External Migration

by Rabia Arif

WORD COUNT	20073	TIME SUBMITTED	22-OCT-2012 02:58PM
CHARACTER COUNT	116016	PAPER ID	277799854

EFFECTS OF EXTERNAL MIGRATION ON SCHOOL ENROLLMENTS ACCUMULATED SCHOOLING AND DROPOUTS IN PUNJAB.

By

Rabia Arif

Thesis submitted to the Lahore School of Economics
in partial fulfillment of the requirements for the degree of
MPhil
2011

Supervised by: Dr. Azam Amjad Chaudhry

Abstract

External migration in developing countries tends to loosen household income constraints due to the high tendency of the external migrants to remit income. This thesisattempts to determine whether the external migration of individuals in a household has a positive effect on the investment in schooling outcomes of children as measured by school enrollments, accumulated level of schooling, number of days spent in school and dropouts in Punjab. Historic migration rates were used to instrument for migration in an analysis of school outcomes for the children ages 5-17, children ages 5-11 and children ages 12-17 in order to analyze which group has been affected most by external migration. The data is taken from Multiple Indicators Cluster Survey (MICS) 2008-09 and the Bureau of Emigration and Overseas Employment. The results show a significantly positive impact of external migration on the school enrollments of younger children, whereas, the accumulated level of schooling for the older children increases significantly if there is an external migrant in the household.

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1. Introduction

Education is essential for the socio-economic development of a country since; it plays a significant role in enhancing human capital and boosts economic growth through increased knowledge, skills and innovations which empower people. The positive outcomes of education include reduction in poverty and inequality, enhancement in health status, and better governance.

Despite the obvious benefits, the United Nation's statistics reveal that hardly 63% of Pakistani children finish primary school education. Also, only 68% of Pakistani boys and 72% of Pakistani girls reach grade 5(UNFPA, 2009). Pakistan intends to increase this figure by 10% by 2015 and subsequently by 15% more by 2020. Primary school gross enrollment[1] ratio for Pakistan in 2001 was 69% which increased to 92% in 2007 (UNESCO, 2009).Therefore a rising trend is evident in the enrollment ratios, indicating that primary school enrollment has improved over time.

The educational system in Pakistan comprises of five levels: primary (grades one through five); middle (grades six through eight); high (grades nine and ten, leading to the Secondary School Certificate); intermediate (grades eleven and twelve, leading to a Higher Secondary School Certificate); and university programs leading to graduate and advanced degrees. The provincial governmentsare responsible for all the academic education institutions, while the federal government looks after curriculum development, official recognition and some research financing.

[1] Gross Enrollment ratio can have a value greater than 100 as well since it is calculated by dividing Number of students enrolled in primary regardless of any age limit by The Total population of School age children.

The Economic Survey of Pakistan has compared Pakistan with the selected sample of Asian Countries and the following table shows the statistics associated with each country.

Table 1: Comparison of Public Sector Spending on Education

Country	Public Sector Spending (As % GDP)	Literacy rate in (%)
Bangladesh	2.6	55
China	-	93.7
India	3.3	-
Indonesia	3.5	-
Iran	5.2	-
Malaysia	4.7	92.1
Nepal	3.2	57.9
Pakistan	2.1	57.0
Srilanka	-	90.6
Thailand	4.5	-
Vietnam	5.3	92.5

Source: World Bank, UNDP, UNESCO, FBS, Ministry of Education

Measures like literacy rates and the public spending on education as a percentage of GDP were reported to analyze the education in each country. The stats show that Pakistan as compared to the other countries performs poorly on education and hence there is a high need for improvement in it. As reported by World Bank, 2011 the literacy rate for Pakistan in 1981 was 35% which improved to 55% in 1998, it increased further to 65% in in 2005 and 69% in 2006. In 2008 it has been reported that the figure was raised t0 71%. The Pakistan Social and Living Standards Measurement (PSLM) survey also report how Pakistan has performed over time in terms of education and the statistics on literacy rates reveal that the literacy rate of Pakistan which was 56% in 2007-08 have increased to 56% in 2007-08. Though Pakistan over time has experienced an increase in literacy rates but it still is at the bottom end of global ranking.

One of the major reasons why developing countries suffer from such a low level of these private investments is due to liquidity constraints which can be the result of incomplete or missing credit markets (Jacoby, 1994; Jacoby & Skoufias, 1997). Therefore, remittances from migrants play a crucial role in loosening constraints if not eliminating them completely.

According to Ravenstein's Sixth Law (1885) individuals migrate to better themselvesby improving their living standards. Semi-skilled and unskilled labor have always migrated from developing countries to developed countries in search of better job opportunities and to earn higher wages which they otherwise could have never earned while residing in their own countries. Hence, there has never been any confusion as far as the betterment of migrating individual is concerned. The real question is as to how the migration of this individual affects his family members back home.

There is substantial evidence of migrants remitting back home in developing countries (Stark & Lucas 1985;Rozelle et al., 1999). These remittancescould then be expected to get utilized by the households to invest more in human capital, increase their level of consumption, increase investments in small businesses which would create more job opportunities and could also decrease the pressure on households to earn income. Furthermore, it could result in increased consumption of leisure. As estimated by the World Bank (2008), migrant remittances of US $283 billion worldwide have led to substantial investments in human and physical capital back home.

Since the formation of Pakistan, which was also an event concerned with migration, millions of people have emigrated from Pakistan. This has created a vast network of migrants around the world which inturn has reduced the formal and informal

costs associated with migration. These networks reduce formal costs by sending back the remittances and informal costs by decreasing the barriers of asymmetric information regarding the opportunities in developed countries for the labor in developing countries. According to international statistics Pakistan fallswithin the top 10 remittance recipient countries (World Bank, 2007) and is also amongst the top 10 immigration countries (World Bank, 2005). Pakistan's net migration rate in 2008 was -0.51 which has increased slightly in 2009 to -0.48, but has drastically dropped again to -2.9. The negative values indicate that the emigration of individuals from Pakistan has always outweighed immigration of individuals to Pakistan.

The aim of this thesis is to explore the relationship between the migration and schooling enrollment in Pakistan. This would help in establishing whether migrationpromotes human development in Pakistan through the stream of cash inflows generated via remittances being sent back home, or is it only the consumption of goods and services together with leisure consumption of households that remittances are spent on.

The thesis is structured as follows: the introduction is followed by a literature review to see how other authors have contributed to the discussion. Section3covers the theoretical framework of the relationship between schooling and migration.In section 4, an econometric model is presented and its potential problems are discussed in Section 5. Section 6 examinesthe sources and the limitations of the data. Section 7 considers the hypotheses. Contribution of the study has been mentioned in section 8. Section 9 comprises of the descriptive statistics. The results and the conclusion have been written in section 10.

2. Literature Review

This section will analyze how other researchers have contributed towards the literature of migration and remittances. Firstly, literature which looks at the determinants of migration is discussed. Secondly, literature that examines the effects of migration on the overall development of countries is reviewed. The last section will more specifically expound on the literature considering the impacts of migration on primary enrollments. My thesis more specifically looks at how external migration affects school enrollments and hence my work is a further continuation of the last section of my literature review in which I have discussed how other researchers have contributed towards the impact of external migration on enrollments and other child outcomes.

3.1 Determinants of Migration

There is a large amount of literature on migration, whereby migration has been looked upon from two different perspectives: first as a Dependent variable and then as an explanatory variable. Mincer (1978), Hoddinott (1994) and many others have taken migration as a dependentvariable, providing models which give possible determinants of migration and discuss how the decision of an individual to migrate depends not only on the individual's utility function but also on thefamily's utility function. Therefore, the decision to migrate is an outcome of both individual's and household's utility function (Docquire & Rapoport, 2005; Stark & Lucas, 1988; Hoddinot, 1994). According to Hoddinot (1994), the level of remittances is influenced by the parent's ability to reward good behavior through the promise of bequests.Mostly, in poor countries; migration is financed by contributing tothe resources of other family members. Thus, the migrant compensates for the investment in him by his family members by remitting back. This argument is supported by the fact that the migrating member of the family usually remits back.

3.2Effects ofMigration and Remittances on theDevelopment of Home Countries

Another branch of literature looks athow migration improves the constraints and opportunities in the home countries. This is brought about by enhanced standards of living and is achieved mainly by reducing poverty, increasing employment, increasing health expenditures, and bringing about improvements in education directly and indirectly via remittances.

The literature is reasonably consistent on the use of remittances. Macroeconomic analyses done by Russel(1992), Taylor et al., (1996), Taylor(1996), Massey and Basem (1992), and Martier (1990) across countries concluded that the remittances are used for daily expenses such as health care, food and clothing, and they compose a significant portion of income of those households. Instead of being spent on education, health and small businesses, remittances are spent on building or improving housing, and buying land, cattle or consumer goods. Using a simple *OLS* analysis, Adams (1998) studied the relationship between remittances and rural asset accumulation in Pakistan and concluded that since people are impatient, that is, their rate of time preference was greater than the rate of interest, the marginal propensity to invest was zero, and therefore people did not sacrifice their present consumption.

On the other hand, another group of researchers found evidence that supports the argument that the remittances collected by the migrant's household are used very consciously in productive investments. Conway and Cohen (1998) in their article on Mexican transnational communities have drawn attention to the positive aspects of 'migra dollars' on home countries through a microeconomic analysis. Based on the ethnographic data from rural Mexico, they have focused on the potential range of

household strategies for remittance investment and the impact of remittances upon recipient communities. Their major results indicate that females in the migrant's household are more powerful in making decisions about the capital inflows, villager's gain more experience by working outside, and overall migration is a lesser evil despite the fact that the family life is disrupted by the absent father.

Similarly, Maurice (2006) in her article, "Migrant remittances, and human capital formation andjob creation externalities in Colombia" performed an analysis with data from the AMCO survey on migration and remittances. Their simulation provides evidence of enhanced schooling opportunities for recipient households and augmentation of human capital. Secondly, it shows that migration creates a high labor demand in the home market, thus increasing job opportunities for the people who have not migrated. This in turn increases the rate of return of schooling for these individuals as well. The analysis also suggested that the net effect of remittances is dependent upon both the accessibility of education and distortions in labor market. Among receivers, 13% of households were reported to invest in education as their primary use of remittances. Just like other capital inflows, the productivity of remittances was dependent on the individual flexibility of workers and businesses in adjusting their skills and scale of operation respectively, to match each other in the market.

Inanother study on remittance use in Guatemala, Adams Jr., Richard H. (2006) performed an *OLS* estimate and concluded that remittances are not spent on consumption goods; instead they are taken as an uncertain stream of income and areused for productive investments. The data he used came from a large nationally representative survey of Guatemalan household (2000).A modified version of Working–Leser model (Working,

1943; Leser, 1963) was used by Adams Jr., Richard H. (2006) to capture all the variables that affected expenditure on education as a proportion of total expenditure.

3.3 Effects of Migration on Primary Enrollment

The research that will be performed for this thesis intends to analyze the effect of migration on primary school enrollment in Punjab, Pakistan. Several economists have tried to trace the effect of migration and remittances on enrollments in different countries.

Acosta (2006) presented microeconomic evidence on the economic effects of remittances on household spending decisions. The data he used was a cross-sectional household survey of Encuesta de Hogares de Propositos Multiples (EHPM) in El Salvador. In this survey, detailed information on demographic characteristic as well as detailed household migration was registered.An asset index was included to deal with the sample selectivity issue, since migrants were taken as non-random group of individuals. The potential problem of migration being an endogenous variable was solved by using instrumental variable techniques in a *Probit* analysis, where historic migration networks at village level and household migration history were used as instruments for migration. Average estimates suggested that young girls and boys (under 15 years of age) from remittance-recipient households were more likely to be enrolled in school. The major conclusions which were drawn from his study were that remittances can affect household labor supply and investment in human capital of children. The results also suggested that when differentiated on the basis of demographic groups, young girls and boys (11-14 years old) were seen to benefit from remittances in terms of higher enrollment rates, but this positive impact does not apply to older (15-17 years old) boys. Remittances were also found to act as a substitute for child labor which results inhigher school dropout

rates. His study was confined to remittances only and did not incorporate the potential effects of migration on the schooling decision.

Mansuri (2006) analyzed the impact of migration on child's schooling investment in rural Pakistan.She instruments for the migrant dummy by thecurrent migration rates interacted withmultiple household characteristics, such as number of adult males and so forth. She found the same positive relationship between primary enrollments and migration. The research was conducted using the Pakistan Residential Household Survey (PRHS) 2001-2002.

Cox and Ureta (2003) in their paper on"Remittances and Schooling in El Salvador" have tested the hypothesis of whether parents make schooling decisions for their children on the basis of expectations of the returns on the these investments or not.To examine this they used a national household surveythe 1997 household survey of Encuesta de Hogares de Propositos Multiples (EHPM)a cross-sectional data which covered 8,387 families. The Cox proportional hazard model was used for a cohort analysis. The major results indicated that retention rates were delayed in rural as compared to urban areas and the cohorts enjoying the largest benefits in urban area were aged 6-9. The key determinant of school retention was parental schooling, but remittances had a larger effect on school retention as compared to other income. Likewise, children receiving remittances with parents having low levels of schooling had low levels of retention.

Hanson and Woodruff (2003) addressed almost the same question intheir analysis of whether a child from a household with a migrant completes more grades of schooling by a given age as compared to non-migrant households. The data they used was from a

10% subsample of 2000 Mexico Census of Population and Housing. They used historic migration rates interacted with adult characteristics as an instrument for migration and concluded that children in households with migrants complete more years of schooling specifically for girls, given that their parents had low levels of education.

A recent research has been conducted by Alcarz, Chiquiar and Salcedo (2010) conducted a similar study for Mexico in which they analyzed the impact of migration and remittances on the schooling and child labor in Mexico. Difference in differences approach was used with the *IV* approach. Data set for the year 2008 and 2009 of Mexican National Occupation and Employment Survey was used where the instrument used in the study is the distance from the U.S borders. They have added a variable of remittance crisis which takes a value of 1 when there was a crisis in remittances in 2009 and zero for 2008 when there was no crisis. The results show that there is a negative and significant effect of remittance crisis on the schooling of children and a positive significant effect on child labor.

Similar studies done on the Philippines (Yang, 2004) and Nepal (Thieme& Wyss, 2005) also support the revisionist school of thought which argues that with increasing migration opportunities for the highly skilled, the expected return to investment in education would increase. All of these papers use instrumental variable analysis to provide robust results. McKenzie and Rapoport (2005) while analyzing the same model for Mexico found that there is a high dropout rate for boys between the ages of 16-18 years for the families with a migrantas compared to those families without one.

Therefore, one school of thought supports the revisionist approach which argues that with increasing migration opportunities for the highly skilled, the expected return to investment in education would increase. Therefore migrants, realizing higher returns of

education in future, are likely to educate their children more. Likewise, since remittances decrease the credit constraints and improve the availability of resources to the migrants' households, it should improve the schooling outcome of migrants' children.

It is expected to have a positive effect of external migration on the schooling outcomes because of the improved credit constraints but it would be good to make estimations in future to check whether the household resources improve significantly from external migration and remittances or not since it is beyond the scope of this study.

Another school of thought talks about the negative impact of migration on the home countries. This could occur due to several reasons: departure of skilled labor, loose links between emigrants and their family members resulting in low remittances, and prospective migrant's permanent relocation after graduate studies toa developed country. Likewise, the emotional strain faced by the migrant's family members in the home country with less adult supervision could also be one of the negative effects of migration which could result in forcing the migrant's forsaken household to work more and study less in the case where the family receives very low amount of remittances or no amount at all. Therefore, in theory, by far the effects of migration are ambiguous.

Existing literature on Pakistan have not used historic migration rates for the estimation of the instrumental variable used for the external migrant. The major contribution of my thesis is that for the first time I have used historic migration rates instrumented for current migration. An improved set of explanatory variables which can explain the variations in the schooling outcomes have also been added for the estimations.

There are important empirical and theoretical limitations in the estimations. The important fact to note is that in the lower income/developing countries the figure for literacy rates are not reliable. There are many ghost students and teachers who exist on paper and draw funding from government but don't exist in reality. The measure on education, on the other hand has also been widely debated upon in literature of Human Capital. There are numerous advantages and disadvantages associated with all these measures.

3.4 Motivation

The motivation to conduct this analysis comes from two major issues: Firstly, an IMF (2006) research paper has discovered that 4 % of GDP in Pakistan has been contributed by the inflows of remittances which areequivalent to 22% of annual exports of goods and services in Pakistan.This shows that there are large inflows from remittances which haveloosenedthe budget constraints faced by households. Moreover, a lack of credit in developing countries like Pakistan is one of the major reasons why people invest less in education. Therefore, this study intends to look at whether remittances are being used to increase primary enrollments significantly or not.

This study intends to look at the factors which can affect the child's school enrollment and more specifically explores how migration affects the schooling decision of household for a child. Once these factors are outlined and analyzed, theycould help us design policies to enhance primary schooling in Pakistan and could guide us on whether we should promote migration to enhance primary enrollments in Pakistan or not. Once it is established that migration helps in improving enrollments, policies could be designed to facilitate migration andaid the transfer of remittances by reducing the transaction costs of remittances.

3. Theoretical Framework

The classical model of human capital investments over the life cycle formulated by Porath (1967) discussed how benefits of schooling changes over time. The model suggested that the production function of human capital is concave and the opportunity cost of allocating time to further skill acquisition increases as the skills accumulate over time. Therefore, the marginal returns associated with schooling are diminishing over time. Moreover, finite life spans limit the time period available to capture returns from schooling as age increases. Hence as age increases, marginal returns to time in school tends to decrease after a specific age. Likewise, Becker (1991)in support of the above argument stated that early in life, if the present value of the return is sufficiently high relative to its current marginal cost, only under these circumstances children choose to specialize in studies and not otherwise.

Becker and Tome (1976) using a household production framework added to the above theory and discussed how educational decision-making process is important to household welfare. According to them, parents are altruistic in nature and their utility depends on the utility of the entire family, but their primary concern is to maximize the family wealth and hence, invest more in children if these children have higher academic potential and are going to earn higher wages in future to support their parents. Likewise, the amount the poor parents invest in the child's education will be smaller than the optimum point, but the amount being invested would increase with an increase in the level of parent's income.

Another theory given by Sawada and Lokshin (2001) discusses how parents might end up choosing "winners" and allocate more resources to their studies. As an initial

theoretical framework to account for this aspect of household behavior, they employed two sets of optimal behavioral rules. First, for inter-temporal allocation of resources parents decide to maximize the expected total lifetime utility of their family. Second, given over-all resource constraint, parents decide optimal allocation of educational resources amongst their children.

The theory which is being used in this paper is built on Swada and Lokshin (2001) and uses a standard investment model of education as the benchmark and applies it to the context ofPakistan. The basic setup of this model was based on the seminal works by Levhari and Weiss (1974) and Jacoby and Skoufias (1997) on human capital investment under uncertainty. The model has been derived for Pakistan and hence has been adapted further by adding important sets of variables for Pakistan's current situations to analyze what factors affect schooling decisions significantly. They extended the Jacoby and Skoufias (1997) model to a generalized form with multiple children. Essentially, risk, uncertainty, and constraints on insurance and credit influence poor Pakistani families' investment and consumption decisions. Therefore, Sawada and Lokshin (2001) formalized human capital accumulation in rural Pakistan as households' sequential schooling investment decisions under uncertainty and credit constraints. This thesis will build on this theoretical framework.

According to Sawada and Lokshin (2001),suppose a household with n children decides household consumption$C$, and schooling for child i, S_i, so as to maximize the household's aggregated expected utility with concave instantaneous utility function, $U(\bullet)$, given the information set at the beginning of time t, Ω_t. The information set, Ω_t, includes initial asset ownership and the whole history of household variables.

Therefore, household's problem can be represented as follows:

$$MaxE_{\{C_t,S_{it}\}}\left\{\sum_{k=0}^{T-t}\beta^k U(C_{t+k})+\beta^{T+1}W(A_{T+1},H_{1T+1}^C,H_{2T+1}^C,\ldots,H_{nT+1}^C)|\Omega_t\right\} \quad (1)$$

Where $B \geq 0$, H^p, A_0 and B_0 are given.In this problem, the objective function includes a concave function of $W(\bullet)$, which comprises of financial bequest and salvage value of the final stock of the child's human capital. The parameter β represents the discount factor.The above household utility function is then maximized given the following constraints:

$$A_{t+1} = A_t + Y_t(H^p) + \sum_{i=1}^{n} W(1 - S_{it}) - C_t(1 + r_t) \quad (2)$$

$$H_{it+1}^C = H_{it}^C + \sum_{i=1}^{n}[f(S_{it}, q_{it}) + e_{it}] \quad where\ i = 1,2,..,n \quad (3)$$

$$A_t + Y_t(H^p) + \sum_{i=1}^{n} Wi(1 - S_{it}) + B \geqslant C_t \quad (4)$$

The first constraint stated as equation (2). is the household's inter-temporal budget constraint. The household's consumable resources in each period are composed of assets, $A$where$A_T \geq 0$, stochastic parental income, Y, which is a function of parents' human capital, H_p, and total child income, $\Sigma w_i(1\text{-}S_{it})$, with w_i being the child-specific wage rate.

The second constraint (equation 3) is the human capital accumulation equation. The human capital production function, $f(\bullet)$, includes the variable q, which represents the school supply side-effect, the gender gap, and subjective factors. Among others, the variable q is a function of a time-invariant gender dummy variable that takes the value of 1 if the child is female and 0 if the child is male. Lastly, there is an additive stochastic element e, which incorporates possibilities of exogenous shocks such as risk of job-mismatching after schooling, bad market conditions etc. We assume that e is a stochastic

error term therefore $(e_{it}|\Omega_t) = 0$ for all i. The third constraint (equation 4) represents the potentially binding credit constraint where B is a maximum amount of credit available to the household.

