	(0.999)
Social caste: Brahmin/Chhetri	-0.0334**	-0.0345**	-0.876**	-1.352**	-1.050**	-1.344**	-1.037**	-1.348**
	(0.0160)	(0.0160)	(0.424)	(0.639)	(0.414)	(0.635)	(0.416)	(0.636)
Unemployment rate (VDC)	0.133	0.143	1.932	-26.93***	2.574	-26.96***	2.526	-26.94***
	(0.103)	(0.105)	(3.197)	(3.688)	(3.214)	(3.722)	(3.210)	(3.724)
Illiteracy rate (VDC)	0.201***	0.196***	1.525	-5.073**	2.410	-5.113**	2.344	-5.089**
	(0.0556)	(0.0555)	(1.444)	(2.034)	(1.537)	(2.068)	(1.527)	(2.065)
Inequality: Income Gini (VDC)	-0.114**	-0.126**	-1.409	2.480	-2.099	2.511	-2.048	2.492
	(0.0542)	(0.0550)	(1.515)	(1.934)	(1.534)	(1.947)	(1.530)	(1.958)
Poverty rate (District)	-0.168**	-0.200**	-4.378**	-2.990	-5.422**	-2.943	-5.345**	-2.972
	(0.0837)	(0.0849)	(2.066)	(2.659)	(2.121)	(2.747)	(2.109)	(2.750)
Constant	0.405***	0.431***	-1.005	1.396	2.159	1.254	1.925	1.339
	(0.0637)	(0.0636)	(2.482)	(2.514)	(2.875)	(2.936)	(2.846)	(3.011)
Observations	16,879	16,879	16,879	16,879	16,879	16,879	16,879	16,879
R^2	0.087	0.086	0.157	0.099	0.132	0.099	0.136	0.099
Wald χ^2					1996	1038	2014	1037
F-test 1stage					68.21	68.21	62.58	62.58
Region Fixed Effect	X	X	X	X	X	X	X	X

Standard errors clustered at VDC level. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample is working age (18 to 60) adults

Note: Columns (1) and (2) are first stage for IV1 and IV2 respectively. Columns (3), (5), and (7) are hours in wage employment while Columns (4), (6), and (8) are hours in self employment.

Table A.3: 2SLS Estimation of Labor Supply by Gender- Full Model

	Female			Male		
	(1) Total Hours	(2) Work Hours (Wage + Self)	(3) Total Household Activity Hours	(4) Total Hours	(5) Work Hours (Wage + Self)	(6) Total Household Activity Hours
Household with migrant	-5.702	-4.538	-1.164	-17.65**	-18.34**	0.689
	(6.312)	(3.552)	(4.960)	(8.652)	(7.142)	(5.980)
Observations	9,597	9,597	9,597	7,282	7,282	7,282
Wald χ^2	2436	960.9	2287	1528	1085	1127
F-test 1stage	74.90	74.90	74.90	35.55	35.55	35.55
Controls						
Individual characteristics	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X
VDC characteristics	X	X	X	X	X	X
Region Fixed Effect	X	X	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Instrument used for 2SLS is share of international migrants in a VDC in 2001 (IV1). Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Robust standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, household head identifier, and marital status. Household controls are share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, and inequality (Gini).

Table A.4: 2SLS Estimation of Labor Supply by Women's Age and Household Head Status- Full Model

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Hours	Work Hours (Wage + Self)	Total Household Activity Hours	Total Hours	Work Hours (Wage + Self)	Total Householdl Activity Hours
Panel A		Old			Young	
Household with migrant	-16.17**	-12.73***	-3.440	-0.0365	0.293	-0.330
	(7.662)	(4.652)	(5.720)	(7.072)	(4.345)	(5.395)
Observations	3,144	3,144	3,144	6,453	6,453	6,453
Wald χ^2	776.8	360.9	885.7	2287	958.8	2627
F-test 1stage	60.28	60.28	60.28	62.12	62.12	62.12
Panel B		HH Head			Other Members	
Household with migrant	-12.86	-12.72**	-0.146	-3.036	-1.939	-1.097
	(9.121)	(5.703)	(6.672)	(6.589)	(3.970)	(5.135)
Observations	1,593	1,593	1,593	8,004	8,004	8,004
Wald χ^2	428.1	204.5	1042	2298	921.2	2163
F-test 1stage	31.33	31.33	31.33	62.19	62.19	62.19
Controls						
Individual characteristics	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X
VDC characteristics	X	X	X	X	X	X
Region Fixed Effect	X	X	X	X	X	X

Note 1: 2SLS estimates are reported in the table. Instrument used for 2SLS is share of international migrants in a VDC in 2001 (IV1). Sample is working age (18 to 60) adults and standard errors are clustered at VDC level. Robust standard errors in parentheses.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual controls are age age^2, years of education, household head identifier, and marital status. Household controls are share of children, amount of land-owned, house ownership and social caste. Similarly VDC level controls are, unemployment rate, poverty rate, illiteracy rate, and inequality (Gini).
Note 2: Young adults are ages between 18 and 40 while old adults are ages between 41 and 60.