According to them this stochastic programming model has n+ 1 state variable: physical assets, A, and child human assetsH_i^C, i = 1, 2…n. When income is stochastic, analytical solutions to this problem, even without human capital, cannot be derived in general (Zeldes, 1989). The standard first order conditions are derived to calculate the optimum conditions. Hence, the Kuhn-Tucker conditions are applied to the standard Bellman equation. The arguments below use the first-order conditions of the above problem.

Under credit market imperfections, the households shadow interest rate is determined endogenously, and which is given by the marginal rate of substitution of consumption over time because separability between consumption and schooling investment decisions breaks down as indicated by equation 5. This implies that once the constraint becomes binding, that is, households are not able to save and borrow money freely, then the schooling decision over time is not independent of the consumption decisions. The equalization of marginal rate of transformation with the marginal rate of substitution would give the optimal condition which is as follows:

$$\frac{\frac{\partial f}{\partial S_{it}}}{\frac{\partial f}{\partial S_{it-1}}} = \beta E_{t-1}\left[\frac{\partial U}{\partial C_t}\Big/\frac{\partial U}{\partial C_{t-1}}\right], \forall i. \quad (5)$$

$$S_{it}^* = X_{it}\beta^C + S_{-it}^* + \varepsilon_{it}, \forall i \quad (6)$$

According to equation (6), the optimum decision for the child$_i$ is conditional on the decisiontaken for all the other childrenin a household. The optimal choice of child *i*'s schooling, S^*_i, depends on S^*_{-I} (where S^*_i,is the decision of schooling taken for child$_i$andS^* is theoptimal schooling decision made for a child other than *i*),*X* includes the gender indicator variable, the access of school variable and household-specificcharacteristicslike educational investments, ownership and accumulation of human assets, physical assets etc. In contrast to a household with perfect credit availability, where parent's income does not affect the schooling of the child, the households facing credit constraints would associate high marginal costs with the schooling of their children if negative income shock is experienced. This reflects that consumption and schooling decisions are not separable under a binding credit constraint.

Local banks may help to alleviate the credit constraints on school attendance. We may expect migration to have a smaller impact on school attendance in village nearby bank, but the data on whether the village is located near a bank or gets the services from banks is not available. Hence, this can be analyzed in future researches whether banks affects the schooling decisions significantly or not.

Hence, based on the model one can conclude that in developing countries like Pakistan, where limited income constraint is the most important concern of individuals for their everyday life, decisions like that of the schooling of children too is influenced by ones income. Also, the other factors like the child characteristics, household characteristics, geographical and the demographic indicators despite of whether the child belongs to a developing country with income constraints or developed country where the income constraints are non-binding always play an important role in determining the schooling of the child.

4. Econometric Model

In order to derive an econometric model, for the schooling of child in Pakistan, one can start with the simplified version of the equation (6) as discussed in previous chapter:

$$S_{it}^{*}=X_{it}\beta_t + \mu_{it} \qquad (7)$$

Where S_{it}^{*} is a variable that takes a value of 1 if a child attends school and is zero otherwise, X_{it} includes the gender indicator variable, the school supply variables, determinants of the household preference, household shock variables, and the siblings composition; therefore, unlike other economic decisions, the schooling decision is not based on simple cost and benefit analysis (Acosta, 2006; Hanson and Woodruff, 2003; Mansuri, 2006; Cox & Ureta, 2003). Household characteristics as well as geographical characteristics together with child's characteristics are very important in determining whether a child would be enrolled in schooling or not, especially in developing countries (Hanson & Woodruff, 2003; Cox &Ureta,2003). Since the data set which is being used in this case is cross-sectional, the variation in schooling enrollment would then also be cross-sectional which would be incorporated in the model. Children with different child characteristics like age, gender and ability would have different outcomes for enrollment. Even a simple cost-benefit analysis indicates that parents associate higher benefits with children with better ability though an unobserved characteristic could be observed partially by incorporating parents' education in the model, since parents' education is a correlate of ability.This is because educated parents are more likely to have higher-ability children (inherited characteristic).Inthe context of developing countries, gender disparity is also one of the major concerns and the gender of a child plays a vital role in thechild's education- decision process;consequently, a gender dummy is also added in the model so

that the gender differences can also be measured and that one can see how external migration affects boys and girls differently.

The majority of the literature has talked about schooling enrollment as a function of family characteristics. Some of the observed characteristics arefamily income and family education; however, characteristics such as the ability of parents are only partially observed, and some others, like parents' preferences, are totally ignored and unobserved. Therefore, all the observed and partially observed household characteristics like parent's education, age, and status are added in the final model.The number of siblings and their ages which act as a resource constraint on parents, also play an important role in the decision making process and can be included in the model.

Similarly, geographical characteristics can also influence the enrollment decisions; and thus variables incorporating need tobe added to the final equation. One of the geographical characteristic is the location of the school which can add to the costs of schooling and should be added in the model. Since it is difficult to note distance of every household from a school, a rural dummy is added to represent houses located in rural areas which have limited access to schools. Likewise, other variables incorporating geographical characteristics like no access to water, number of rooms in a house, and presence of other household facilities indicate that the child belongs to a remote area where schooling represents extra costs.

In addition to the variables discussed in equation (7) there are several ways by which family composition can affect a child's enrollment. Disruptions to family life because of single parent or divorcee parents may affect the resources devoted by the households for educating their children (Hanson & Woodruff, 2003). Therefore, a

number of variables explaining these disruptions like solo female head, and whether the parents are divorced or not, are also added in the model.

An important question which could be addressed in this analysis is how is the loosening of credit constraints going to affect the schooling decision, because if the migration is new then younger children are to benefit more from the migration as compared to the older ones but if migration has taken place a while back then it would affect the older children too. Since Multiple Indicator Cluster Survey (MICS) does not ask a question in which the history of migration is addressed, therefore this study is only confined to overall migration rather than addressing migration specific to the years when it occurred.

Based on the discussion above, the equation which will be estimated is as follows:

$$S_{ghi} = \beta_1 M_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{ghi} + \mu_{ghi} \quad (8)$$

This equation looks at all the factors that affect the measure of attainment of schooling of a child g of household residing in district. S_{ghi} is the measurement of schooling which is equal to 1 if child g in household h and district i is enrolled and zero otherwise. C_{ghi} is a vector of child characteristics and X_{hi} is a vector of household characteristics. $B_{hi,}$ on the other hand, is the child's gender.

M_{ghi} is introduced to incorporate the effect of migration; this variable would take a value of 1 if a household has a migrant and zero otherwise. One potential problem with this specification is the issue of endogeniety. Since unobserved household characteristics and district characteristics influence the decision of migration and schooling simultaneously, the Ordinary Least Square (OLS) estimates would give biased results.

Migration in this specification is thus an endogenous variable and instrumental variable is required to obtain unbiased estimates.

Another point worth noting is that in this empirical analysis, the migration coefficient could occasionally be capturing the combined effect of household migration and remittance receipts which are likely to work in opposite directions. Specifically, remittances are expected to ease investments in education by decreasing liquidity constraints.Also, household migration is thought to disrupt family life in ways that may impede educational investments or reduce the anticipated returns to the said educational investments. Considering that these two effects are expected to have opposite impacts on children's schooling, one has to understand that the results will show the impact of both.

The final econometric specification would comprise of all the possible variables mentioned above that have an effect on the schooling decisions of the child. Migrant indicator variable would be added in the specification too which would then be instrumented with historic migration rates at district level because of the potential endogeniety problem associated with it.

Estimations would be made on the basis of above theory about the impact of the loosening of the constraint on the schooling and other similar attributes of children such as accumulated level of schooling, number of days spent last week in school, number hours spent on household chores and the dropouts amongst children. The entire estimation procedure would be repeated to measure the impact of migration on all of the attributes mentioned above on the age groups 5-17, 5-11 and 12-17 respectively. The reason to divide the group into subgroups is to see whether migration affects the older and the younger children differently or not. The age group has been chosen on the criteria

of Pakistan's education standards. Primary and middle schooling of children in Pakistan is confined to the age group of 5-11 and all the children above 11 are enrolled in secondary. The reason why I have not included the children above the age group of 18 is that after 18 there is a high probability of children to leave for abroad to attain higher education, which is beyond the scope of this study. The thesis only looks at the effect of external migration on the children back in home countries.

5. Specification Issues

Simple OLS estimation technique for the specification estimating the schooling of children would give biased coefficients because of numerous reasons. Firstly, there are several other child and household characteristics which are unobserved, like ability and income shocks, and would result in omitted-variable bias.Secondly, some characteristics of households and children could be correlated with the decision of migration resulting in an endogeneity problem. Thirdly, while comparing the socio-economic characteristics and demographic characteristics, if it is established that migrants differ from non-migrants in income, correction measures have to be taken. A detailed analysis of all the misspecifications and their proposed solutions are as follows:

First of all, unobserved characteristics like child ability would result in omitted variable biases. To solve this problem, father's and mother's education have been usedas proxies. Dummy variables are used which would equal 1 if father has completed primary, secondary or tertiary education. Similarly, dummy variables for mother's education would be added as a proxy for child's ability.

The second and most important concern is the endogeniety of the migration variable. Some variables omitted from the equation (like market conditions) affectthe decision to migrate and send children to school simultaneously, and these would be absorbed in the error term.Therefore, the best way to deal with this problem is to use an instrumental variable technique. An instrument should be found which is correlated with migration but uncorrelated with schooling decision. Different authors have used different instruments in their studies to deal with this problem.

Bansak and Chezum (2009) used past literacy rates and political unrest as instruments, which suggests that districts with higher literacy rates historically have better job prospects due to agglomeration economies, and thus individuals in these districts are less likely to migrate. Likewise, districts with political unrest have disrupted social networks.The presence of Western Unions within the district during past years can also be an important instrument for the analysis (Amuedo-Dorantes, Catalina and Susan Pozo (2007)). Hanson and Woodruff (2003) are of the view that the interaction of this instrument with the HH characteristics can explain the variations in the decision-making process at household level. To eliminate the endogeniety problem we can use these instruments, but data limitations do not permit us to do so.

Acosta (2006) used current migration rates calculated as migration propensity of the county/village of residence in his study to eliminate the endogeniety problem, and Mansuri (2006) has used the proportion of households that currently have a family member abroad in the area of reference as an instrument for migration. A better instrument suggested by Hanson and Woodruff (2003) is the historic migration rates of each village. Since some regions are more accustomed to sending migrants abroad for reasons other than income diversification, such as political unrest, this activity decreases the costs of future migration by establishing informal linkages between the emigrants and their area members, by decreasing the informational barrier.

The data on historic migration networks at district levels in Punjab from 1980-2000 has been taken to compute for the instrumental variable, since previous migration networks facilitate current moves. Historic migration rates can then be used as an instrument at the district level. This instrument would vary from one district to the other,but would be constant for all of the households living in that district. For this

analysis we need an instrument which should vary across households that could explain the variations in migration decision at the household level. Therefore, historic migration rates should be interacted with a particular household's characteristics which facilitate migration. Hanson and Woodruff (2003) is of the view that interacting district fixed effects with mother's education can explain these variations in the household's decision-making process. According to them, the more the mothers are educated, the less likely are their husbands to migrate. On the other hand Mansuri (2006) is of the view that interacting number of adult males in the house with the historic migration rates which does not vary across districts, would give a better instrument since houses with more adult males would have fewer security issues, which would inturn facilitate migration.In this study the historic migration rates have been interacted with the number of adult males in household since, mother's education is highly correlated with the child's enrollment, which could create an endogeniety problem as well.

Thirdly, an issue of missing families arises, as discussed by Hanson and Woodruff (2003) and their analysis was confined to rural areas only, since emigrants from rural areas are more likely to leave their families back in home countries. On the other hand in urban areas, emigrants take their families with them which results in missing families in the data (Massey et al., 1993; Cornelius & Marseli 2001; Durand et al., 2001). The statistics from the data suggests that there are significant households residing in urban areas with external migrants, which means that the problem of missing families in urban areas do not create a problem and hence in this thesis the analysis has been performed for the families in rural and urban areas both.

Fourthly, migrants' household characteristics when compared to non-migrant households show that there is a distinct difference between the two groups' income

levels; hence, migrant households do not act as a random sample. Therefore, we have to add the variable of income in the equation, but this variable acts as an endogenous variable since people make the decision of schooling and migration simultaneously based on their income. This problem could be dealt with by including either an asset index (Acosta, 2006) or simply adding the assets the households possess, because the amount of assets households possess do not depend on present income and the migration decision is independent of it.

Therefore, equation (8) would comprise of the fitted values of migration from the first stage regression where migration is regressed against the instrumental variables. Likewise, in order to avoid endogeniety problem from income variable which was one of the household characteristics, household assets are added in the final equation and hence the econometric equation is as follows:

$$S_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \qquad (9)$$

S_{ghi} is the schooling outcome C_{ghi}, X_{hi} and B_{hi} are the households and geographic characteristics respectively and $\tilde{M}_{ghi}$ are the fitted values of regression from the first stage.

6. Data Source and the Hypotheses

6.2 Data

For the purpose of my thesis the data has been taken from the Multiple Indicator Cluster Survey (MICS) which was originally developed in response to the World Summit for Children to measure progress towards an internationally agreed set of mid-decade goals with the assistance of UNICEF. Since mid-1990s, MICS has collected cross-country data for international comparisons for a range of indicators such as education, health, child protection and HIV and AIDS and in 2003- 2004 the survey was conducted in Pakistan for the first time. The recent round of MICS 2007-2008 has been collected for Punjab only as opposed to the entire country data (2004).

Primarily, the data for my study has been taken from the MICS 2008-09 a household level data set which is representative at district and tehsillevel and comprises of 91,075 households amongst which 592,843 members are listed. I have used data from BEOE (Bureau of Emigration and Overseas Employment in Pakistan) to calculate the historic migration rates which has been used as an instrumental variable in this study.

Questions concerning whether households have migrants and also whether they get remittances from them are included in the questionnaire. Likewise, questions about whether children in each household are going to school or not are also included. Historic schooling data of children which could help in calculating the dropout rates of children are included in the survey. Other questions with regards to the parents' education history and family's status are also included in the survey.

6.3 Hypotheses

The hypotheses are drawn from the above literature. Hanson and Woodruff (2003), Mansuri (2006) etc. have used multiple measures for the schooling outcomes. I have also used the same measures like the school enrollments, accumulated level of schooling, dropouts together with the number of days spent in school, and hours spent on household chores to conduct my analysis.

Hypothesis 1A: Migration has no impact on the enrollment of children of all ages (5-17) in Punjab holding all other variables constant.

Migration is an important explanatory variable which is initially added as a dummy variable that takes a value of 1 if a household has a migrant and zero otherwise. It could affect households either positively or negatively. Firstly, it can improve the resources of households by loosening the constraints, therefore resulting in enhanced physical as well as human capital.Secondly, an absent household head, especially a father, can result in more burdens on elder children to work and increased psychological stress which can have a negative impact on enrollments. I have used a dummy dependent variable instead that takes a value of 1 if child is enrolled and zero otherwise.

$$S_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \qquad (10)$$

Where $\tilde{M}_{ghi}$ is the migrant dummy which takes a value of 1 if there is an external migrant in the household and zero otherwise. C_{ghi} includes all the variables associated with child characteristics like gender, age etc whereas, B_{hi} includes all the household level variables like parents education, household head's income etc.

Hypothesis 1B: Migration has no effect on the enrollments of younger children (5-11) in Punjab holding all other variables constant.

To test whether migration affects younger children differently as compared to elder children, the sample is divided into two sub samples. Equation 10 would be tested for a smaller sub sample of children of age group 5-11.

Hypothesis 1C: Migration has no effect on the enrollments of elder children (12-17) in Punjab holding all other variables constant.

The literature regarding this issue is split. The majority of the literature finds a negative relationship between the number of school age siblings and schooling of child i if he or she is the eldest amongst them. The basic perception behind this relationship is that whenever the head of a house migrates, the pressure falls on the eldest child and he or she is thenforced to leave school and join the labor market. Likewise, given the income constraints,an increase in thenumber of school age siblings would increasethe cost of schooling.

Therefore, this would have a negative effect on the schooling of the elder $child_i$. Acosta (2006) on the other hand, links this concept with the economies of scale, and is of the view that an increased number of school going siblings would have a positive effect on a single child's schooling because more children going to the same school and utilizing the same course material would reduce the costs associated with successive child's schooling, therefore, increasing the enrollment rate as the number of children increases. An interaction dummy could also be added in the regression equation to see whether being a female and having more siblings could affect a child's enrollment in school or not. Cox and Ureta (2003) and Acosta (2006) are of the view that if a child is a

female and has more siblings, parents might not choose to send her to school. A sub sample of children from the age group of 12-17 is used to test equation 10 again. The two results from the two hypotheses would then give a good comparison between elder and younger children living in the same household.

Hypothesis 2A: External migration would have no effect on the accumulated level of schooling of children from the age group of 5-17 in Punjab holding all the other variables constant.

The following specification would be tested for the children in Punjab since school enrollments alone cannot show the true picture of how children are being influenced by the external migration. Therefore, other dependent variables like accumulated level of schooling can be tested to get a more comprehensive analysis of the learning potential of children in the migrant's house as compared to the non-migrants. The dependent variable in this case is a continuous variable; therefore instrumental variable regression would give unbiased coefficients.

$$\text{Accumulated level of Schooling}_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \quad (11)$$

Where $\tilde{M}_{ghi}$ is the migrant dummy which takes a value of 1 if there is an external migrant in the household and zero otherwise. C_{ghi} is a vector of child's characteristics and X_{hi} is a vector of household's characteristics. B_{hi} on the other hand is the child's gender as explained initially.

Evidently, if there is more pressure on the children because of the absent parent, then the accumulated schooling attained by the children should fall significantly as compared to the children in non-migrant households.

Hypothesis 2B: External migration would have no effect on the accumulated level of schooling of younger children from the age group of 5-11 in Punjab holding all the other variables constant.

Equation 11 is tested again to see whether younger children are affected differently from the elder children because of external migration or not.

Hypothesis 2C: External migration would have no effect on the accumulated level of schooling of elder children from the age group of 12-17 in Punjab holding all the other variables constant.

The same analysis is conducted for the elder children alone to see whether there is any significant difference in the schooling patterns of elder children from that of younger children.

Hypothesis 3A: External migration would have no effect on the number of days spent last week in the school by the children of age group 5-17 in Punjab holding all the other variables constant.

$$\text{Days Spent in School last week}_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \quad (13)$$

The above specification is also tested in support of the research conducted. The dependent variable is a continuous variable, i.e. the number of days that a child spent in schools last week. In this case too instrumental variable regressions would give unbiased coefficients. Where $\tilde{M}_{ghi}$ is the migrant dummy which takes a value of 1 if there is an external migrant in the household and zero otherwise. C_{ghi} is a vector of child's characteristics and X_{hi} is a vector of household's characteristics. B_{hi} on the other hand is the child's gender as explained initially.

If there are any disruptions in the family life of a child because of children then there would also be a significant decrease in the number of days that the child attends school. MICS only covers the days the child went to school during the previous week only (last seven days), and hence one cannot say much about the results. Absenteeism of a household member, as discussed earlier, puts more responsibilities on the child to deal with the daily household chores. Therefore, one major reason for the negative influence on schooling because of migration of a household is that there are fewer hands to take care of household chores, and hence children have to look after their houses as well. If the coefficient for the external migrant in the above specification turns out to be positive and significant then we can conclude that the children face more responsibilities if they have a migrant in their house.

Hypothesis 3B: External migration would have no effect on the number of days spent last week in the school by the younger children of age group 5-11 in Punjab holding all the other variables constant.

Above analysis for the younger group of children would be conducted separately. To see is they are affected differently from the elder group of children or not.

Hypothesis 3C: External migration would have no effect on the number of days spent last week in the school by the elder children of age group 12-17 in Punjab holding all the other variables constant.

Same analysis as above would be conducted for the elder group of children.

Hypothesis 4A: Migration would have no effect on the Dropout rate of children in Punjab holding all other variables constant.

MICS 2007-08 has data on past and present enrollments which could be used to see whether children in migrants' houses leave the school or not. A complete analysis cannot be done to see how early and late migrations affect dropout rates because of the data unavailability. But an analysis could be done to check whether a child belonging to a migrant's household leaves school in the successive year or not. This analysis could be conducted for the children of all ages from 5-17 to see the overall effect of migration on dropout rates. Dropout rates would be taken as a dependent variable and the regression equation would comprise of the same variables used in earlier regressions. Thus, the new econometric specification is as follows:

$$Dropout_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \qquad (12)$$

The dropout variable takes the value of 1 if a child i leave the school in 2008-09 given he/she was enrolled previously .$C_{ghi}$is a vector of child's characteristics and $X_{hi}$is a vector of household's characteristics. B_{hi}on the other hand is the child's gender as explained initially*IV Probit*in this analysis would give biased coefficients.

Hypothesis 4B: External migration would have no effect on the Dropout rate of younger children of age group 5-11 in Punjab holding all other variables constant.

To examine which group is being affected by migration the most, this hypothesis is conducted to test whether younger children dropout of their schools due to the stress they face because of absent household member or not.

Hypothesis 4C: External migration would have no effect on the Dropout rate of elder children of age group 12-17 in Punjab holding all other variables constant.

The results of this hypothesis would further shed light on responsibilities the elder children face because of absent household members; therefore, if there is any negative effect of external migration on children, dropout rates should increase and hence it is expected that external migration would have significant positive coefficient in this specification.

Hypothesis 5A: External migration would have no effect on the number of hours spent on household chores by the children of age group 5-17 in Punjab holding all the other variables constant.

Following equation is estimated to test this hypothesis. The dependent variable is a continuous variable and hence instrumental variable regression techniques would give unbiased coefficients.

$$\text{Hrs spent on HH Chores}_{ghi} = \beta_1 \tilde{M}_{ghi} + \beta_2 C_{ghi} + \beta_3 X_{hi} + \beta_4 B_{hi} + \mu_{ghi} \quad (14)$$

Where $\tilde{M}_{ghi}$ is the migrant dummy which takes a value of 1 if there is an external migrant in the household and zero otherwise. C_{ghi} is a vector of child's characteristics and X_{hi} is a vector of household's characteristics. B_{hi} on the other hand is the child's gender as explained initially.

Hypothesis 5B: External migration would have no effect on the number of hours spent on household chores by the younger children of age group 5-11 in Punjab holding all the other variables constant.

The sub sample for younger children is again tested for the equation (14) to see how external migration would affect the younger children.

Hypothesis 5C: External migration would have no effect on the number of hours spent on household chores by the elder children of age group 12-17 in Punjab holding all the other variables constant.

Equation (14) is tested for the elder children under this hypothesis.

All the hypotheses outlined in this chapter would be tested by using the data as mentioned above. The results would be based on the basis of the estimated coefficients, whether the migration coefficient in each of the specification has a positive or a negative significant impact on the dependent variables or whether the effect of migration on these variables is insignificant.

7. Descriptive Statistics

7.1 Introductory Results

In the context of this study, while exploring the effects of an individual's migration on enrollment of a child in home country together with the other factors which can affect enrollments, school enrollment is equal to 1 if the child is currently attending school and 0 otherwise. The averages of important variables have been reported in this chapter. The data on schooling outcome from MICS comprises of 216,047 households and on average 12.95% have at least one member who has migrated to another district, province orcountry.

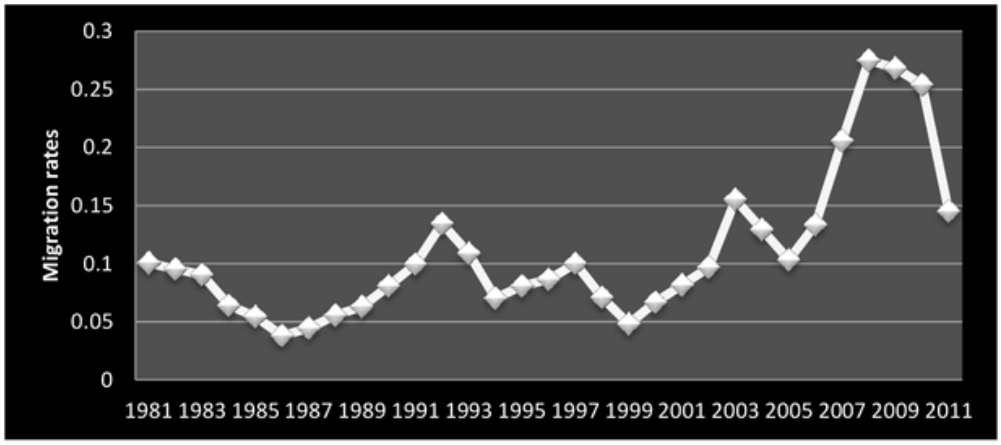
Therefore, there is enough data available to see whether the schooling decision varies amongst the families which comprise of migrants and those that do not have any migrant member. Out of these 27,373 households in MICS on average 20.9% of the individuals, have migrated to other cities, 24.24% have migrated to other districts and 41.78% have migrated overseas. There is not much variation amongst the enrollments of children on the basis of the places where the migrants have travelled, be it internal or external.

On average the percentage of households receiving remittances from the family members who have migrated abroad is 85% in contrast with 76%, 80% and 80% from other cities, districts and provinces, respectively. This show that the majority of the migrants, who have travelled outside or within a country remit back significantly. The average amount received from overseas is approximately Rs.194, 282, whereas the average amount received by the families from internal remittances is Rs.69, 972. The only problem while using the amount of remittances in the analysis is that there is a high probability of pooling and recalling bias (Acosta, 2006). Family members tend to pool

their actual income with the amount of remittances they spend and are not able to recall the right amount of remittances received.

MICS represents all the districts in Punjab and around 52% of the migrants going abroad are from Punjab (Arif, 2009). The Data from Bureau of Emigration and Overseas Migration suggests that 60% of the total people who have migrated over time came from only 20 districts of Pakistan, mainly northern Punjab and only two districts from southern Punjab, Khyber Pakhtunkhwa and Sindh (Arif,2009) The historic migration rates for Punjab calculated as the total number of people migrated abroad divided by the total population of Punjab over time are as follows:

Figure 1: External Migration Rates for Punjab, Pakistan



Source: Bureau of Emigration and Overseas Employment (2009); Population Census (1998)

The figure shows that since 1981 there have been fluctuations in the migration rates. An upward trend can be seen in the migration rates in the 1990s. However, there was a decline in migration in the late 90s. It is also interesting to note that the migration rate rose substantially from 2007-2009, and afterwards a drastic decline was observed. These migration rates on average show how Punjab has performed in terms of sending the

individuals abroad overtime. For the instrumental variable,the same approach has been used to calculate migration rates at the district level.

For the context of this study, I confine my analysis to external migration only. The results in table for having a migrant in household or receiving remittances are almost the same with a very little variation because the data of households receiving remittances is simply a subset of the data from migrant households, and have only a fewer number of observations as compared to the migrant's data set.

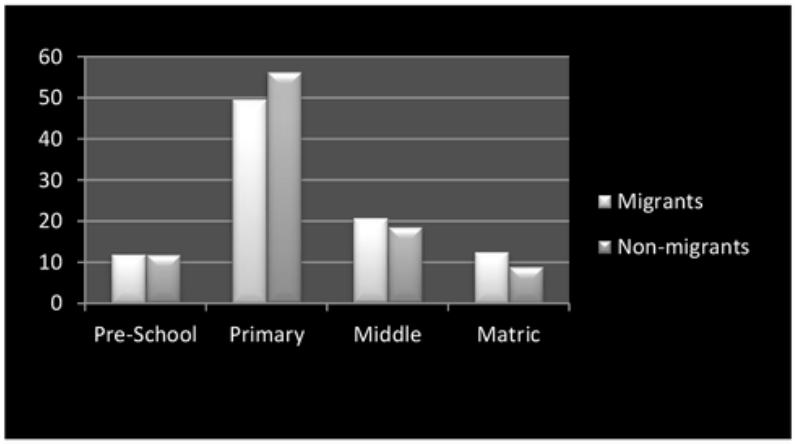
Out of the total 216,047 individuals for whom the analysis is being conducted only 148,433 individuals lie in the range of 5-17 age group. Amongst them 89.24% attend school and 10.76 % do not. 4.69% of these children belong to the households with migrants. Only 7.28% of the children do not attend school in the migrant households as compared to 10.93% in the non-migrant households.

The children in this range are further divided into two subgroups of younger and older children in support of the analysis. Overall, 99.5%of the children age 5-9 and 80.07% of children age 10-17 have been reported of being currently enrolled in schools. Out of 22.72% of the children who attended pre-school during the previous year, only 12.03% have been reported as promoted to class 1. The data suggests that at each level children drop out.

The summary of the statistics suggests that there are variations in school levels attended by children based on whether they belong to migrant's household or not. It has been noted that 11.95% of the childrenwho belong to migrant's household are enrolled in pre-school as compared to 12.02% for the children in non-migrant houses. Observations show that 49.74% of the children go to primary for migrants and 56.36% for non-

migrants and likewise, the enrollments in matriculation is 12.59% for migrants as compared to 9.09% for non-migrants.

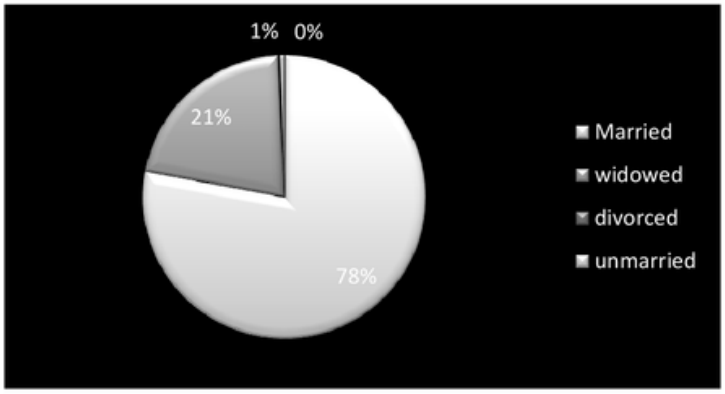
Figure 2: Percentage of Children Attending Different Levels of Schooling in Punjab



Female headship is defined as 1 if the gender of the household head is female and 0 otherwise. This can play an important part in the families in terms of enrollments. Out of 216,047 households, only 11,044 families are headed by females, amongst which 31.73% belong to the migrant households and 68.27% are the families without migrants. On average 30.67% of the houses are headed by females if there is a migrant and males head 69.33 % of the households.

There are possibly many reasons of a female member for being the household head. The incidence of having a married female head in the migrant households is 77.9%, which is relatively high as compared to 21.38% being a widow and only 0.11% and 0.57% being divorced or unmarried, respectively.

Figure 3: Household Head's Marital Status in Punjab



Given the statistics on average it can be seen that there is a high probability of having a female head in the migrant's household indicating that when the household head migrates the responsibility of the family lies on the shoulders of the spouse. These figures are estimated to analyze the disruptions brought in family because of different factors, such as divorced parents, but the statistics show that the probability of having a divorced household headsreasonably low. Out of the 30.67% of the migrant houses headed by females, the incidence of enrollment of children is 77.6% as compared to 67.4% if it would have been a male-headed family.

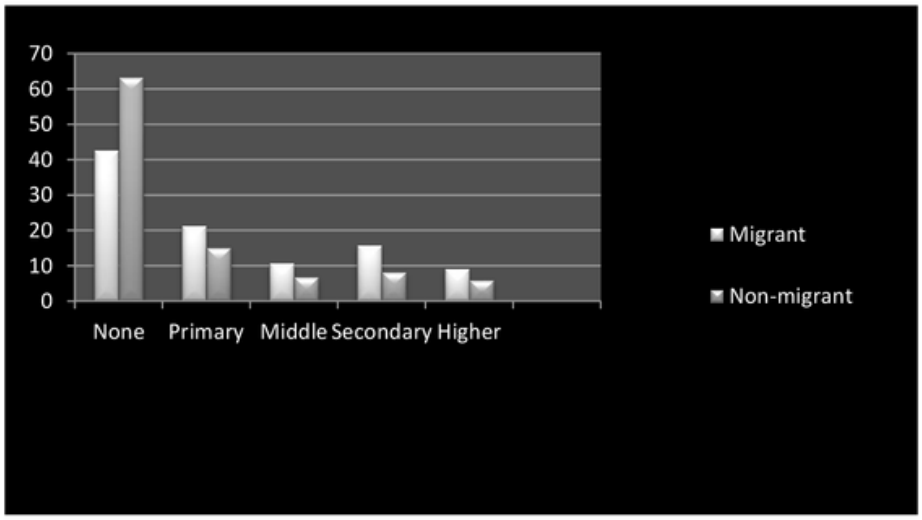
Gender disparity is an equally important issue to analyze. The boy's enrollments in the houses with female headship are approximately 79.2% as compared to girls, which is 75.93%. This could be explained by the fact that because of the absence of the father, more work has to be done by the mother, so she requires help. Hence, girls are kept at home to take care of the household chores.

The estimated number of household members, adults, infants and school age going siblings is equal across the migrant and the non-migrant households. However, the education of mother varies significantly, that is, nearly 42.6% of mothers in migrant's

household were never enrolled in school as compared to 63.4% mothers in non-migrant households.As far as primary education is concerned 21.3% of the mothers attended school in families with migrants as compared 15.29% for non-migrants.

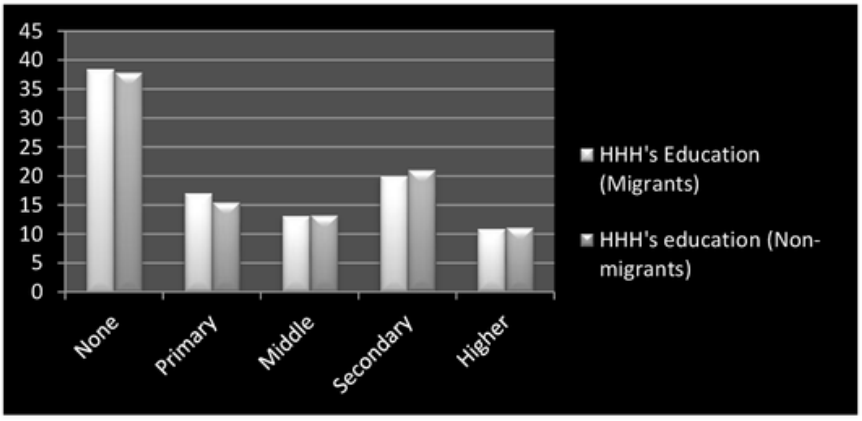
The rate for the mother's education in migrant's families is10.83%, 15.9% and 9.3% for middle, secondary and higher education respectively, as opposed to 6.83%, 8.43% and 6.06% for the non-migrants families respectively. This shows that, on an average, the mothers in migrant families are more educated as compared to the non-migrant families. A low percentage of 42.57% for the mothers in migrant's households as compared to 63.39% for the mothers in non-migrant's families that have never gone to schools further strengthens the fact that external migrant households have more educated mothers.

Figure 4: Education of Mothers in a Household in Punjab



Likewise the education of household head does vary, though not substantially, between migrant and non-migrant households.

Figure 5: Education of the Household Head in Punjab

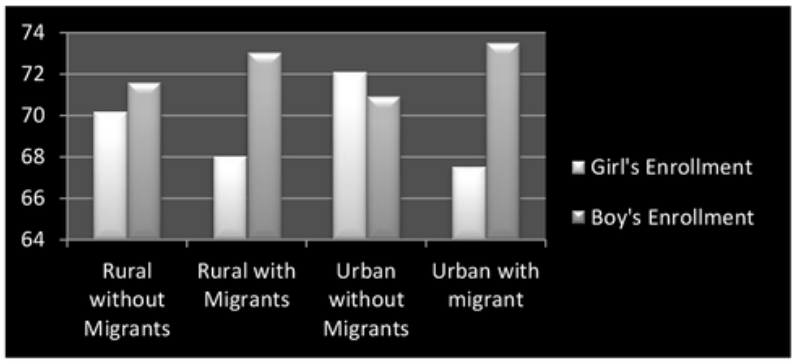


As far as the profession of household head is concerned, on average 40.75% of the household heads are unemployed, searching for a job, or working with the household chores; therefore, they donot have any source of primary income. As opposed to this, in the non-migrant families this figure drops to 9.6%. Likewise, if the household head is a government employee or is associated with a proper job or business, the chances of having a migrant from such families is quite low which is 2.89% and 3.69% respectively, which in turn strengthens the fact that the reason for migration of an individual is to enhance the family's resources and decrease the constraints on credit.

The above argument can further be strengthened by taking into account the nature of the area of residencewhich helps in determining whether the individual living there would decide to migrate or not. This could further affect the decision of child enrollments. A noted, 62.35% out of the total migrant families reside in rural areas and the rest 37.65% reside in urban area.This could be explained by the fact that individuals living in rural areas face poor resources and hence decide to leave their homes in search of better opportunities abroad or in different districts.This argument can be supported by the fact that on an average,rural area families with migrants tend to receive Rs.13955.6 as compared to Rs.11573.39 for non-migrant's families and the same trend is followed in

urban areas where households receive higher monthly income which is Rs.20371.75 as opposed to Rs.15796.45 if there is no migrant. On an average, the enrollments of girls and boys separately based on the above discussion can further be explained from the figure noted below:

Figure 6: Average Enrollment of Children based on Gender in Punjab

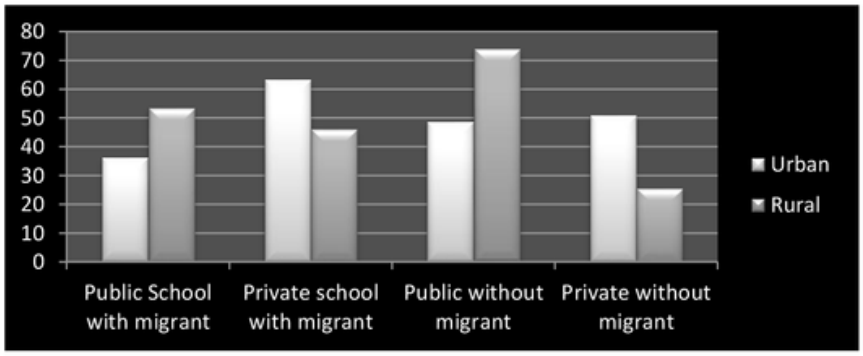


As can be seen from the above table,girl's enrollment in migrant's houses is significantly lower than that of boys. On the other hand the enrollment of boys and girls in the non-migrant houses is not significantly different from each other. These statistics further reinforce that the girls in the migrant's house look after the household chores and have poor enrollment rates.

The type of school is also very important in determining whether the child would be enrolled in the school or not. Sixty-three percent (63%) of the students attend public schools and 36.87% go to private schools; whereas 42.2% of the children in urban areas go to the public schools from migrant's families as compared to 46.4% from that of non-migrants.Likewise, 57.74% of the children who belong to migrant's families in urban areas attend private schools as opposed to 53.5% from non-migrants. The percentage of people going to private schools in rural areas is very low for the children belonging to the migrant's and non-migrant's families which are 46.22% and 25.83% respectively,

and53.7% and 74.1% for the public schools. The statistics show that in both rural and urban areas high percentage of households with migrants send their children to private schools,whereasa comparatively high percentage of households without migrants send their children to public schools.

Figure 7: Average Enrollment in Public and Private Schools in Punjab



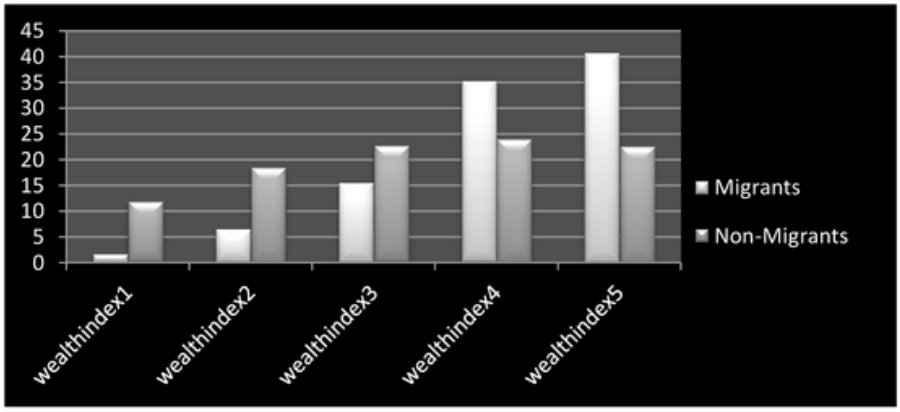
Another important point which revealed fromthese statistics is that a high percentage of people living in rural areas send their children to public schools regardless of whether they have or do not have a migrant in their families. This can be associated with the low cost of schooling in terms of school fees and other factors.

The social status is equally important while making decisions for migration and school enrollments. Wealth index has been used to eliminate the endogeniety problem related with the income of the household. Any shocks in income can affect the decision to migrate and child-enrollment simultaneously. The wealth index is divided into five quintiles, from the lowest to the highest. The descriptive statistics for the migrants belonging to different wealth indices are as follows:

- 11.89% of the households without migrants fall in the lowest quintile of the wealth index. The percentage of households which falls in the lowest quintile falls substantially to 1.6% for the migrant's households.

- 18.6% amongst the non-migrants whereas only 6.6% of the households which have migrant falls in the second quintile of the wealth index
- 15.5% and 22.78% for the migrants and non-migrants respectively for the third quintile.
- The fourth and fifth quintile represents the rich class of the society and the statistics show that majority of the families that have at least one external migrant in their house lie in the fourth and the fifth quintile. 35.5% of the houses with migrant lie in the fourth quintile and the figure further rise to 40.8% for the fifth quintile.
- Likewise, for the highest quintile, households with migrants are 23.27% as compared to 22.65% for non-migrants. These statistics show that the households with migrants and receiving remittances have better resources and hence have a better standard of living

Figure 8: Percentage of Households in Different Quintiles of Wealth Indices in Punjab



Numerous researchers have outlined the difficulties associated with migration in terms of high costs. These statistics indicate that on an average the people who migrate

belong to the families which are capable of sending them abroad and can finance them easily as well.

The other way by which the effect of wealth can be added in the specification is by adding the assets the households own directly into the specification. The list of assets which are included in the data set are electricity, gas, radio, television, telephone, mobile phone, computer, internet connection, refrigerator/ freezer, air conditioner, washing machine, air cooler, cooking range, stitching machine, iron, water filter, donkey pump, watch, bicycle, motor cycle, car and animal drivencarts. Likewise the value of house owned and ownership of livestock is also added to see if there are any variations amongst the households with and without migrants. The statistics show that on average larger number of people consume the goods which enhance the standard of living such as computer, internet, television, air conditioner, stitching machines, cars et cetera increases significantly in the migrant's houses if they have a migrant in their families. Table 6 shows the composition of assets in the two types of households.On the contrary, the consumption of inferior goods like bicycles declines significantly. The value of the agricultural land being owned is higher in the migrant's families. Moreover, a large percentage of families with migrants also own their houses.

Table 5 shows the descriptive statistics of the characteristics of migrants and non-migrants at household level for a comparison. Likewise the mean averages for the recipients of the remittances and non-recipients of the remittances have also been added in the table. The results of the two comparisons are quite similar to each other since the recipients of remittances are simply the subset of migrant households.

The mean values show that on average 30% of the houses of migrants are headed by females as compared to only 3% in the non-migrant houses. The marital status of the

household head shows that 85% of them are married in the migrant's houses as compared to 90% on average in the non-migrant households. There is no significant difference between the levels of education household head has attained in both type of households. The age of household head on average is 51 which are higher in the migrant families as compared to 47 in the non-migrants.

The profession of the household head is also very important in the household's decision processes; the averages show that 40% of household head are unemployed in the migrant houses as compared to only 9.6% in the non-migrant families. The other point worth noting is that the houses which are headed by the government employees have a 5% incidence for migration as compared to 11% of the families that have no-migrant. This strengthens the fact that family's majority of the times chose to send their children abroad if their financial situation is weaker. The families headed by government officials are better off in terms of resources they have as compared to the other average households hence the current migration rate in such families is quite low as there never was a need to migrate in past for such households.

Table 7 shows at the average household composition of the two type of families. The mean values do not show any significant difference between the two types of families. Number of household members, total number of girls, total number of boys and infants are not different for the different types of families, one with migrants and the other without migrants.

Averages for the household facilities have been reported in Table 8 in terms of the health and education facilities for the families in urban and rural areas both. The figures indicate that on average there are more families with migrant in rural areas as compared to urban areas, 37% of the migrant families are from urban areas and 62% of the migrant

families are from rural areas. As far as the health facility is concerned, 57% of the families with migrants choose to go for private health facilities as appose to 42% which choose to go for government health facilities in rural areas. In the urban areas too, on average larger proportion of households prefer to go for private health facilities.

The type of education the two different households receive is much more significantly different from each other, regardless of whether the households belong to urban or rural areas, the descriptive statistics show that on average the households with a migrant prefers to send their children to private schools as compared to the public schools.46% of the households choose to send their children to private schools if they have a migrant as compared to 25% without migrants in rural areas. Likewise in urban areas 63% of the migrant households choose to send their children to private schools as compared to 51% of the non-migrant households sending their children to private schools.

Based on the discussion above, one can conclude that the households with migrants have better resources and thus have better standard of living as compared to non-migrants. Likewise higher income families have a lower incidence of migration as well to some extent because the need for improvement in resources through migration is no longer there.

8. Estimating the effect of the Historic Migration rates on Current Migration

Before testing the relationship between the historic migration rates and current migration, first stage regressions are estimated. Note that this first stage will remain the same for all the instrumental variable estimationsmentioned in the previous chapter. A priori, the current migration rates should be positively related to the regional migration networks, as regional migration networks strongly influence the current decision- making process of adults in those regions as the household characteristics are positively influenced by the gains from migration consistently.

Table 9 shows the results for the first stage regression. The migrant dummy is kept as a binary dependent variable and average historic migration rates from 1980-2000 at the district level interacted with the number of adult males in the houses is the key explanatory variable in the specification. All the other variables which can influence the decision of migration at household level are also added in the specification such as household head's age and age squared, wealth indices, marital status of the household head, household head's education proportion of women working and so forth.

Results from the simple *OLS*regressions are reported in the first and the second columns of the table, which show that historic migration rates have a significant and positive relationship with having an external migrant in the household. The only difference between the two columns is that in the *OLS*(1) wealth indices are added in the specification which deals with the fact that migrant and non-migrant households are not random sample and hence variables which can distinguish between their social status and wealth need to be added. Whereas, in *OLS* (2) instead of adding wealth indices, the assets each household possess are added directly in the specification. The two specificationsgive

approximately the same results and show a significantly positive relationship between the instrumental variable and the binary dependent variable.

The third column shows the results from using the Probit analysis. The coefficients are the marginal effects which are interpreted as the effect of a unit change in the explanatory variable on the dependent variable. The results reinforcethe result that the IV is positively related to the dependent variable. The result is significant at the 10%, 5% and 1% levels of significance. The magnitude of the coefficient is quiet large as compared to the other variables added in the regression which show that the greater variance in current migration is coming from the historic migration networks as compared to the other variables. The R-square, Adjusted R-Square are near about 0.17 which improves to 0.26 in the IV Probit estimations and is reported as the Psuedo R-squared.

The other explanatory variables added in the specification also exhibit the same signs as expected. The rural dummy has a significantly positive coefficient indicating that individuals in rural areas migrate more as compared to people in urban areas because of their desire to improve their standard of living. The dummies for the wealth indices on the other hand also indicate that the householdswho are amongst the higher score wealth indices tend to have an external migrant.Likewise, the fourth column shows that the individuals who have better facilities like a television, electricity and so forth, tend to have an external migrant. On the contrary, household who own relatively inferior goods tend to not have an external migrant.

The proportion of women working in a house significantly decreases if there is an external migrant in a household. This is also quite consistent with the literature: If the

proportion of women working in a house is higher, the probability of having an external migrant in a household decreases significantly as the need for migration decreases.

The household head's education and profession play an important role in determining whether males would make a decision to migrate or not. The results show that if the household head has attained primary education then there is a significantly high probability of having an external migrant in a household as compared to the households with and uneducated head. The literature says that if the household head is educated then there is a greater tendency for a household to know the opportunities abroad and hence would send their family members abroad. However, the migration in the houses where household heads have attained higher education is significantly lower than the households headed by the uneducated individuals. This can be explained by the fact that highly educated individuals heading families may havebetter opportunitiesin their home countries and hence the need for more improvement in standard of living through migration is not required. Hence, do not need to travel abroad to increase their resources.

It is important to note that it is also likely to be not just about employment opportunities in home countries but also about the type of employment undertaken by migrant that can lead to such results. A large share of migration from Pakistan has been unskilled Gulf migration which could increase the relative return/ wage to unskilled labor and hence reduce the demand of education in the migrant households. Hence, the nature of the job is very important to determine the effect of external migration on education of children and household heads. Since the data does not cover any question related to the nature of job the migrant has hence this analysis can be done in future researches.

As the age of the household head increases there is a decreasing probability of sending family members abroad, but the effect diminishes as the person ages further, and

the direction of the coefficients in the Probit and OLS model was quite consistent with the literature. The dummy variables added for the profession of household heads in the regression indicate that if the household head is a government officer or owns a private business then the possibility of having an external migrant in these houses would be significantly lower than the houses with the unemployed household heads.

A Wald test was conducted to see whether the instrument was weak or not and the statistical value for the Wald-test was higher than the critical value indicating that historic migration rates interacted with the number of males in a household is a good instrumentor in other words variation in the external migration can be explained by the historic migration IV at the district level.

9. Estimating the Impact of External Migration on Schooling

To estimate the effect of external migration on the schooling outcomes of the children, different hypotheses based on school enrollments, accumulated level of schooling and the number of hours spent in school last week were tested using instrumental variables. The results for each specification estimated are given below:

9.1 School Enrollments

The first hypothesis 1A tested is to see whether external migration affects school enrollments significantly across all the households in the sample. The null hypothesis is that external migration has no significant effect on school enrollments of children ages 5-17 in Punjab. As far as the sign of the coefficient is concerned the literature suggests different impacts of external migrations on school enrollments in different countries. A two sided t-test can be used to see whether the coefficient is significant or not.Children ages 5-17 years were selected from the data set.

Table 10 (A) shows the results for thehypothesis 1A. The simple OLS results are mentioned in the first two columns of the table. The *dprobit* column indicates the marginal effect of explanatory variables on school enrollments using the Probit approach. The *ivreg* column indicates the results by using an instrumental variable, whereas the *IVprobit*column shows the results when aProbitmodel is used with the instrumental variable for the estimations of the coefficients. The coefficients in the last column are not the marginal effects, so to convert these coefficients into marginal effects one would have to multiply them with 0.40, which would then make them comparable to that of *IVRegression* results. The district dummies are added in the *ivprobit with fixed effects* and the *ivprobit without fixed effects* is the specification estimated with the same technique but without the district dummies.

In each specification, column (1) and Column (2) only differ in the way in which wealth of the households has been added. In Column (1) the wealth indices have been added in the specification whereas, in column (2) the assets that the households possess have been added directly into the specification. This was done to see if there is any significant difference in the two approaches. But the results reveal that the magnitude and signs for both specifications remain the same. Hence in the subsequent analysis we will use the specifications which include wealth indices.

The results for ages 5 -17 show that external migration has a significantly positive relationship with the school enrollments for children ages 5-17 which means that a higher number of children in migrant houses are enrolled in schools as compared to non-migrants. The last column shows the same analysis being conducted without the district fixed effects and in this regression equation the external migrant coefficient becomes negative and insignificant. Also, the urban dummy becomes negative and significant if the district fixed effects are eliminated from the specification indicating that the enrollments in the rural areas are high which could possibly be because of highernumber of people in rural areas as compared to urban areas.

The gender dummy (which takes the value of 1 if the gender of child is male) has a positive and significant coefficient which means that the enrollment of boys is higher than that of girls implying a gender bias. Likewise, the number of siblings of all ages is negatively related to school enrollments, which is also consistent with the literature.

To test hypothesis 1B and 1C, the data set was divided into two sub samples. The first subsample comprises of younger children ages 5-11. Whereas, the other sub group comprises of elder children ages 12-17. The basic reason behind dividing the data set in

two sub groups was to test whether migration affects younger and older children differently.

Table 10 (B) shows the results for the hypotheses 1B and 1C. The results indicate that external migration has a significantly positive impact on the school enrollments of younger children. All the other variables added in the specification show the same signs as they did for the first hypothesis and are consistent with the literature.For older children we get the opposite results: The coefficient associated with the instrumental variable is not significant; hence, external migration does not affect the enrollments of the older children significantly. A plausible explanation of this result is that because of current migrations it becomes difficult for the older children to get enrollment in that time period. A lagged migration variable can be incorporated to see the impact of early and late migrations on the enrollments of older and younger children but because of data limitations that cannot be done in this thesis.

9.2 Accumulated Level of Schooling

Some economists believe that school enrollment is not a good measure of human capital. So, other dependent variables need to be tested to support the argument that the children in Punjab are benefitting from external migration. So the accumulated level of schooling acquired by a child is also used.

Table 11 represents the result from the regressions keeping the accumulated level of schooling as dependent variable for the children of age group 5-17, 5-11 and 12-17.The first set of results testing hypothesis 2B for the age group 5-17 is quite similar to those which were discussed in the previous section. It appears that accumulated schooling is affected significantly positively by external migration. Likewise, the accumulated level of schooling in the houses headed by more educated individuals is significantly higher as

compared to less educated or uneducated household heads. The same holds true for the children whose houses are headed by government officers as compared to laborers and unemployed household heads.

The results for the first sub sample (ages 5-11) tests hypothesis 2B. The results show that external migration does not have a significant impact on the younger children when the district fixed effects are added in the specification.As soon as the district fixed effects are eliminated from the specification, the results show that the coefficient of external migration becomes significantly positive. The coefficient of child age and age-squared is positive and significant indicating that as the age of the child increases, the level of accumulated schooling also increases. The distance to schooling variable only becomes significant when district fixed effects are eliminated from the specification.

The results for the older sub group (ages 12-17) testing hypothesis 2C of the children are different from that of younger children. Regressions without adding the district fixed effects in the regression show that external migration has a significant negative relationship with accumulated schooling of the older children, but as soon as the district fixed effects are added in the regression the coefficient becomes positive and significant, thus indicating that external migration improves the accumulated level of schooling for the older children significantly.

The results also show that in the education of younger children fewer males attain higher level of education as compared to the females. On the other handolder children in the households with a higher proportion of working women attain significantly higher level of accumulated level of schooling possibly indicating that if the child belongs to a house where there are a high proportion of females working outside the house, they are more aware of the job market and the opportunities associated with higher education.

9.3 Number of Days Spent in School Last week

Table 12 shows the results for the regression when the number of days spent by the child in school during the previous week is kept as a dependent variable. The results testing hypothesis 3A indicate that for the children of ages 5-17 there is no significant difference in the days children spend in their schools, between the households with and without external migrants. The results remain the same even if the district fixed effects are eliminated from the specification. On the other hand, by eliminating district fixed effects, the urban dummy becomes significantly negative, indicating that the children in urban areas spend fewer days in school as compared to the children in rural areas. But these results are to be seen in light of the fact that we only have data on a week's attendance.

The results from sub sample of the younger children testing hypothesis 3B(ages 5-11) imply that there is no significant effect of external migration on the number of days spent by younger child in the school that week but the coefficient of the external migrant becomes negatively significant if the district fixed effects are eliminated, showing that the attendance of younger children falls significantly if there is an external migrant in the household.

The results for the subsample of the older childrenfor testing hypothesis 3C (ages 12-17) show similar results, that is, the attendance of children remain unaffected if there is an external migrant in a household.Likewise, the results for both sub samples ages 5-11 and 12-17 implies that if the household head is highly educated then the number of days the child attends school increases significantly as compared to the houses headed by individuals with low education.

Overall the last set of results implies that the children in the households with an external migrant do not spend extra time on household chores and hence the effect of

external migration on the schooling of child is positive. The results are quite consistent with the findings in literature which has found that external migration has a positive significant impact on school enrollments and accumulated level of schooling. The relaxation of income constraints help households invest more in the schooling of their children and the number of daysthe children attended school last week was not affected significantly negatively.

10. Robustness Checks and Other Results

In order to verify the result that theexternal migration has a positive effect on the child's schooling outcomes,robustness checks have also been performed. Dropouts and the hours spent on household chores which may measure the negative effect of external migration on children are tested as dependant variables.

10.1 Dropouts

Table 13 shows the results for the children dropping out of school if they belong to a household with external migrant. Many economists feel that external migration causes emotional distress amongst children and places added responsibilities on them because of missing family member, forcing them to leave the school. The null hypothesis is that external migration does not have any effect on the number of children dropping out of the school. The same analysis was conducted using the subsamples of younger and older children, but since the incidence of dropout amongst children in the sub sample of younger children is low hence there was insufficient variation in the data to perform this analysis for the younger children.

The resultshow that after testing hypothesis 4A the children ages 5-17 and hypothesis 4B for children ages 12-17,external migrant did not have any significant impact on dropouts. Another point worth noting was that if district fixed effects are eliminated from the regression equations, then the results in table show that the external migration has a significant negative effect on the children from 5-17, and this analysis holds true for the age group of 12-17.

Another important variable which is significant is the proportion of working women outside the houses. This impliesthat households with high proportion of working women create disruptions in the schooling life of children because they have to deal with greater household responsibilities.

10.2 Number of Hours Spent on Household Chores

The last hypothesis deals with the number of hours in a day that children spend on household chores. Table 14 shows that external migration does not haveany significant effect on the number of hours spent on the household chores by the children. On the contrary if the district fixed effects are eliminated from the regression then the external migration shows a negative and significant effect on the hours spent by the children on household chores. Which imply that since the resources of the households increase from the remittances they are able to get extra assistance and hence the number of hours spent by the children on household chore decrease significantly. The urban dummy becomes significant when the fixed effects are eliminated indicating that if the children are living in urban areas, they have to face fewer responsibilities.

The results for the subsample of the younger children (hypothesis 5B) further strengthens the same result that the children face no added responsibility when there is an external migrant in a house, and hence there is no significant effect of external migration on the hours being spent by them on household chores. Other variables which have been added in the specification also reveal that if the child is a male then the time he spends on household chores is significantly lower than the female. Likewise, children have to spend significantly more time on household chores as the proportion of working women in the house increases. It is also interesting to note that if the children belong to wealthier families, that is, if they are ranked higher in the wealth indices score, then the hours spent by the children on household chores drops significantly as compared to if they would have belonged to the first index score.

The results for the sub sample of the older children (hypothesis 5C) show that the impact of external migration on hours spent on household chores remains insignificant.

However, the coefficient for the external migrant becomes significant and negative as soon as the district fixed effects are eliminated from the regression.

10.3 Other Results

The estimations of all the regressions were also done by clustering the data at the district level. The results were consistent with the results in the previously discussed. Overall, the signs and the significance of the important coefficients remain the same. On the other hand the size of the coefficients did vary slightly. Overall the results were quite similar to what has been reported in the previous section.

One issue worth noting is thatwhen the mother's education,was incorporated in the regression the same results were obtained, but the degrees of freedom were significantly lower and the R-squared were reduced significantly. Therefore, the mother's education was not added in any of the specification, as house hold head's education was already added as the proxy for the parent's education.

Hence, all the results and robustness checks further strengthen the result that the children in the households with external migrants are better off as compared to the children in non-migrant households because of greater availability of resources they get from remittances. Therefore, external migration has a positive influence over their school enrollments and accumulated level of schooling and also helps in reducing their household work load.

11. Conclusion

The study finds a positive and significant impact of external migration on school attainment. The results show that the children in external migrant households not only have higher enrollments as compared to the non-migrant households but also have a higher level of accumulated schooling. When the analysis was repeated with the subsamples of older and younger children it can be seen that the positive effect of external migration on enrollment is larger for younger children as compared to the older children.

The results in the study conducted by Mansuri (2006) for the children in rural Pakistan indicate that the effect of external migration for older children is positive and significant, but since the instrumental variable used in the study is current migration community averages hence the coefficients estimated were not fully corrected for bias as current migration rates and current enrollments maybe simultaneously affected the unobserved variables. The regressions were repeated with the elimination of thedistrict fixed effects, the coefficient associated with the external migrant became insignificant and negative.

The results for testing the hypothesis of the accumulated level of schooling of a childindicate that it is being influenced positively by the external migration. The effect of migration on the accumulated schooling is significantly positive only for older children. The results in the article written by Mansuri(2006) reveal that the effect of external migration remains significantly positive for both types of children i.e. younger and elder. The other point worth noting is that all the coefficients estimated in her study are smaller than those found in this study, which show that the impact of external migration on the

schooling enrollment and the accumulated level of schooling is larger than what has been reported inprevious studies.

School enrollments cannot explain the true effect of external migration on children alone. Hence other hypotheses were tested in the study, like the number of hours spent by the children in household chores, the number of days the child spent last week in the school and the number of dropouts.The previous studies did not have specific data which addressed these questions in detail. The results for the dropouts conditional on that the child was enrolled last year indicated that there is no significant effect of external migration on the dropouts of the children. The coefficient for the external migration became significantly negative when district dummies were omitted from the regression. The results remained consistent with what the results from the regressions of the major data set for all the children from 5-17 ages showed.

Likewise, the results for the number of days spent by the child in school and the hours sent on household chores indicate that there has been no significant effect on the two dependent variables even if there is an external migrant in the house. The education of the children in the external migrant's household is not affected by the added responsibilities they would have to face because of the absent family member and also,the children do not have to spend significantly more hours on household chores. The number of days attended last week, by the two different types of households mentioned in the study is also not significantly different from each other.

The other variables added in the regression were quite consistent with the other studies. The distance from the school affects the accumulated level of schooling significantly. The coefficient indicated that as the distance increases the accumulated schooling of the child drops significantly. Likewise if the household head has higher

education this affects the schooling positivelyimplying that if the household heads are more educated they are more aware of the opportunities associated with high schooling and hence would decide to send their children to school for higher education.

Wealth indices on the other hand also play key role in determining whether a child enrollment, accumulated levels of schooling and number of hours spent on household chores. The children in the rich families have better resources and hence acquire higher levels of accumulated schooling as compared to the children in the poor families. Likewise they also spend significantly less time on household chores as compared to the children in poor families.

The results also show that a gender bias also exists in rural Punjab. Boys have higher enrollments as compared to girls but the accumulated level of schooling for girls is significantly higher as compared to boys. Usually householdsprefer to invest more in the boy's education because of the reason that they associate their future security with the security of their male members. Likewise the hours spent on household chores for males are significantly lower than the girls indicating that whenever there is a need for some work to be done in house because of resource constraints or other reasons, the girls face more responsibilities and hence spends more time on household chores as compared to boys.

As the proportion of working women in a household increases, the hours spent by the child on household chores increase significantly. Also as the proportion of working women increases, the number of dropouts increase indicating that the children face more responsibilities when the proportion of women working outside the house rises and hence they end up leaving the schools and spending more time on household chores but it can be seen that the accumulated level of schooling for the children enrolled in the schools

increases significantly which can be explained by the argument that households with more working women are well aware of the opportunities associated with higher education in the market.

The results are also consistent with the similar studies conducted for different countries. Hanson and Woodruff (2003) for Mexico concluded that children complete more years of schooling if they belong to households with external migrant. Likewise, Cox and Ureta (2003) in his study conducted for El Salvador concluded that if households receive remittances, the retention rate amongst their children is low as compared to the households without remittances. Alcarz, Chiquiar and Salcedo (2010) conducted a similar study for Mexico and concluded that remittance crisis had a negative impact on the schooling of children and a positive impact on the child labor.

The finding of the thesis imply that external migration is going to make a significant impact on the education of Pakistan through better flows of knowledge across borders and loosening credit constraints. The positive impacts of external migration in Pakistan outweigh the negative impacts like brain drain, high number of hours consumed as leisure and high relative returns for unskilled labor in Pakistan.

Based on these results, one can conclude that external migration has a significant positive effect on the human capital formation in Punjab, Pakistan.Based on the positive effects of external migration on human capital outlined by this study, one can argue that external migration should be promoted and there is a need for improvement in the formal channels to promote migration.

Appendices

Appendices

Explanation of the Variables

Table 1: Child Characteristics

Variables	Description	Explanation	Reference	Expected Signs
Parents Education (Representative of Child's Ability)	Dummy variable =1 if father has finished primary Dummy variable = 1 if mother has finished primary Dummy is = 1 if father has finished secondary Dummy is = 1 if mother has finished secondary	Educated parents may be better informed about the opportunities and wages their child can get in future with high levels of education. Since child's ability is unobserved, parent's education is a correlate of ability. Mother's education could be used as a proxy as father could be absent because of migration	Mansuri (2006), Cox and Ureta (2003) and Acosta (2006) Hanson and Woodruff (2003)	Positive Positive Positive Positive
Gender	Dummy is= 1 if child is female	Parents would invest more in boys , expecting they will be with them after their marriage and raise their family.	Mansuri (2006), Cox and Ureta (2003) and Pablo Acosta (2006)	Negative
Age	Will take a value from 0-17			Positive
Age Sq.	-			Negative
Disabled	Dummy is = 1 if child has some physical or mental disorder	A disabled child is likely to get lesser or no years of schooling.	Hanson and Woodruff (2003)	Negative
Presence of Older Brother or Sister Under Age 18	Dummy = 1 if yes	Children with older siblings are less likely to be removed from the schools.	Mansuri(2006)	Positive
Indigenous Language	Dummy = 1 if yes	-	Hanson and Woodruff (2003)	Uncertain

Table 2: Household Characteristics

Variables	Description	Explanation	References	Expected Relationship
Married Household Heads	Dummy =1 if married	Children are more likely to be in school if have married household heads	Acosta (2006)	Positive
Age of Household Head	18-65		Mansuri (2006)	Negative
Age Sq.	-		Mansuri (2006)	Positive
No. of Other School Age Siblings	No. of children with age 5-10 living in house. No. of childrenunder 5living in house No. of children with age 11-17 living in house.	Family resources are constrained and costs increases with an increase in family size. Because of Economies of scale, if there are more siblings going to school then the likelihood of child going to school increases.	Mansuri (2006), Cox and Ureta, (2003) and Hanson and Woodruff (2003). Acosta(2006)	Negative Positive All over ambiguous
No. of other School Age Siblings * Gender	No. of siblings * Female	If a child is a female and has more no. of siblings parents might not choose to send her to school	Cox and Ureta (2003) and Acosta (2006)	Negative
Surviving Children	Fraction of children born to mother that survived	Fraction of children born to mother that survive	Hanson and Woodruff (2003)	Negative
Female Household Head	Dummy =1 if household head is a female.	Should affect the schooling of boys and girls differently.	Mansuri (2006)	Uncertain
Social Status	Dummy = 1 if household head is a farmer at land Dummy = 1 if household head is a casual labor Dummy = 1 if household head runs a business or is an officer		Lokshin and Swada (2001)	Negative Negative Positive
9.Migrant	Dummy = 1 if yes, o otherwise	Helps in loosening constraints, on the other hand results in stress due to	Mansuri (2006), Cox and Ureta, (2003) and Hanson and Woodruff (2003).	Uncertain

		absent household head.	Acosta (2006)	
10. Owns home	Dummy =1 if yes, o otherwise	Tells about the social status of households	Hanson and Woodruff (2003)	Positive
11. No. of Adults	Continuous variable	More adult males would mean better security and lesser budget constraints because of more earning hands.	Hanson and Woodruff (2003)	Positive
12. Number of Rooms available per Household	Continuous variable	Representative of the house hold conditions	Acosta (2006)	Positive
13. Refrigerator	Dummy =1 if hh owns a refrigerator	Representative of the house hold conditions	Acosta (2006)	Positive
14.Electricity Connection	Dummy =1 if hh have a electricity	Representative of the house hold conditions	Acosta (2006)	Positive

Table 3: Regional Characteristics

Variables	Description	Explanation	References	Expected Relationship
Rural / Urban Dummy	=1 if HH is located in rural area.	If HH is located in rural area and the distant from the school, then the cost of going to school would increase and probability of HH's child going to school would decrease.	Cox and Ureta (2003) and Acosta (2006)	Uncertain
District Dummy	(n-1) dummies are added in the regression. Where n= The number of Total districts in Punjab	-	-	uncertain
Water Services	=1 for HH in municipality with running water.	Representative of the geographical conditions of household.	Hanson and Woodruff (2003), Cox and Ureta (2003)	Positive
Sanitation	=1 for HH in municipality with sanitation	Representative of the geographical conditions of household.	Hanson and Woodruff (2003)	Positive

Table 4: Instrumental Variables

Instrumental Variable	Explanation	Reference

Historic migration rates	Since historic migration decreases the costs of future migration by establishing informal linkages between the emigrant and its area members and also decreasing the informational barriers.	Hanson and Woodruff (2003)
Past literacy rates	Districts with higher literacy rates historically have better job prospects due to agglomeration economies therefore individuals are likely to migrate less.	Bansak and Chezum (2009)
Political unrest	Districts with political unrest have disrupted social networks.	Bansak and Chezum (2009)
Western unions	Presence of western union offices present within the district during past years interacted with the HH characteristics.	Amuedo- Dorantes and Pozo(2007)
Migration propensity of the county/village of residence	It is the proportion of households that currently has a family member abroad in the area of reference. Some regions are more accustomed in sending migrants abroad for reasons other than income diversification like political unrest etc.	Acosta (2006)

Table 5: Descriptive Statistics – Household Characteristics on average

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Female Head	.0311184	.2172605	.3066632	.030513
	(.1736381)	(.4123902)	(.4611285)	(.1719944)
Male Head	.9688816	.7827395	.6933368	.969487
	(.1736381)	(.4123902)	(.4611285)	(.1719944)
Age of Household Head (Years)	.1651468	.1498259	51.73015	47.69876
	(1.881066)	(1.788981)	(14.80811)	(12.27236)
Marital Status of Household Head				
Married=1	.9095342	.8659475	.8527457	.9097371
	(.2868487)	(.3407161)	(.3543747)	(.2865587)
Widowed=1	.0652454	.1025917	.1159496	.0649976
	(.2469589)	(.3034313)	(.3201785)	(.2465222)
Divorced=1	.0023758	.0017192	.0009619	.0024032
	(.048684)	(.0414281)	(.0310005)	(.0489634)
Unmarried=1	.0218851	.029097	.0298181	.0219211
	(.1463086)	(.1680821)	(.1700927)	(.1464262)
Household Head's Education				
None=1	.3791248	.4017742	.3859879	.3794588
	(.4851705)	(.4902673)	(.486849)	(.4852536)
Primary=1	.1563194	.1768582	.1713461	.156286
	(.3631588)	(.3815568)	(.3768276)	(.3631272)
Middle=1	.1329047	.127896	.131549	.1334061
	(.3394726)	(.3339811)	(.3380146)	(.3400141)
Secondary=1	.2117972	.2007148	.2019592	.2112987
	(.408583)	(.4005438)	(.4014795)	(.4082309)
Higher=1	.1198538	.0927569	.1091577	.1195504
	(.3247914)	(.2900977)	(.3118506)	(.3244359)

Note:
Standard errors in parentheses

Table 5 (Continued): Descriptive Statistics - Household Characteristics on Average

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Mother's Education				
None=1	.6338073	.5590057	.4257373	.6339661
	(.4817652)	(.4965278)	(.4944985)	(.4817211)
Primary=1	.1534644	.1917139	.2135836	.1528512
	(.3604363)	(.3936664)	(.4098727)	(.3598457)
Middle=1	.0681922	.0799826	.108311	.068318
	(.2520766)	(.271278)	(.3108006)	(.252292)
Secondary=1	.083874	.1076319	.1596068	.0843095
	(.2772001)	(.3099285)	(.3662737)	(.2778527)
Higher=1	.060662	.0616659	.0927614	.0605552
	(.2387104)	(.2405583)	(.2901237)	(.2385138)
Household Head's Profession				
Not Working=1	.0982543	.3130715	.407506	.0969427
	(.2976589)	(.4637533)	(.4913922)	(.2958805)
Government Employee=1	.1139992	.0866934	.0504835	.1135296
	(.3178111)	(.2813913)	(.2189502)	(.3172399)
Private Employee=1	.1187237	.0917008	.0716884	.1185324
	(.323464)	(.2886094)	(.2579827)	(.3232384)
Self Employed=1	.182831	.0998868	.1166711	.1842221
	(.3865289)	(.2998555)	(.3210422)	(.3876662)
Employer=1	.0060244	.0046591	.0074528	.0060462
	(.0773831)	(.0680996)	(.0860109)	(.0775221)
Laborer=1	.2105986	.1092049	.0691154	.21204
	(.4077348)	(.3119029)	(.2536616)	(.4087541)
Agriculture=1	.0982543	.1877994	.1647591	.1979839
	(.2976589)	(.3905604)	(.3709795)	(.398481)
Livestock, Poultry, Fishery=1	.1139992	.0219455	.0189868	.0160893
	(.3178111)	(.1465088)	(.1364842)	(.1258195)

Note:
Standard errors in parentheses

Table 6: Asset Composition on Average

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Household Asset Composition				
Owns House=1	.8607668 (.3461906)	.8943054 (.3074529)	.915973 (.2774404)	.88597342 (.3472635)
Number of Rooms	2.273511 (1.123357)	2.630621 (1.288813)	2.864022 (1.363967)	2.2664 (1.11989)
Electricity=1	.9623294 (.1903989)	.9770461 (.1497598)	.9894166 (.1023343)	.9620376 (.1911059)
Gas=1	.3094885 (.462284)	.237937 (.4258295	.3590734 (.4797498)	.3118126 (.463235)
Radio/Tape	.4202211 (.4935956)	.5359762 (.4987148)	.6329736 (.4820149)	.4187686 (.4933587)
Television	.7010502 (.457799)	.7747624 (.4177477)	.8761263 (.3294518)	.700288 (.458133)
Cable/T.V	.2425828 (.428646)	.1896559 (.3920372)	.2829593 (.4504566)	.2440615 (.4295305)
Telephone	.1752364 (.3801702)	.2907734 (.454129)	.4611736 (.4985121)	.1738409 (.3789736)
Mobile Phone	.7693107 (.4212751)	.8726022 (.3334253)	.9195271 (.2720358)	.7678987 (.4221744)
Computer	.1017817 (.3023618)	.1437242 (.3508174)	.2198774 (.4141815)	.1014056 (.3018658)
Internet Connection	.0523497 (.2227318)	.0804246 (.2719552)	.1362042 (.3430203)	.0522208 (.2224727)
Refrigerator/Freezer	.4647281 (.4987556)	.5790085 (.4937288)	.7731012 (.418845)	.463382 (.4986586)
Air Conditioner	.0700304 (.2551989)	.0836282 (.2768354)	.1470485 (.3541698)	.0697334 (.2546979)
Washing Machine	.5767141 (.4940812)	.65 (.4769799)	.8333187 (.3727075)	.57604 (.4941854)
Air Cooler	.9061606 (.2916059)	.936747 (.2434227)	.9575996 (.2015096)	.9065148 (.291112)
Cooking Range	.0631926 (.2433096)	.0780656 (.2682806)	.1400457 (.3470497)	.063055 (.2430625)
Stitching Machine	.8067815 (.3948239)	.8610359 (.3459165)	.9209376 (.269848)	.8056845 (.3956739)
Iron	.8809022 (.3239044)	.9370377 (.2429004)	.976451 (.1516458)	.8801413 (.3247971)
Water Filter	.0345573 (.1826561)	.0412638 (.198904)	.0698552 (.254914)	.343762 (.1821939)
Donkey Pump	.5989538 (.4901116)	.6696644 (.470344)	.7784976 (.415276)	.597867 (.4903298)

Table: 6 Continued

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Watch	.9570207	.9300306	.9755116	.9298273
	(.2028149)	(.255096)	.1545664	(.2554445)
Bicycle	.5546613	.5591008	.5079755	.5581388
	(.4970139)	(.4964961)	.4999583	(.4966097)
Motorcycle	.2971995	.2851577	.3991416	.2848264
	(.457035)	(.4514907)	(.4897434)	(.4513329)
Car/Truck	.0878582	.0906114	.1323465	.0902544
	(.2830946)	(.2870565)	(.3388819)	(.2865466)
House Value	863505.7	778117.4	1302006	779114
	(2097968)	(2363393)	(2784932)	(2381861)
Own Agricultural Land=1	.4163801	.3344109	.4183138	.3321553
	(.4929687)	(.4717853)	(.4933038)	(.4709876)
Agricultural Land Value	7.534741	8.76095	1.40e+07	9584775
	(44.51119)	(33.66547)	(3.25e+08)	(2.52e + 08)
Owns Livestock	.5360998	.4915569	.4346076	.4894215
	(.4987058)	(.49993)	(.4957271)	(.4998894)
Wealth Index 1	.0621051	.1179375	.0168765	.1188814
	(.2413516)	(.322535)	(.1288145)	(.3236498)
Wealth Index 2	.1688658	.1865339	.0661945	.1860581
	(.3746414)	(.3895379)	(.2486326)	(.3891546)
Wealth Index 3	.2460996	.2278815	.1551242	.227441
	(.4307465)	(.4194669)	(.3620388)	(.4191808)
Wealth Index 4	.2823312	.2418923	.3535327	.2410296
	(.4501433)	(.4282305)	(.4780871)	(.4277094)
Wealth Index 5	.2405983	.2257547	.4082721	.2265898
	(.427456)	(.4180795)	(.4915355)	(.4186261)

Note:
Standard errors in parentheses

Table 7: Household Composition on Average

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Total Number of Women 15-49 (Age)	1.054727 (.6468077)	1.236044 (.8705746)	1.302929 (.8860962)	1.051567 (.6409341)
Children 5-14 (Age)	2.432911 (1.704762)	2.152749 (1.784138)	2.109217 (1.80066)	2.439254 (1.698991)
Children Under 5 (Age)	.7338593 (1.012009)	.863435 (1.178886)	.8905033 (1.212895)	.7331729 (1.008948)
Total Number of Household Members	8.043798 (3.092769)	8.390381 (3.834882)	8.296782 (3.976634)	8.022706 (3.066573)
Total Boys 5-9 (Age)	.588199 (.7886067)	.5390037 (.7922016)	.5578874 (.8297422)	.5903795 (.7878841)
Total Girls 5-9 (Age)	.5496732 (.769335)	.4977436 (.7640664)	.5038475 (.7561918)	.5510716 (.7680823)
Total Boys 10-18 (Age)	1.205898 (1.110452)	1.135041 (1.105337)	1.053253 (1.047226)	1.158604 (1.109064)
Total Girls 10-18 (Age)	1.159633 (1.109711)	1.054111 (1.051025)	1.014516 (1.059638)	1.158604 (1.109448)
Total Siblings (Boys)	1.549601 (1.302225)	1.446684 (1.381414)	1.425498 (1.410546)	1.553003 (1.300427)
Total Siblings (Girls)	1.468041 (1.315615)	1.313491 (1.307284)	1.278944 (1.273667)	1.471402 (1.312645)

Note:
Standard errors in parentheses

Table 8: Household Facilities on Average

Variables	Remittances		Migrants	
	Non Recipients	Recipients	With	Without
Urban=1	0.4123301	.2919586	.376503	.4143627
	(.4922553)	(.4546731)	(.4845366)	(.492613)
Health Facility				
Government	.4640613	.435572	.4225844	.4646948
	(.4987099)	(.49558682)	(.494028)	(.4987552)
Private	.5359387	.564428	.5774156	.5353052
	(.4987099)	(.4958682)	(.494028)	(.4987552)
Education				
Government	.488632	.4345133	.3642906	.4881616
	(.4998753)	(.4957478)	(.4813132)	(.4998645)
Private	.511368	.5654867	.6357094	.5118384
	(.4998753)	(.4957478)	(.4813132)	(.4998645)
Rural=1	.5876699	.7080114	.6234697	.5856373
	(.4922553)	(.4546731)	(.4845366)	(.492613)
Health Facility				
Government	.6428489	.6404535	.615699	.6424673
	(.479162)	(.4798821)	(.4864639)	(.4792757)
Private	.3571511	.3595465	.384301	.3575327
	(.479162)	(.4798821)	(.4864639)	(.4792757)
Education				
Government	.7406748	.5462968	.5377943	.7416276
	(.4382672)	(.4781409)	(.498621)	(.4377426)
Private	.2593252	.3537032	.4622057	.2583724
	(.4382672)	(.4781409)	(.498621)	(.4377426)

Note:
Standard errors in parentheses

Table: 9 Estimating the effect of Historic migration rates*No of Adult males on Migrant Dummy

Dependent variable=1 if there is an external migrant in the house.	OLS (1)	OLS (2)	Probit (1)	Probit (2)
No.of Adult males*Average historic Migration rate	4.761653*** (.471946)	6.686588*** (.4809517)	1.821809*** (.2564573)	2.804213*** (.2721793)
Rural=1	.0519144*** (.0038479)	.0279441*** (.0040673)	.0170851*** (.0015831)	.0117522*** (.0021143)
Wealthindex2	.0176122*** (.0035141)	–	.0621742*** (.0089763)	–
Wealthindex3	.0286561*** (.0035282)	–	.0794907*** (.0090346)	–
Wealthindex4	.0848196*** (.0038801)	–	.165182*** (.0134478)	–
Wealthindex5	.1546896*** (.0053593)	–	.3205208*** (.0240796)	–
Married Household Head	.080123*** (.0045909)	.0826849*** (.0046583)	.0181035*** (.0014853)	.0198425*** (.0015013)
Value of Agricultural Land Owned	4.51e-12 (5.16e-12)	2.92e-12 (5.19e-12)	2.76e-12 (2.71e-12)	2.41e-12 (2.78e-12)
Number of Rooms in the House	.0013146 (.0010488)	.0045243*** (.001065)	.0005504 (.0006638)	.0024897*** (.0006995)
Value of House Owned	1.40e-09** (5.57e-10)	2.00e-09*** (5.64e-10)	6.75e-10** (2.70e-10)	8.33e-10*** (2.78e-10)
Household Head's Gender (male=1)	-.3998146*** (.0060193)	-.4042105*** (.0060714)	-.3590238*** (.0162192)	-.383718*** (.0163884)
Age of the Household Head	-.0071826*** (.0005137)	-.0072438*** (.0005294)	-.0026739*** (.0003294)	-.0028387*** (.0003466)
Household Head Age Squared	.0000845*** (4.86e-06)	.0000863*** (5.01e-06)	.0000324*** (3.01e-06)	.0000352** (3.16e-06)
Household Head's Education if Primary	.0108956*** (.0033522)	.0138287*** (.0033895)	.0061144** (.0026067)	.0104277*** (.0029049)
Household Head's Education if Middle	.0026338*** (.0034486)	.0048465 (.0034802)	.0013797 (.0025427)	.00525* (.0028565)
Household Head's Education if Secondary	-.0054356*** (.0031403)	-.0014986 (.0031655)	-.0033749 (.0021278)	5.38e-06 (.0023574)

Table: 9(Continued)

Dependent variable=1 if there is an external migrant in the house.	OLS (1)	OLS (2)	Probit (1)	Probit (2)
Household head's education if Higher	-.0257753*** (.0042815)	-.0169949*** (.0043674)	-.0103228*** (.0023596)	-.0080037*** (.0027347)
Household head if Govt. employee	-.0244116*** (.0040563)	- 0.0258793*** (-.0041289)'	-.0141716*** (.0021008)	-.0141164*** (.0022669)
Household head if Pvt. Employee	-.0036568 (.0045842)	-.004247 (.0046507)	.0018 (.0032817)	.0021113 (.0035149)
Household head if agriculturist	-.0074228*** (.002553)	-.0076244*** (.0025947)	-.0056748*** (.0017622)	-.0057853*** (.0018601)
Household head if owns livestock	.0019949 (.0081649)	.0049183 (.0082755)	.0097276* (.0063511)	.0117848* (.0069138)
Total household members	-.0078246*** (.0006618)	-0.0093831*** (-.0006805)	-.003206*** (.0004518)	-.0042923*** (.0004898)
Total number of women(15-49)	.040853*** (.0026921)	.0429469*** (.0027306)	.0192612*** (.0017044)	.0215425*** (.0017809)
Proportion of Women working	-.0147761*** (.0026179)	-.0137542*** (.0026655)	-.0077925*** (.0021691)	-.0071589*** (.002267)
Total infants	.0091721*** (.0012492)	.0090525*** (.0012756)	.004376*** (.000832)	.004421*** (.000883)
Total children (5-17)	.0016508* (.0008836)	.0024494*** (.0009022)	-.0012317** (.0006107)	-.0007727 (.0006489)
Electricity	–	-.0070201 (.0047107)	–	.0117352** (.0043238)
Gas	–	-0.0079733* (0.004521)'	–	-.0038092 (.0026312)
Television	–	.0195691*** (.0025958)	–	.0169198*** (.0019266)
Computer	–	.0267339*** (.0048119)	–	.0139792** (.0037525)
Washing Machine	–	.0376968*** (.0027047)	–	.0257655*** (.002177)

Table: 9(Continued)

Dependent variable=1 if there is an external migrant in the house.	OLS (1)	OLS (2)	Probit (1)	Probit (2)
Microwave	–	.0513589*** (.00612)	–	.0214089*** (.0051536)
Stitching Machine	–	.0045649 (.0029372)	–	.0056994** (.0023549)
Turbine	–	.0149132*** (.0025598)	–	.0104272*** (.0019007)
Bicycle	–	-.0101801*** (.0022339)	–	-.0097474*** (.001719)
Motorcycle	–	.0127143*** (.0025884)	–	.009958*** (.0019677)
Car/Truck	–	-.0151936*** (.0033413)	–	-.0075141*** (.0019317)
Constant	.4107908*** (.0145192)	.4381186*** (.0152258)	–	–
Observations	41289	40431	41289	40431
R-Squared	0.1781	0.1717	–	–
Adjusted R-Squared	0.1776	0.1711	–	–
Psuedo R-Squaed	–	–	0.259	0.2511
F-statistics(To test joint significance of excluded instruments)	344	253.82	–	–

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 10 (A): Estimating the Effect of External migration on School Enrollment

Dependent Variable: Child Enrolled Currently (5-17)	OLS		DPROBIT		Ivreg		IV probit		IVPROBIT (without village F.E)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
extmigrant	0.0189***	0.0168***	0.187***	0.166***	-0.165	0.373	4.079***	4.006***	-1.107	-1.096
	(0.00573)	(0.00586)	(0.0503)	(0.0520)	(0.472)	(0.233)	(1.411)	(0.730)	(0.932)	(0.999)
urban2	-0.0273***	-0.0153***	-0.204***	-0.110***	-0.0335**	-0.00936*	-0.0131	-0.0152	-0.265***	-0.152***
	(0.00308)	(0.00341)	(0.0238)	(0.0265)	(0.0161)	(0.00522)	(0.103)	(0.0336)	(0.0387)	(0.0316)
Age_HHH_sum	0.00169***	0.00179***	0.0112***	0.0124***	0.00104	0.00307***	0.0220***	0.0229***	0.00600	0.00781
	(0.000522)	(0.000538)	(0.00379)	(0.00394)	(0.00176)	(0.00100)	(0.00380)	(0.00337)	(0.00530)	(0.00566)
hhhage_sq	-0.0000150***	-0.0000177***	-0.0000964***	-0.000118***	-0.00000729	-0.0000318***	-0.000235***	-0.000239***	-0.0000351	-0.0000657
	(0.00000501)	(0.00000518)	(0.0000366)	(0.0000381)	(0.0000205)	(0.0000106)	(0.0000470)	(0.0000341)	(0.0000566)	(0.0000588)
malehhh	-0.0173**	-0.0165**	-0.0894*	-0.0957*	-0.0707	0.0875	1.082**	1.062***	-0.482*	-0.487
	(0.00693)	(0.00708)	(0.0510)	(0.0523)	(0.137)	(0.0684)	(0.448)	(0.234)	(0.280)	(0.302)
workingwomen_proportion	-0.0122***	-0.0107***	-0.0667***	-0.0520***	-0.0147**	-0.00631*	0.00738	0.00920	-0.0905***	-0.0785***
	(0.00225)	(0.00230)	(0.0155)	(0.0160)	(0.00696)	(0.00369)	(0.0394)	(0.0203)	(0.0181)	(0.0185)
childage	0.0786***	0.0794***	-0.122***	-0.127***	0.0788***	0.0788***	-0.0902***	-0.0977***	-0.116***	-0.121***
	(0.00201)	(0.00204)	(0.0235)	(0.0243)	(0.00207)	(0.00213)	(0.0346)	(0.0236)	(0.0236)	(0.0246)
childagesq	-0.00513***	-0.00519***	-0.00625***	-0.00624***	-0.00514***	-0.00516***	-0.00437**	-0.00432***	-0.00610***	-0.00616***
	(0.0000894)	(0.0000910)	(0.000924)	(0.000954)	(0.0000907)	(0.0000946)	(0.00177)	(0.00110)	(0.000927)	(0.000950)
male	0.00922***	0.00878***	0.0992***	0.0991***	0.00946***	0.00828***	0.0652**	0.0661***	0.0973***	0.0975***
	(0.00236)	(0.00239)	(0.0185)	(0.0191)	(0.00245)	(0.00248)	(0.0310)	(0.0203)	(0.0184)	(0.0188)
Disability	-0.0112	-0.0104	-0.296	-0.296	-0.0138	-0.00232	-0.157	-0.127	-0.316	-0.327
	(0.0188)	(0.0193)	(0.241)	(0.248)	(0.0200)	(0.0205)	(0.203)	(0.194)	(0.233)	(0.240)
sec_govdis	-0.00616***	-0.00664***	-0.0413***	-0.0453***	-0.00634***	-0.00618***	-0.0257	-0.0280**	-0.0505***	-0.0529***
	(0.00172)	(0.00175)	(0.0131)	(0.0134)	(0.00179)	(0.00183)	(0.0158)	(0.0126)	(0.0127)	(0.0131)
pri_pvtdis	-0.00194	-0.00209	-0.0198	-0.0176	-0.00229	-0.00114	-0.00642	-0.00241	-0.0202	-0.0281**
	(0.00190)	(0.00193)	(0.0142)	(0.0145)	(0.00212)	(0.00208)	(0.0137)	(0.0124)	(0.0134)	(0.0139)
pri_govdis	0.000573	-0.00156	0.00172	-0.0184	0.00113	-0.00272	-0.0107	-0.0259	0.00585	-0.0152
	(0.00344)	(0.00352)	(0.0254)	(0.0260)	(0.00375)	(0.00370)	(0.0207)	(0.0209)	(0.0248)	(0.0258)
T_INFANTS	-0.00502***	-0.00595***	-0.0430***	-0.0514***	-0.00363	-0.00776***	-0.0604***	-0.0572***	-0.0300**	-0.0441***
	(0.00110)	(0.00114)	(0.00878)	(0.00917)	(0.00372)	(0.00166)	(0.00688)	(0.00773)	(0.0126)	(0.0119)
T_BOYS_5_9	-0.00597***	-0.00608***	-0.0198*	-0.0157	-0.00528**	-0.00685***	-0.0293***	-0.0206**	-0.0143	-0.0125
	(0.00136)	(0.00139)	(0.0107)	(0.0110)	(0.00223)	(0.00151)	(0.00843)	(0.00875)	(0.0112)	(0.0111)
T_GIRLS_5_9	-0.00631***	-0.00706***	-0.0313***	-0.0365***	-0.00601***	-0.00718***	-0.0290***	-0.0284***	-0.0282**	-0.0357***
	(0.00140)	(0.00142)	(0.0111)	(0.0113)	(0.00160)	(0.00146)	(0.0103)	(0.00994)	(0.0110)	(0.0111)

Table 10 (A) (Continued): Estimating the Effect of External migration on School Enrollment

Dependent Variable: Child Enrolled Currently (5-17)	OLS		DPROBIT		Ivreg		IV probit		IVPROBIT (without village F.E)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
rooms		0.00407***		0.0295***		0.000555		-0.0171		0.0414***
	_	(0.00112)	_	(0.00925)	_	(0.00257)	_	(0.0133)	_	(0.0122)
electricity		-0.00537		-0.0577		-0.00521		-0.0400		-0.0694
	_	(0.00632)	_	(0.0457)	_	(0.00650)	_	(0.0377)	_	(0.0446)
gas		0.00774**		0.0655**		0.00803**		0.0510**		0.0464*
	_	(0.00338)	_	(0.0266)	_	(0.00348)	_	(0.0225)	_	(0.0240)
radio		-0.000882		0.00135		-0.00551		-0.0492***		0.0155
	_	(0.00234)	_	(0.0182)	_	(0.00386)	_	(0.0175)	_	(0.0224)
television		-0.00304		-0.00645		-0.00563*		-0.0331*		0.0151
	_	(0.00280)	_	(0.0210)	_	(0.00334)	_	(0.0175)	_	(0.0218)
cable		-0.00338		-0.0231		-0.00197		-0.00144		-0.0365
	_	(0.00322)	_	(0.0258)	_	(0.00344)	_	(0.0213)	_	(0.0259)
mobilephone		-0.00119		0.00444		-0.00435		-0.0311*		0.0181
	_	(0.00285)	_	(0.0211)	_	(0.00358)	_	(0.0184)	_	(0.0225)
computer		0.0489***		0.382***		0.0410***		0.190**		0.406***
	_	(0.00510)	_	(0.0472)	_	(0.00738)	_	(0.0745)	_	(0.0466)
internet_cnction		0.00491		0.0363		0.00148		-0.00920		0.0511
	_	(0.00690)	_	(0.0687)	_	(0.00744)	_	(0.0542)	_	(0.0675)
refrigerator		0.0311***		0.235***		0.0239***		0.0922*		0.253***
	_	(0.00293)	_	(0.0226)	_	(0.00558)	_	(0.0481)	_	(0.0251)
Airconditioner		-0.00417		0.000223		0.00243		0.0725*		-0.0290
	_	(0.00557)	_	(0.0517)	_	(0.00717)	_	(0.0426)	_	(0.0535)
washingmachine		0.0196***		0.140***		0.0148***		0.0491		0.160***
	_	(0.00299)	_	(0.0225)	_	(0.00439)	_	(0.0330)	_	(0.0247)
aircooler		0.00253		0.0165		0.00492		0.0378		0.0107
	_	(0.00421)	_	(0.0308)	_	(0.00460)	_	(0.0251)	_	(0.0306)
microwave		0.0103*		0.208***		0.00426		0.0847		0.228***
	_	(0.00576)	_	(0.0574)	_	(0.00710)	_	(0.0588)	_	(0.0570)
stitchingmachine		0.00472		0.0687***		0.00498		0.0526***		0.0664***
	_	(0.00307)	_	(0.0228)	_	(0.00316)	_	(0.0200)	_	(0.0225)
iron		0.00934**		0.0841***		0.00741*		0.0402		0.0938***
	_	(0.00390)	_	(0.0285)	_	(0.00420)	_	(0.0273)	_	(0.0278)

Table 10 (A)(Continued) : Estimating the Effect of External migration on School Enrollment

Dependant Variable: Child Enrolled Currently (5-17)	OLS		DPROBIT		Ivreg		IV probit		IVPROBIT (without village F.E)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
waterfilter		0.00579		0.0805		0.00240		0.0207		0.0853
	_	(0.00631)	_	(0.0622)	_	(0.00685)	_	(0.0511)	_	(0.0607)
bicycle		0.00513**		0.0313*		0.00765***		0.0504***		0.0148
	_	(0.00222)	_	(0.0174)	_	(0.00281)	_	(0.0139)	_	(0.0180)
motorcycle		0.0110***		0.0863***		0.00986***		0.0501**		0.0777***
	_	(0.00269)	_	(0.0221)	_	(0.00286)	_	(0.0219)	_	(0.0214)
car_truck		-0.00165		0.0377		-0.00271		0.0159		0.0369
	_	(0.00416)	_	(0.0369)	_	(0.00433)	_	(0.0297)	_	(0.0360)
_cons	0.669***	0.661***	3.474***	3.473***	0.734***	0.535***	1.068	1.156	3.886***	3.906***
	(0.0191)	(0.0201)	(0.185)	(0.194)	(0.169)	(0.0849)	(1.416)	(0.716)	(0.272)	(0.295)
N	69286	66873	69273	66860	69285	66873	58355	55799	69286	66873
R-sq	0.206	0.210			0.194	0.166				
adj. R-sq	0.205	0.209			0.194	0.165				
Psuedo R-squared			0.312	0.3106						
Wald test of exogeneity	_	_	_	_	_	_	2.90 Prob > chi2 = 0.0887	11.24 Prob > chi2 = 0.0008	1.84 Prob > chi2 = 0.1749	1.52 Prob > chi2 = 0.2182

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 10 (B) : Estimating the Effect of External migration on School Enrollment

Dependent Variable: Child Enrolled Currently	Age Group 5-11					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E
extmigrant	-0.00678***	0.0783	-0.502	5.028***	-0.955	0.0421***	0.203***	-0.0198	1.481	-1.590
	-0.00172	(0.130)	(0.686)	(0.896)	(2.035)	(0.0122)	(0.0540)	(0.346)	(1.316)	(1.475)
urban2	-0.00275	-0.219***	-0.0241	-0.258***	-0.285***	-0.0532***	-0.201***	-0.0552***	-0.154**	-0.274***
	-0.00307	(0.0564)	(0.0236)	(0.0445)	(0.0883)	(0.00664)	(0.0265)	(0.0130)	(0.0604)	(0.0497)
Age_HHH_sum	0.0000035	-0.0118	-0.00190	-0.0189***	-0.0160	-0.00104	-0.000172	-0.00118	0.00277	_
	-0.00000287	(0.0103)	(0.00216)	(0.00574)	(0.0114)	(0.00110)	(0.00416)	(0.00184)	(0.00628)	(0.00889)
hhhage_sq	0.00654	0.000123	0.0000234	0.000229***	0.000171	-0.0000362***	-0.000137***	-0.0000334*	-0.000193***	-0.0000399
	-0.00435	(0.000101)	(0.0000273)	(0.0000554)	(0.000122)	(0.0000105)	(0.0000402)	(0.0000191)	(0.0000664)	(0.0000917)
malehhh	-0.00465***	0.190	-0.151	-1.279***	-0.170	-0.0316**	-0.134**	-0.0485	0.219	-0.639
	-0.00134	(0.125)	(0.214)	(0.288)	(0.675)	(0.0134)	(0.0550)	(0.0952)	(0.372)	(0.408)
workingwomen_proportion	0.00182	-0.103***	-0.0121	-0.115***	-0.141***	-0.0177***	-0.0585***	-0.0186***	-0.0398	-0.0839***
	-0.00322	(0.0357)	(0.0103)	(0.0239)	(0.0397)	(0.00451)	(0.0172)	(0.00647)	(0.0270)	(0.0221)
childage	0.0297***	0.598***	0.0283***	0.274	0.581***	0.0615**	-0.443***	0.0606**	-0.411***	-0.438***
	-0.0029	(0.101)	(0.00411)	(0.171)	(0.108)	(0.0258)	(0.105)	(0.0263)	(0.113)	(0.103)
childagesq	-0.00218***	-0.0463***	-0.00209***	-0.0214*	-0.0449***	-0.00476***	0.00519	-0.00473***	0.00434	0.00561
	-0.00018	(0.00602)	(0.000261)	(0.0130)	(0.00678)	(0.000896)	(0.00360)	(0.000916)	(0.00369)	(0.00350)
male	0.00174	0.0683	0.00278	0.0463	0.0562	0.0282***	0.115***	0.0283***	0.109***	0.111***
	-0.00138	(0.0424)	(0.00225)	(0.0302)	(0.0413)	(0.00533)	(0.0212)	(0.00537)	(0.0226)	(0.0219)
Disability	-0.0084	-0.300	-0.0153	-0.202	-0.331	_	_	_	_	
	-0.00791	(0.241)	(0.0137)	(0.151)	(0.233)					
sec_govdis	-0.000154	0.000414	-0.000989	0.000870	-0.00717	-0.0137***	-0.0505***	-0.0137***	-0.0488***	-0.0590***
	-0.000958	(0.0302)	(0.00166)	(0.0168)	(0.0305)	(0.00375)	(0.0148)	(0.00376)	(0.0148)	(0.0140)
pri_pvtdis	0.000594	0.0101	-0.00130	-0.0136	-0.00681	-0.00763*	-0.0301*	-0.00757*	-0.0305*	-0.0213
	-0.00104	(0.0313)	(0.00290)	(0.0181)	(0.0300)	(0.00423)	(0.0161)	(0.00424)	(0.0159)	(0.0155)
pri_govdis	-0.00146	-0.0428	-0.000686	-0.0142	-0.0370	0.00580	0.0180	0.00612	0.0110	0.0275
	-0.00187	(0.0522)	(0.00261)	(0.0322)	(0.0507)	(0.00768)	(0.0293)	(0.00789)	(0.0299)	(0.0294)
T_INFANTS	0.000123	0.00333	0.00438	0.0461***	0.00935	-0.0143***	-0.0560***	-0.0138***	-0.0631***	-0.0383**
	-0.000588	(0.0195)	(0.00584)	(0.0122)	(0.0265)	(0.00258)	(0.00998)	(0.00347)	(0.0114)	(0.0181)
T_BOYS_5_9	-0.00250***	-0.0654***	-0.000144	-0.00453	-0.0586**	-0.00203	-0.00880	-0.00182	-0.0128	-0.00159
	-0.000757	(0.0223)	(0.00335)	(0.0262)	(0.0258)	(0.00315)	(0.0125)	(0.00335)	(0.0129)	(0.0134)

Table 10 (B)(Continued): Estimating the Effect of External migration on School Enrollment

Dependent Variable: Child Enrolled Currently	Age Group 5-11					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E
T_GIRLS_5_9	-0.00176**	-0.0467**	0.000189	-0.00493	-0.0419*	-0.00858***	-0.0362***	-0.00868***	-0.0333**	-0.0353***
	-0.000775	(0.0238)	(0.00284)	(0.0201)	(0.0250)	(0.00326)	(0.0128)	(0.00330)	(0.0133)	(0.0125)
T_BOYS_10_18	-0.000871	-0.0354*	-0.000491	-0.0121	-0.0333*	-0.00975***	-0.0367***	-0.00999***	-0.0308***	-0.0438***
	-0.000586	(0.0183)	(0.000907)	(0.0145)	(0.0182)	(0.00231)	(0.00911)	(0.00268)	(0.0115)	(0.00935)
T_GIRLS_10_18	0.000798	0.0193	0.000217	0.00298	0.0198	-0.000949	0.0000848	-0.00121	0.00544	-0.00837
	-0.000571	(0.0190)	(0.00107)	(0.0122)	(0.0188)	(0.00230)	(0.00923)	(0.00273)	(0.0106)	(0.0112)
govt_employee	-0.00148	-0.0728	-0.0119	-0.148***	-0.0941	0.0237***	0.122***	0.0222*	0.151***	0.0742
	-0.00221	(0.0807)	(0.0145)	(0.0436)	(0.0861)	(0.00807)	(0.0354)	(0.0118)	(0.0433)	(0.0585)
pvt_employee	0.00139	0.0554	-0.00173	0.0136	0.0825	0.00637	0.0301	0.00600	0.0367	0.00457
	-0.00197	(0.0734)	(0.00492)	(0.0456)	(0.0745)	(0.00756)	(0.0310)	(0.00784)	(0.0311)	(0.0324)
labourer	-0.00208	-0.0701	-0.00620	-0.0807**	-0.0842	-0.0262***	-0.0815***	-0.0266***	-0.0721**	-0.0921***
	-0.00174	(0.0555)	(0.00602)	(0.0320)	(0.0554)	(0.00577)	(0.0260)	(0.00705)	(0.0284)	(0.0252)
agriculture	-0.00213	-0.0685	-0.00468	-0.0792**	-0.0864	0.0208***	0.0849***	0.0204***	0.0905***	0.0648*
	-0.00184	(0.0596)	(0.00418)	(0.0342)	(0.0585)	(0.00714)	(0.0281)	(0.00746)	(0.0278)	(0.0337)
livestock_poultry	-0.00822	-0.130	-0.00969	-0.118	-0.149	-0.0265	-0.0826	-0.0262	-0.0875	-0.0751
	-0.00504	(0.142)	(0.0109)	(0.0852)	(0.139)	(0.0200)	(0.0746)	(0.0201)	(0.0737)	(0.0757)
hhedulevel2	0.00398**	0.110**	0.00699	0.0781*	0.112**	-0.00573	-0.0187	-0.00536	-0.0258	-0.00124
	-0.00173	(0.0559)	(0.00465)	(0.0414)	(0.0549)	(0.00669)	(0.0252)	(0.00701)	(0.0258)	(0.0277)
hhedulevel3	0.00199	0.0494	0.00458	0.0524	0.0602	0.0305***	0.111***	0.0306***	0.106***	0.122***
	-0.00198	(0.0628)	(0.00430)	(0.0364)	(0.0621)	(0.00736)	(0.0286)	(0.00738)	(0.0294)	(0.0280)
hhedulevel4	0.00173	0.0285	0.00294	0.0293	0.0891	0.0739***	0.297***	0.0736***	0.295***	0.290***
	-0.00176	(0.0588)	(0.00278)	(0.0343)	(0.0572)	(0.00670)	(0.0273)	(0.00690)	(0.0288)	(0.0415)
hhedulevel5	0.00513**	0.258***	0.00225	0.114	0.259***	0.101***	0.516***	0.101***	0.504***	0.506***
	-0.00222	(0.0932)	(0.00483)	(0.0942)	(0.0946)	(0.00870)	(0.0398)	(0.00872)	(0.0474)	(0.0614)
fem_bias	-0.00117	-0.0393	-0.0133	-0.0869	-0.0724	-0.00244	-0.0120	-0.00355	0.0112	-0.0387
	-0.00844	(0.101)	(0.0170)	(0.0584)	(0.111)	(0.0151)	(0.0601)	(0.0164)	(0.0640)	(0.0648)
wlthindex2	0.00922***	0.209***	0.0141**	0.159***	0.205***	0.0274***	0.0896***	0.0283***	0.0685*	0.109***
	-0.00198	(0.0540)	(0.00714)	(0.0567)	(0.0524)	(0.00868)	(0.0318)	(0.0100)	(0.0398)	(0.0340)
wlthindex3	0.0139***	0.357***	0.0252	0.286***	0.359***	0.0698***	0.241***	0.0715***	0.198***	0.276***
	-0.0021	(0.0620)	(0.0156)	(0.0824)	(0.0644)	(0.00892)	(0.0333)	(0.0132)	(0.0608)	(0.0391)

Table 10 (B)(Continued) : Estimating the Effect of External migration on School Enrollment

Dependent Variable: Child Enrolled Currently	Age Group 5-11					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E	OLS	DPROBIT	IVREG	IVPROBIT F.E	IVPROBIT without F.E
withindex4	0.0179***	0.508***	0.0467	0.523***	0.531***	0.127***	0.454***	0.130***	0.366***	0.518***
	-0.00234	(0.0736)	(0.0393)	(0.0963)	(0.112)	(0.00968)	(0.0371)	(0.0224)	(0.110)	(0.0616)
withindex5	0.0250***	0.874***	0.0676	0.825***	0.866***	0.218***	0.894***	0.223***	0.758***	0.951***
	-0.00282	(0.101)	(0.0580)	(0.169)	(0.143)	(0.0113)	(0.0451)	(0.0324)	(0.173)	(0.0668)
_cons	0.891***	0.642	1.081***	1.714***	1.163	0.743***	5.601***	0.773***	4.826***	6.147***
	-0.0144	(0.503)	(0.260)	(0.301)	(0.880)	(0.186)	(0.764)	(0.250)	(1.220)	(0.771)
N	39429	39193	39429	37858	39429					
R-sq	0.017		.			0.148		0.147		
adj. R-sq	0.016		.			0.146		0.145		
Psuedo R-squared		0.115					0.154			
Wald test of exogeneity									0.87 Prob > chi2 = 0.3509	1.30 Prob > chi2 = 0.2533

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 11: Estimating the effect External Migration on Accumulated level of Schooling

Accumulated level attended	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
extmigrant	0.0222*	3.818**	-1.137***	-0.000737	-0.0639	0.459**	0.0556***	3.225***	-4.841***
	(0.0114)	(1.529)	(0.280)	(0.0114)	(1.781)	(0.208)	(0.0208)	(0.787)	(1.216)
urban2	0.00513	0.132**	-0.0434***	0.0169***	0.0147	0.0331***	-0.0117	0.0912***	-0.212***
	(0.00513)	(0.0519)	(0.0136)	(0.00608)	(0.0609)	(0.0108)	(0.0113)	(0.0296)	(0.0552)
Age_HHH_sum	0.00796***	0.0214***	0.00345**	0.00429***	0.00409	0.00580***	0.0120***	0.0253***	-0.0103*
	(0.00104)	(0.00567)	(0.00150)	(0.00105)	(0.00570)	(0.00126)	(0.00186)	(0.00413)	(0.00620)
hhhage_sq	-0.0000606***	-0.000220***	-0.00000761	-0.0000300***	-0.0000274	-0.0000490***	-0.0000916***	-0.000235***	0.000149**
	(0.00000997)	(0.0000662)	(0.0000162)	(0.0000101)	(0.0000717)	(0.0000133)	(0.0000179)	(0.0000428)	(0.0000655)
malehhh	-0.0762***	1.029**	-0.429***	-0.0254*	-0.0452	0.117*	-0.112***	0.750***	-1.503***
	(0.0138)	(0.446)	(0.0862)	(0.0154)	(0.561)	(0.0692)	(0.0227)	(0.216)	(0.349)
workingwomen_proportion	-0.00852*	0.0445**	-0.0314***	-0.00279	-0.00373	-0.00589	-0.0113	0.0308**	-0.0827***
	(0.00448)	(0.0226)	(0.00620)	(0.00473)	(0.0271)	(0.00568)	(0.00767)	(0.0146)	(0.0213)
childage	0.115***	0.112***	0.116***	0.334***	0.334***	0.334***	-0.00723	0.0440	-0.0821
	(0.00400)	(0.00661)	(0.00431)	(0.0103)	(0.0111)	(0.0105)	(0.0438)	(0.0599)	(0.0773)
childagesq	0.00324***	0.00332***	0.00321***	-0.00990***	-0.00988***	-0.00989***	0.00805***	0.00625***	0.0107***
	(0.000178)	(0.000290)	(0.000192)	(0.000637)	(0.000705)	(0.000653)	(0.00152)	(0.00208)	(0.00269)
male	-0.0130***	-0.0174**	-0.0113**	-0.0126***	-0.0125**	-0.0128**	0.00389	-0.000567	0.0109
	(0.00469)	(0.00780)	(0.00506)	(0.00486)	(0.00598)	(0.00499)	(0.00905)	(0.0122)	(0.0156)
Disability	0.00641	0.0536	-0.0120	-0.0124	-0.0132	-0.0156	0	0	0
	(0.0375)	(0.0635)	(0.0404)	(0.0280)	(0.0355)	(0.0287)	(.)	(.)	(.)
sec_govdis	-0.00156	0.00221	-0.00583	0.00488	0.00477	0.00775**	-0.00941	-0.00820	-0.0265**
	(0.00343)	(0.00575)	(0.00379)	(0.00337)	(0.00447)	(0.00352)	(0.00637)	(0.00852)	(0.0114)
pri_pvtdis	-0.00895**	-0.00193	-0.0129***	-0.00977***	-0.0100	-0.0149***	-0.0134*	-0.0170*	-0.00453
	(0.00378)	(0.00674)	(0.00396)	(0.00367)	(0.00762)	(0.00369)	(0.00719)	(0.00965)	(0.0120)
pri_govdis	-0.00282	-0.0151	0.00377	-0.00453	-0.00443	-0.00279	0.00621	-0.0114	0.0449*
	(0.00587)	(0.0122)	(0.00741)	(0.00563)	(0.00722)	(0.00673)	(0.0131)	(0.0181)	(0.0240)
T_INFANTS	-0.0275***	-0.0565***	-0.0189***	-0.0186***	-0.0181	-0.0253***	-0.0404***	-0.0621***	-0.00413
	(0.00219)	(0.0122)	(0.00332)	(0.00206)	(0.0154)	(0.00288)	(0.00438)	(0.00796)	(0.0116)

chooling

Table 11(Continued): Estimating the effect External Migration on Accumulated level of Schooling

Accumulated level attended	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
T_BOYS_5_9	0.0133***	-0.00111	0.0177***	0.0166***	0.0169*	0.0139***	0.00137	-0.00934	0.0192*
	(0.00271)	(0.00726)	(0.00312)	(0.00267)	(0.00873)	(0.00291)	(0.00535)	(0.00763)	(0.0101)
T_GIRLS_5_9	0.00904***	0.00309	0.0109***	0.0179***	0.0181**	0.0165***	-0.00361	0.000964	-0.00877
	(0.00278)	(0.00509)	(0.00300)	(0.00274)	(0.00719)	(0.00286)	(0.00554)	(0.00749)	(0.00954)
T_BOYS_10_18	-0.0238***	-0.0206***	-0.0251***	-0.0140***	-0.0140***	-0.0157***	-0.0256***	-0.0139**	-0.0453***
	(0.00206)	(0.00357)	(0.00223)	(0.00207)	(0.00250)	(0.00211)	(0.00392)	(0.00599)	(0.00848)
T_GIRLS_10_18	-0.0168***	-0.00897**	-0.0192***	-0.0120***	-0.0121***	-0.0121***	-0.0162***	-0.00300	-0.0374***
	(0.00203)	(0.00455)	(0.00227)	(0.00202)	(0.00281)	(0.00208)	(0.00391)	(0.00617)	(0.00868)
govt_employee	0.0388***	0.126***	0.0132	0.0249***	0.0236	0.0348***	0.0419***	0.122***	-0.0806**
	(0.00768)	(0.0371)	(0.0104)	(0.00780)	(0.0379)	(0.00904)	(0.0137)	(0.0270)	(0.0385)
pvt_employee	-0.00497	0.0180	-0.0176**	0.00299	0.00262	0.00812	-0.0164	0.00189	-0.0591**
	(0.00700)	(0.0146)	(0.00787)	(0.00696)	(0.0125)	(0.00736)	(0.0128)	(0.0177)	(0.0235)
labourer	-0.0361***	-0.00916	-0.0447***	-0.00868	-0.00917	-0.00273	-0.0865***	-0.0678***	-0.118***
	(0.00622)	(0.0148)	(0.00701)	(0.00615)	(0.0153)	(0.00654)	(0.0115)	(0.0161)	(0.0208)
agriculture	-0.00151	0.0194	-0.0135*	0.00247	0.00217	-0.000978	0.00195	0.0236	-0.0416*
	(0.00657)	(0.0136)	(0.00738)	(0.00649)	(0.0107)	(0.00680)	(0.0121)	(0.0171)	(0.0233)
livestock_poultry	-0.0517***	-0.0327	-0.0617***	-0.0376**	-0.0384	-0.0339*	-0.0665*	-0.0851*	-0.0290
	(0.0182)	(0.0305)	(0.0196)	(0.0179)	(0.0286)	(0.0185)	(0.0341)	(0.0458)	(0.0594)
hhedulevel2	0.0309***	0.00833	0.0392***	0.0336***	0.0339***	0.0288***	0.0341***	0.0165	0.0714***
	(0.00618)	(0.0135)	(0.00698)	(0.00611)	(0.0125)	(0.00646)	(0.0114)	(0.0158)	(0.0215)
hhedulevel3	0.0915***	0.0773***	0.0993***	0.0576***	0.0579***	0.0551***	0.137***	0.132***	0.161***
	(0.00685)	(0.0125)	(0.00754)	(0.00682)	(0.0112)	(0.00713)	(0.0125)	(0.0168)	(0.0219)
hhedulevel4	0.154***	0.156***	0.159***	0.0612***	0.0614***	0.0591***	0.273***	0.288***	0.268***
	(0.00624)	(0.0101)	(0.00667)	(0.00622)	(0.00763)	(0.00639)	(0.0114)	(0.0157)	(0.0195)
hhedulevel5	0.203***	0.216***	0.207***	0.0902***	0.0898***	0.0929***	0.376***	0.379***	0.395***
	(0.00796)	(0.0140)	(0.00851)	(0.00784)	(0.0127)	(0.00802)	(0.0148)	(0.0198)	(0.0250)
fem_bias	-0.0313**	0.0369	-0.0557***	-0.0138	-0.0154	-0.00212	-0.0275	0.0278	-0.124**
	(0.0126)	(0.0342)	(0.0148)	(0.0121)	(0.0450)	(0.0136)	(0.0257)	(0.0369)	(0.0497)

Accumulated level attended	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
wlthindex2	0.0477***	0.00286	0.0579***	0.0493***	0.0499***	0.0457***	0.0856***	0.0392*	0.150***
	(0.00742)	(0.0217)	(0.00862)	(0.00699)	(0.0186)	(0.00738)	(0.0148)	(0.0228)	(0.0313)
wlthindex3	0.125***	0.0307	0.149***	0.101***	0.103**	0.0921***	0.213***	0.123***	0.345***
	(0.00777)	(0.0400)	(0.0111)	(0.00744)	(0.0404)	(0.00899)	(0.0152)	(0.0301)	(0.0450)
wlthindex4	0.197***	-0.0216	0.255***	0.121***	0.125	0.0976***	0.352***	0.167***	0.624***
	(0.00856)	(0.0890)	(0.0191)	(0.00827)	(0.102)	(0.0148)	(0.0165)	(0.0510)	(0.0798)
wlthindex5	0.312***	-0.0129	0.389***	0.154***	0.160	0.119***	0.548***	0.272***	0.929***
	(0.0102)	(0.132)	(0.0259)	(0.00995)	(0.151)	(0.0195)	(0.0192)	(0.0731)	(0.111)
_cons	-0.876***	-2.233***	-0.417***	-1.661***	-1.637**	-1.802***	-0.345	-1.885***	2.114***
	(0.0380)	(0.550)	(0.112)	(0.0510)	(0.679)	(0.0963)	(0.316)	(0.569)	(0.817)
N	68688	68688	68688	39095	39095	39095	29593	29593	29593
R-sq	0.628	0.026	0.569	0.414	0.414	0.384	0.387	.	.
adj. R-sq	0.627	0.025	0.569	0.413	0.413	0.384	0.386	.	.

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 12: Estimating the Effect of External Migration on the No. of Days spent in School Last Week

No.of days attended in school Last week	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
extmigrant	-0.109***	5.616	-0.577	-0.0457	1.204	-1.135**	-0.0413	1.050	0.687
	(0.0212)	(3.635)	(0.491)	(0.0313)	(1.085)	(0.563)	(0.0293)	(1.081)	(1.014)
urban2	-0.0622***	0.128	-0.119***	-0.0427**	-0.00374	-0.156***	-0.0493***	-0.0163	-0.0465
	(0.0116)	(0.122)	(0.0240)	(0.0177)	(0.0385)	(0.0287)	(0.0163)	(0.0367)	(0.0463)
Age_HHH_sum	-0.00573***	0.0154	-0.00473*	-0.00822***	-0.00179	-0.00473	-0.00825***	-0.00275	-0.000885
	(0.00199)	(0.0137)	(0.00273)	(0.00301)	(0.00639)	(0.00322)	(0.00282)	(0.00617)	(0.00618)
hhhage_sq	0.0000625***	-0.000186	0.0000539*	0.0000737**	0.00000677	0.0000661*	0.0000776***	0.0000202	-0.00000312
	(0.0000191)	(0.000160)	(0.0000292)	(0.0000287)	(0.0000653)	(0.0000342)	(0.0000269)	(0.0000632)	(0.0000635)
malehhh	0.0159	1.772	-0.125	0.0602*	0.434	-0.341*	0.0506	0.382	0.308
	(0.0262)	(1.115)	(0.159)	(0.0349)	(0.327)	(0.185)	(0.0329)	(0.330)	(0.320)
workingwomen_proportion	0.0156*	0.107*	0.00440	0.0128	0.0338	0.000522	0.0145	0.0327	0.0194
	(0.00869)	(0.0594)	(0.0118)	(0.0125)	(0.0224)	(0.0148)	(0.0116)	(0.0216)	(0.0219)
childage	0.0861***	0.0846***	0.0886***	0.129*	0.149**	0.0748***	0.134***	0.137***	0.112
	(0.00766)	(0.0114)	(0.00789)	(0.0699)	(0.0745)	(0.0267)	(0.0478)	(0.0491)	(0.0745)
childagesq	-0.00298***	-0.00311***	-0.00310***	-0.00450*	-0.00525**	-0.00225	-0.00470***	-0.00484***	-0.00398
	(0.000349)	(0.000524)	(0.000360)	(0.00245)	(0.00262)	(0.00166)	(0.00172)	(0.00177)	(0.00262)
male	0.00970	-0.00273	0.00937	0.0206	0.0165	0.00237	0.0100	0.00591	0.0198
	(0.00890)	(0.0154)	(0.00922)	(0.0143)	(0.0152)	(0.0127)	(0.0133)	(0.0142)	(0.0152)
Disability	-0.133**	-0.0591	-0.173**	0	0	-0.179**	0	0	0
	(0.0672)	(0.110)	(0.0694)	(.)	(.)	(0.0726)	(.)	(.)	(.)
sec_govdis	-0.00415	-0.00311	-0.0359***	-0.00986	-0.0123	-0.0359***	-0.00992	-0.0121	-0.0398***
	(0.00647)	(0.00962)	(0.00675)	(0.0101)	(0.0106)	(0.00896)	(0.00935)	(0.00984)	(0.0104)
pri_pvtdis	0.00628	0.0227	0.00458	0.0183	0.0194	-0.00359	0.0153	0.0164	0.0186
	(0.00717)	(0.0149)	(0.00725)	(0.0115)	(0.0120)	(0.00937)	(0.0106)	(0.0110)	(0.0117)
pri_govdis	0.0176	0.0104	-0.00993	0.0246	0.0216	-0.0184	0.0269	0.0252	0.000546
	(0.0130)	(0.0198)	(0.0133)	(0.0210)	(0.0218)	(0.0171)	(0.0193)	(0.0199)	(0.0222)
T_INFANTS	-0.0154***	-0.0571**	-0.0167***	-0.00398	-0.0126	-0.0167**	-0.00356	-0.0111	-0.0149
	(0.00414)	(0.0272)	(0.00582)	(0.00704)	(0.0104)	(0.00728)	(0.00645)	(0.00999)	(0.0105)
T_BOYS_5_9	-0.00652	-0.0225*	-0.00785	-0.0146*	-0.0167*	-0.000436	-0.0156**	-0.0164**	-0.0170*
	(0.00513)	(0.0127)	(0.00548)	(0.00845)	(0.00893)	(0.00736)	(0.00769)	(0.00793)	(0.00900)

Table 12(Continued): Estimating the Effect of External Migration on the No. of Days spent in School Last Week

No.of days attended in school Last week	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
T_GIRLS_5_9	0.0000541	-0.00928	-0.00309	-0.00924	-0.00581	0.00174	-0.00578	-0.00269	-0.0129
	(0.00524)	(0.00977)	(0.00541)	(0.00873)	(0.00951)	(0.00732)	(0.00793)	(0.00869)	(0.00943)
T_BOYS_10_18	-0.0141***	-0.00735	-0.0187***	-0.00900	-0.00212	-0.0211***	-0.00987*	-0.00432	-0.00869
	(0.00392)	(0.00723)	(0.00407)	(0.00621)	(0.00878)	(0.00538)	(0.00575)	(0.00806)	(0.00899)
T_GIRLS_10_18	-0.0195***	-0.00267	-0.0228***	-0.00989	-0.00221	-0.0288***	-0.0117**	-0.00539	-0.00541
	(0.00380)	(0.0121)	(0.00419)	(0.00610)	(0.00918)	(0.00532)	(0.00564)	(0.00850)	(0.00913)
govt_employee	-0.0499***	0.0827	-0.0680***	-0.0439**	-0.0109	-0.0785***	-0.0389**	-0.0104	-0.0321
	(0.0143)	(0.0868)	(0.0185)	(0.0207)	(0.0358)	(0.0232)	(0.0192)	(0.0344)	(0.0343)
pvt_employee	0.00845	0.0382	0.00461	0.0270	0.0320	-0.0156	0.0298	0.0340*	0.0380*
	(0.0131)	(0.0271)	(0.0140)	(0.0198)	(0.0210)	(0.0187)	(0.0183)	(0.0193)	(0.0211)
labourer	-0.0150	0.0235	-0.0229*	0.000841	0.00687	-0.0292*	0.00114	0.00700	-0.00980
	(0.0119)	(0.0301)	(0.0127)	(0.0185)	(0.0199)	(0.0167)	(0.0170)	(0.0184)	(0.0197)
agriculture	-0.0190	0.00793	-0.0275**	-0.0198	-0.0147	-0.0291*	-0.0261	-0.0212	-0.0267
	(0.0124)	(0.0251)	(0.0132)	(0.0191)	(0.0202)	(0.0173)	(0.0177)	(0.0187)	(0.0207)
livestock_poultry	-0.0687**	-0.0218	-0.0706**	-0.126**	-0.126**	-0.0551	-0.141***	-0.136**	-0.122**
	(0.0349)	(0.0597)	(0.0360)	(0.0560)	(0.0579)	(0.0468)	(0.0521)	(0.0536)	(0.0586)
hhedulevel2	0.0416***	-0.00597	0.0551***	0.0252	0.0113	0.0682***	0.0231	0.0102	0.0212
	(0.0118)	(0.0349)	(0.0131)	(0.0185)	(0.0226)	(0.0165)	(0.0170)	(0.0217)	(0.0238)
hhedulevel3	0.0550***	0.0266	0.0644***	0.0288	0.0258	0.0855***	0.0222	0.0198	0.0282
	(0.0130)	(0.0263)	(0.0138)	(0.0198)	(0.0207)	(0.0183)	(0.0183)	(0.0190)	(0.0213)
hhedulevel4	0.0675***	0.0661***	0.0714***	0.0391**	0.0438**	0.0956***	0.0432***	0.0461***	0.0376**
	(0.0118)	(0.0174)	(0.0121)	(0.0177)	(0.0188)	(0.0163)	(0.0164)	(0.0171)	(0.0184)
hhedulevel5	0.0843***	0.0964***	0.0717***	0.0498**	0.0490**	0.0926***	0.0527**	0.0518**	0.0280
	(0.0148)	(0.0232)	(0.0151)	(0.0223)	(0.0231)	(0.0203)	(0.0207)	(0.0212)	(0.0232)
fem_bias	-0.00766	0.118	-0.0165	-0.0172	0.00937	-0.0379	-0.0402	-0.0172	0.00217
	(0.0235)	(0.0869)	(0.0271)	(0.0395)	(0.0469)	(0.0346)	(0.0371)	(0.0444)	(0.0474)
wlthindex2	0.0366***	-0.0220	0.0529***	0.0525**	0.0383	0.0479**	0.0597***	0.0492**	0.0525*
	(0.0141)	(0.0427)	(0.0154)	(0.0245)	(0.0282)	(0.0188)	(0.0223)	(0.0251)	(0.0284)
wlthindex3	0.0746***	-0.0588	0.101***	0.0641**	0.0336	0.112***	0.0677***	0.0424	0.0619
	(0.0148)	(0.0875)	(0.0196)	(0.0249)	(0.0369)	(0.0234)	(0.0227)	(0.0342)	(0.0377)

Table 12(Continued): Estimating the effect of External Migration on the No. of Days spent in School Last Week

No.of days attended in school Last week	Age Group 5-17			Age Group 5-11			Age Group 12-17		
	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E	OLS	ivreg with F.E	ivreg without F.E
wlthindex4	0.106***	-0.214	0.167***	0.0872***	0.0169	0.202***	0.0921***	0.0344	0.0747
	(0.0162)	(0.205)	(0.0332)	(0.0267)	(0.0670)	(0.0387)	(0.0244)	(0.0624)	(0.0571)
wlthindex5	0.0874***	-0.391	0.162***	0.0276	-0.0777	0.234***	0.0437	-0.0455	0.00787
	(0.0192)	(0.305)	(0.0448)	(0.0307)	(0.0968)	(0.0511)	(0.0282)	(0.0929)	(0.0928)
_cons	5.077***	2.888**	5.352***	4.831***	4.151***	5.615***	4.789***	4.302***	4.671***
	(0.0721)	(1.394)	(0.208)	(0.501)	(0.786)	(0.255)	(0.337)	(0.593)	(0.769)
N	60900	60900	60900	22833	22833	38067	26688	26688	22833
R-sq	0.066	.	0.008	0.060	.	.	0.060	0.011	
adj. R-sq	0.065	.	0.007	0.057	.	.	0.058	0.009	

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 13: Estimating the effect of External Migration on the Dropouts

Dependant Variable: DROPOUT	Age Group 5-17					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT with (village F.E)	IVPROBIT (without village F.E)	OLS	DPROBIT	IVREG	IVPROBIT with F.E	IVPROBIT without F.E
extmigrant	-0.00162	-0.207	0.0247	2.220	-3.240*	-0.00292	-0.170	0.00879	0.769	-4.217***
	(0.00137)	(0.153)	(0.113)	(8.627)	(1.677)	(0.00290)	(0.160)	(0.0819)	(4.097)	(1.483)
Urban2	-0.00131	-0.109	-0.000429	-0.0146	-0.218***	-0.00246	-0.107	-0.00208	-0.0734	-0.245***
	(-1.77)	(-1.66)	(0.00384)	(0.378)	(0.0744)	(0.00157)	(0.0737)	(0.00308)	(0.170)	(0.0576)
Age_HHH_sum	0.000113	0.00856	0.000206	0.0164	-0.00310	0.000223	0.0126	0.000273	0.0167	-0.00872
	(0.000125)	(0.0117)	(0.000419)	(0.0265)	(0.0125)	(0.000260)	(0.0133)	(0.000436)	(0.0212)	(0.0144)
hhhage_sq	-0.00000150	-0.000127	-0.00000261	-0.000218	0.0000190	-0.00000329	-0.000185	-0.00000383	-0.000228	0.0000652
	(0.00000120)	(0.000115)	(0.00000490)	(0.000291)	(0.000138)	(0.00000250)	(0.000133)	(0.00000452)	(0.000216)	(0.000163)
malehhh	0.000787	0.0718	0.00845	0.776	-0.844	0.00196	0.0883	0.00515	0.345	-1.093**
	(0.00166)	(0.132)	(0.0328)	(2.454)	(0.551)	(0.00316)	(0.144)	(0.0226)	(1.122)	(0.487)
workingwomen_proportion	0.00272***	0.135***	0.00309*	0.154***	0.108	0.00423***	0.130***	0.00439***	0.141***	0.0593
	(0.000539)	(0.0350)	(0.00166)	(0.0352)	(0.0668)	(0.00107)	(0.0394)	(0.00153)	(0.0541)	(0.0803)
childage	-0.00132***	0.176***	-0.00134***	0.156	0.141**	-0.00700	-0.102	-0.00682	-0.0823	-0.131
	(0.000482)	(0.0592)	(0.000494)	(0.147)	(0.0573)	(0.00610)	(0.286)	(0.00624)	(0.297)	(0.193)
childagesq	0.000115***	-0.00240	0.000116***	-0.00211	-0.00185	0.000310	0.00657	0.000304	0.00584	0.00657
	(0.0000214)	(0.00235)	(0.0000217)	(0.00288)	(0.00195)	(0.000212)	(0.00984)	(0.000217)	(0.0103)	(0.00674)
male	0.000642	0.0468	0.000608	0.0390	0.0443	0.000361	0.0127	0.000341	0.0113	0.0192
	(0.000566)	(0.0522)	(0.000586)	(0.0655)	(0.0432)	(0.00126)	(0.0609)	(0.00127)	(0.0605)	(0.0409)
Disability	-0.00139		-0.00103			-	-	-	-	
	(0.00451)		(0.00478)							
sec_govdis	-0.000221	-0.0214	-0.000196	-0.0167	-0.0169	-0.000236	-0.00948	-0.000233	-0.00881	-0.00903
	(0.000413)	(0.0356)	(0.000428)	(0.0406)	(0.0292)	(0.000889)	(0.0405)	(0.000889)	(0.0400)	(0.0277)
pri_pvtdis	-0.000575	-0.0525	-0.000524	-0.0430	-0.0394	-0.000644	-0.0284	-0.000655	-0.0294	-0.0117
	(0.000455)	(0.0403)	(0.000506)	(0.0651)	(0.0322)	(0.00100)	(0.0462)	(0.00100)	(0.0456)	(0.0312)
pri_govdis	0.000249	0.0351	0.000169	0.0236	0.0467	-0.000114	-0.00771	-0.000174	-0.0130	0.0345
	(0.000824)	(0.0713)	(0.000894)	(0.0842)	(0.0568)	(0.00182)	(0.0851)	(0.00187)	(0.0869)	(0.0562)
T_INFANTS	-0.0000848	-0.00838	-0.000283	-0.0270	0.0256	0.000382	0.0157	0.000304	0.00864	0.0441**
	(0.000264)	(0.0248)	(0.000889)	(0.0663)	(0.0245)	(0.000611)	(0.0279)	(0.000822)	(0.0421)	(0.0192)

Table 13(Continued): Estimating the effect of External Migration on the Dropouts

Dependant Variable: DROPOUT	Age Group 5-17					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT with (village F.E)	IVPROBIT (without village F.E)	OLS	DPROBIT	IVREG	IVPROBIT with F.E	IVPROBIT without F.E
T_BOYS_5_9	0.0000202	0.00679	-0.0000781	-0.00302	0.0196	-0.000432	-0.0206	-0.000471	-0.0232	0.00211
	(0.000327)	(0.0297)	(0.000532)	(0.0459)	(0.0247)	(0.000746)	(0.0358)	(0.000794)	(0.0367)	(0.0265)
T_GIRLS_5_9	0.000459	0.0316	0.000417	0.0243	0.0304	0.00138*	0.0565*	0.00140*	0.0571*	0.0303
	(0.000335)	(0.0298)	(0.000382)	(0.0463)	(0.0249)	(0.000772)	(0.0342)	(0.000782)	(0.0338)	(0.0297)
T_BOYS_10_18	-0.000657***	-0.0670***	-0.000633**	-0.0591	-0.0560***	-0.00148***	-0.0737***	-0.00144**	-0.0696**	-0.0665***
	(0.000249)	(0.0236)	(0.000271)	(0.0579)	(0.0217)	(0.000547)	(0.0270)	(0.000635)	(0.0350)	(0.0234)
T_GIRLS_10_18	-0.000431*	-0.0406*	-0.000375	-0.0317	-0.0404**	-0.00124**	-0.0626**	-0.00119*	-0.0578	-0.0601***
	(0.000244)	(0.0230)	(0.000342)	(0.0514)	(0.0192)	(0.000545)	(0.0269)	(0.000647)	(0.0364)	(0.0215)
govt_employee	-0.00129	-0.0983	-0.000692	-0.0337	-0.154**	-0.00253	-0.106	-0.00224	-0.0819	-0.172***
	(0.000926)	(0.0838)	(0.00271)	(0.276)	(0.0704)	(0.00191)	(0.0918)	(0.00279)	(0.146)	(0.0615)
pvt_employee	-0.00319***	-0.305***	-0.00303***	-0.257	-0.270***	-0.00623***	-0.302***	-0.00616***	-0.292***	-0.224**
	(0.000845)	(0.0852)	(0.00111)	(0.298)	(0.0822)	(0.00179)	(0.0930)	(0.00186)	(0.112)	(0.0996)
labourer	-0.00187**	-0.159**	-0.00168	-0.124	-0.156***	-0.00405**	-0.180**	-0.00398**	-0.171**	-0.143**
	(0.000749)	(0.0646)	(0.00110)	(0.193)	(0.0556)	(0.00160)	(0.0731)	(0.00167)	(0.0867)	(0.0671)
agriculture	-0.00237***	-0.208***	-0.00222**	-0.175	-0.158***	-0.00531***	-0.244***	-0.00524***	-0.235**	-0.164**
	(0.000791)	(0.0688)	(0.00100)	(0.204)	(0.0588)	(0.00169)	(0.0780)	(0.00177)	(0.0949)	(0.0699)
livestock_poultry	0.00433**	0.175	0.00448**	0.168	0.159	0.00231	0.0244	0.00225	0.0161	0.0745
	(0.00219)	(0.139)	(0.00228)	(0.155)	(0.124)	(0.00475)	(0.178)	(0.00477)	(0.180)	(0.122)
hhedulevel2	0.00114	0.0844	0.000977	0.0581	0.0973*	0.00266*	0.107	0.00259	0.0982	0.106**
	(0.000744)	(0.0611)	(0.00101)	(0.137)	(0.0500)	(0.00159)	(0.0681)	(0.00166)	(0.0806)	(0.0506)
hhedulevel3	-0.000667	-0.0591	-0.000767	-0.0612	-0.0364	-0.00180	-0.0871	-0.00181	-0.0873	-0.0457
	(0.000825)	(0.0757)	(0.000931)	(0.0702)	(0.0666)	(0.00174)	(0.0853)	(0.00175)	(0.0842)	(0.0678)
hhedulevel4	-0.0000316	0.000454	-0.0000122	0.000701	-0.00706	-0.000346	-0.0173	-0.000291	-0.0127	-0.0275
	(0.000752)	(0.0668)	(0.000759)	(0.0604)	(0.0545)	(0.00159)	(0.0744)	(0.00163)	(0.0763)	(0.0499)
hhedulevel5	-0.00145	-0.199**	-0.00135	-0.168	-0.190**	-0.00362*	-0.254**	-0.00360*	-0.248**	-0.178
	(0.000960)	(0.102)	(0.00106)	(0.209)	(0.0912)	(0.00206)	(0.115)	(0.00207)	(0.121)	(0.113)

Table 13(Continued): Estimating the effect of External Migration on the Dropouts

Dependant Variable: DROPOUT	Age Group 5-17					Age Group 12-17				
	OLS	DPROBIT	IVREG	IVPROBIT with (village F.E)	IVPROBIT (without village F.E)	OLS	DPROBIT	IVREG	IVPROBIT with F.E	IVPROBIT without F.E
fem_bias	0.00111	0.101	0.00159	0.143	0.0327	0.00224	0.0793	0.00246	0.0954	-0.0208
	(0.00153)	(0.117)	(0.00256)	(0.152)	(0.112)	(0.00359)	(0.141)	(0.00388)	(0.154)	(0.113)
withindex2	-0.000750	-0.0869	-0.00106	-0.109	-0.0373	-0.000219	-0.00545	-0.000389	-0.0198	0.0543
	(0.000892)	(0.0771)	(0.00160)	(0.0829)	(0.0740)	(0.00206)	(0.0934)	(0.00238)	(0.111)	(0.0680)
withindex3	-0.000668	-0.0860	-0.00132	-0.140	0.0141	0.000377	0.0157	0.0000477	-0.0117	0.137*
	(0.000935)	(0.0803)	(0.00295)	(0.173)	(0.0899)	(0.00211)	(0.0956)	(0.00313)	(0.153)	(0.0750)
withindex4	-0.000591	-0.0839	-0.00211	-0.221	0.136	0.0000777	0.00574	-0.000608	-0.0520	0.269**
	(0.00103)	(0.0890)	(0.00658)	(0.458)	(0.135)	(0.00229)	(0.105)	(0.00532)	(0.272)	(0.110)
withindex5	-0.00251**	-0.271**	-0.00478	-0.460	0.0994	-0.00246	-0.126	-0.00349	-0.210	0.309*
	(0.00122)	(0.112)	(0.00977)	(0.571)	(0.203)	(0.00268)	(0.128)	(0.00767)	(0.380)	(0.179)
_cons	0.00897**	-3.960***	-0.000436	-4.434***	-2.404	0.0580	-1.868	0.0523	-2.324	0.516
	(0.00458)	(0.484)	(0.0404)	(0.458)	(1.546)	(0.0440)	(2.088)	(0.0593)	(2.775)	(2.052)
N	69286	64897	69286	64897	69081	29857	28075	29857	28075	29857
R-sq	0.007		0.002			0.007		0.007		
adj. R-sq	0.006		0.001			0.005		0.005		
pseudo R-sq		0.125								

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 14: Estimating the effect of External Migration on Hours Spent on HH chores

HRs spent on HH chores	Age Group 5-17			Age Group 5-11			Age group 12-17		
	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E
extmigrant	-0.233	-50.80	-9.929**	-0.590***	-0.933	-3.509	0.426	5.955	-34.57*
	(0.200)	(109.9)	(4.049)	(0.227)	(6.724)	(3.373)	(0.375)	(9.108)	(18.84)
urban2	-1.130***	-2.550	-1.624***	-0.815***	-0.824***	-1.049***	-1.613***	-1.466***	-2.990***
	(0.0996)	(3.092)	(0.170)	(0.113)	(0.223)	(0.162)	(0.189)	(0.309)	(0.649)
Age_HHH_sum	-0.0320*	-0.163	-0.0251	-0.0341*	-0.0349	-0.00832	-0.0328	-0.0151	-0.116
	(0.0170)	(0.286)	(0.0214)	(0.0193)	(0.0249)	(0.0218)	(0.0326)	(0.0440)	(0.0790)
hhhage_sq	0.000318*	0.00192	0.000329	0.000367**	0.000377	0.000143	0.000268	0.0000717	0.00129
	(0.000164)	(0.00349)	(0.000222)	(0.000186)	(0.000276)	(0.000221)	(0.000313)	(0.000452)	(0.000847)
malehhh	-0.0979	-12.93	-2.614**	0.169	0.0807	-0.580	-0.378	1.000	-9.481*
	(0.247)	(27.90)	(1.104)	(0.305)	(1.759)	(0.952)	(0.419)	(2.307)	(5.015)
workingwomen_proportion	0.199***	-0.328	0.356***	0.238***	0.234**	0.392***	0.148	0.189	0.246
	(0.0707)	(1.152)	(0.0865)	(0.0818)	(0.118)	(0.0947)	(0.129)	(0.147)	(0.229)
childage	0.171*	0.432	0.221*	-0.00262	-0.00224	-0.0422	-0.0154	0.680	-5.200
	(0.103)	(0.596)	(0.114)	(0.209)	(0.210)	(0.222)	(3.649)	(3.861)	(5.702)
childagesq	0.0208***	0.0101	0.0192***	0.0315**	0.0315**	0.0350***	0.0325	0.00600	0.230
	(0.00517)	(0.0251)	(0.00568)	(0.0127)	(0.0127)	(0.0134)	(0.141)	(0.149)	(0.219)
male	-0.543***	-0.371	-0.591***	-0.260***	-0.259***	-0.327***	-1.065***	-1.107***	-0.872***
	(0.0759)	(0.399)	(0.0838)	(0.0875)	(0.0893)	(0.0929)	(0.154)	(0.170)	(0.271)
Disability	-0.338	-1.446	-0.406	-0.258	-0.265	-0.243	0	0	0
	(0.613)	(2.644)	(0.670)	(0.550)	(0.568)	(0.586)	(.)	(.)	(.)
sec_govdis	0.00927	-0.0940	0.0289	-0.0264	-0.0275	0.00708	0.0643	0.0627	0.0909
	(0.0541)	(0.244)	(0.0596)	(0.0603)	(0.0644)	(0.0648)	(0.105)	(0.106)	(0.147)
pri_pvtdis	0.206***	0.237*	0.406***	0.197***	0.197***	0.374***	0.266**	0.268**	0.510***
	(0.0581)	(0.125)	(0.0608)	(0.0641)	(0.0647)	(0.0651)	(0.116)	(0.117)	(0.156)
pri_govdis	-0.405***	0.0796	-0.721***	-0.358***	-0.356***	-0.721***	-0.513**	-0.599**	-0.380
	(0.104)	(1.069)	(0.120)	(0.115)	(0.123)	(0.123)	(0.207)	(0.252)	(0.444)
T_INFANTS	-0.00135	0.383	0.0728	0.00507	0.00807	0.0364	0.00415	-0.0271	0.199
	(0.0348)	(0.838)	(0.0506)	(0.0377)	(0.0697)	(0.0505)	(0.0726)	(0.0896)	(0.164)

Table 14(Continued): Estimating the effect of External Migration on Hours Spent on HH chores

HRs spent on HH chores	Age Group 5-17			Age Group 5-11			Age group 12-17		
	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E
T_BOYS_5_9	0.232***	0.386	0.201***	0.130***	0.131**	0.0834	0.316***	0.295***	0.368***
	(0.0425)	(0.342)	(0.0477)	(0.0480)	(0.0532)	(0.0519)	(0.0856)	(0.0931)	(0.137)
T_GIRLS_5_9	-0.0171	-0.0875	-0.108**	-0.0694	-0.0694	-0.137***	0.192**	0.218**	-0.0527
	(0.0440)	(0.172)	(0.0482)	(0.0497)	(0.0497)	(0.0525)	(0.0887)	(0.0990)	(0.148)
T_BOYS_10_18	-0.136***	-0.194	-0.205***	-0.0941**	-0.0938**	-0.148***	-0.157**	-0.126	-0.420***
	(0.0338)	(0.141)	(0.0370)	(0.0382)	(0.0385)	(0.0402)	(0.0674)	(0.0854)	(0.147)
T_GIRLS_10_18	-0.0656**	-0.177	-0.159***	-0.0917**	-0.0922**	-0.162***	-0.114*	-0.0920	-0.344***
	(0.0332)	(0.248)	(0.0373)	(0.0376)	(0.0390)	(0.0401)	(0.0658)	(0.0758)	(0.122)
govt_employee	0.131	-1.337	-0.127	0.211	0.201	0.0964	0.0261	0.176	-0.826
	(0.132)	(3.200)	(0.184)	(0.152)	(0.258)	(0.190)	(0.242)	(0.347)	(0.612)
pvt_employee	0.0377	-0.631	-0.00116	0.148	0.143	0.177	-0.150	-0.0790	-0.519
	(0.117)	(1.468)	(0.143)	(0.133)	(0.162)	(0.151)	(0.222)	(0.253)	(0.424)
labourer	-0.0971	-0.567	-0.0620	-0.144	-0.147	-0.0641	-0.0334	0.0118	-0.163
	(0.100)	(1.038)	(0.118)	(0.113)	(0.132)	(0.126)	(0.193)	(0.209)	(0.319)
agriculture	0.0893	-0.537	0.220*	0.0858	0.0818	0.270**	0.0922	0.170	-0.111
	(0.105)	(1.373)	(0.127)	(0.118)	(0.142)	(0.132)	(0.201)	(0.240)	(0.402)
livestock_poultry	0.640**	-0.179	0.713**	0.443	0.439	0.604*	1.071*	1.189**	0.697
	(0.277)	(1.847)	(0.309)	(0.305)	(0.319)	(0.327)	(0.554)	(0.592)	(0.861)
hhedulevel2	0.132	0.560	0.264**	0.222**	0.225*	0.262**	-0.0306	-0.0866	0.492
	(0.0982)	(0.946)	(0.114)	(0.111)	(0.121)	(0.120)	(0.188)	(0.211)	(0.356)
hhedulevel3	0.202*	0.290	0.140	0.280**	0.281**	0.158	0.0379	0.0587	0.0177
	(0.111)	(0.276)	(0.121)	(0.126)	(0.130)	(0.134)	(0.213)	(0.218)	(0.295)
hhedulevel4	-0.0225	0.160	-0.0540	-0.000928	0.00124	-0.0432	-0.0906	-0.0870	-0.138
	(0.103)	(0.438)	(0.113)	(0.118)	(0.125)	(0.126)	(0.195)	(0.197)	(0.268)
hhedulevel5	-0.219	-0.163	-0.463***	-0.215	-0.214	-0.436***	-0.255	-0.262	-0.428
	(0.136)	(0.272)	(0.146)	(0.152)	(0.153)	(0.159)	(0.262)	(0.265)	(0.371)
fem_bias	0.0403	1.123	0.152	0.224	0.233	0.206	-0.284	-0.303	-0.171
	(0.218)	(2.384)	(0.248)	(0.241)	(0.304)	(0.268)	(0.455)	(0.461)	(0.631)

Table 14(Continued): Estimating the effect of External Migration on Hours Spent on HH chores

HRs spent on HH chores	Age Group 5-17			Age Group 5-11			Age group 12-17		
	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E	OLS	IVPROBIT with F.E	IVPROBIT without F.E
wlthindex2	-0.0895	0.632	0.268**	-0.164	-0.160	0.0865	-0.0887	-0.117	0.753*
	(0.109)	(1.580)	(0.131)	(0.119)	(0.152)	(0.133)	(0.223)	(0.260)	(0.426)
wlthindex3	-0.688***	0.502	-0.151	-0.865***	-0.658***	-0.358**	-0.865***	-1.027***	0.670
	(0.118)	(2.596)	(0.160)	(0.130)	(0.188)	(0.152)	(0.238)	(0.359)	(0.665)
wlthindex4	-0.964***	1.649	0.0459	-1.008***	-0.990***	-0.437*	-1.001***	-1.279**	1.513
	(0.134)	(5.686)	(0.257)	(0.150)	(0.384)	(0.238)	(0.264)	(0.530)	(1.036)
wlthindex5	-1.065***	2.721	0.258	-1.091***	-1.066**	-0.388	-1.152***	-1.567**	2.378
	(0.165)	(8.234)	(0.340)	(0.185)	(0.536)	(0.304)	(0.319)	(0.756)	(1.472)
_cons	6.758***	20.49	7.542***	6.748***	6.846***	6.140***	8.587	2.277	51.40
	(0.715)	(29.87)	(1.381)	(1.026)	(2.181)	(1.456)	(23.61)	(26.01)	(40.29)
N	29222	29222	29222	18672	18672	18672	10550	10550	10550
R-sq	0.169	.	0.020	0.154	0.153	0.050	0.143	0.126	.
adj. R-sq	0.167	.	0.019	0.151	0.151	0.049	0.138	0.120	.

Note:
Standard errors in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

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