Remittances and Consumption of Public Services: Empirical Evidence from Pakistan

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Abstract

Remittances are now one of the largest forms of foreign direct investment, providing a stable form of private aid to households in developing countries. While much of academia has focused on the positive impact of remittances in the area of development, less attention has been given to the political economy implications of such unearned foreign income. Studies discussing the negative impact of remittances on government behavior have assumed that remittances encourage a sectorial glide towards greater use of private substitutes to public services (e.g. private schools versus public schools). This implies that an increase in remittances should be correlated with a decrease in usage of public services. Using cross-sectional household survey data from 2004-2005 and 2010-2011, this research study shows that remittances do not have a significant economic impact on the usage of public versus private schools and hospitals in Pakistan.

Keywords: *remittances, public services, education, health, government, Pakistan*

I. Introduction

THE advent of technology and globalization stirred a rise in the movement of people from one part of the world to another. Remittances emerge out of this labor migration when migrant workers send money to households in their home countries. Villages or towns with a high concentration of the labor force living abroad can develop their area and improve their standard of living by utilizing remittances for private solutions to public services such as schools, hospitals, and roads. Other places, however, where the majority of the population has not had the opportunity to emigrate, might not be able to develop in the same way. This research project tests whether it is the case that people receiving remittances substitute public services with those provided by non-state actors to account for the unmet demand of public services. More specifically, how do remittances impact the consumption of public services at the household level? Remittances are now one of the most prevalent types of foreign direct investment, not only exceeding aid to developing countries, but also providing a private form of foreign aid that is relatively stable (Kapur 2003). This is evident in Figure 1, which shows the flow of remittances in comparison to other international monetary flows. The increasing impact of such capital flows necessitates the need to study them in more depth.

While remittances are an important source of revenue for a wide range of countries, this research project focuses primarily on Pakistan. Situated in South Asia, the second highest receiver of remittances after Latin America, Pakistan is the eighth largest remittance-receiving country by amount according to the World Bank, as Figure 2 shows. World Bank statistics also show that remittances made up 6.1 percent of Pakistan's GDP last year. In terms of amounts, official remittance numbers by the State Bank of Pakistan rose from $983.73 million in 2000 to $13,186.62 million in 2012.

While remittances also grew in Pakistan during the 1970s due to the construction boom in the Middle East, the current rise in numbers began in the aftermath of 9/11 as shown in Figure 3 (Mughal 2013). Oda (2009) credits this sharp increase in official statistics to the flow of remittances coming in from American Pakistanis who were transferring money through official channels to avoid confiscation in light of the crackdown on illegal channels of money transfer. Other reasons for this trend include an increase in worker migration since the beginning of the 21st century especially to the Persian Gulf, a shift from low-skill to high-skill workers (making remittances more stable), and an increase in return of investment and improvement in economic conditions in Pakistan, encouraging the diaspora to capitalize on such opportunities in the their home country (Kock

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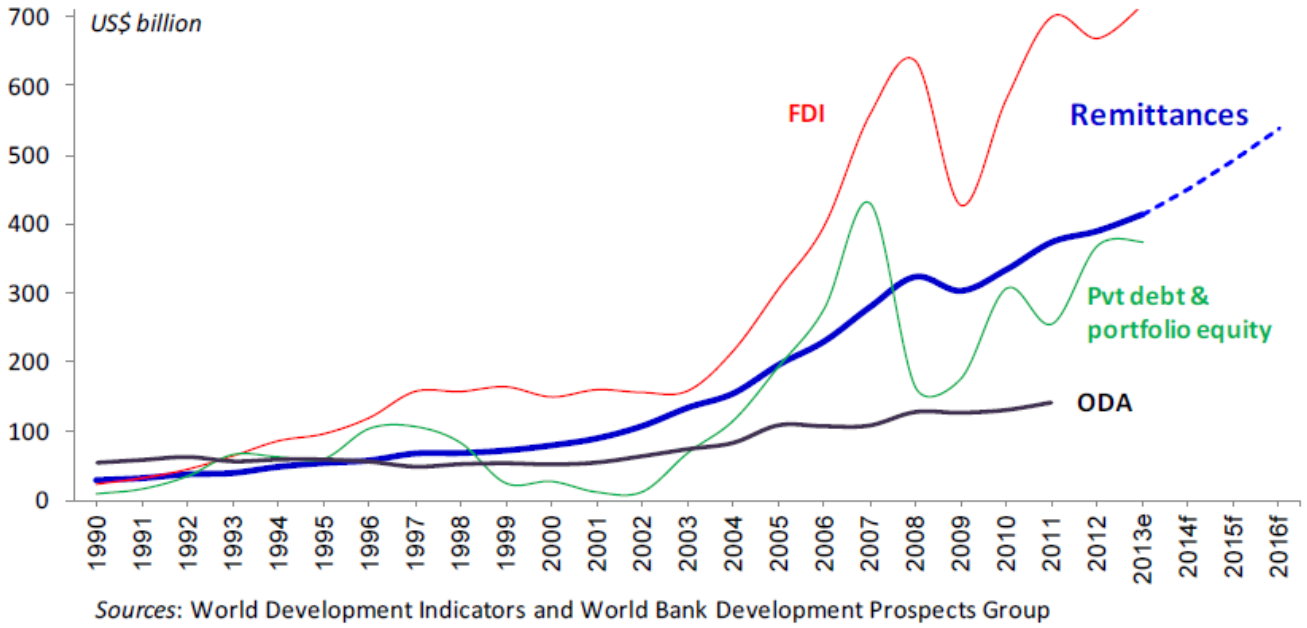
Figure 1: *Trends of International Monetary Flows (Source: World Bank)*



and Sun 2011). Not only have remittances been increasing in the last decade or so, but the Government of Pakistan has also introduced projects, such as the 2009 Pakistan Remittance Initiative (PRI), to further attract remittances within the country through official channels (Mughal 2013). This involves encouraging banks to provide remittance- specific services to expand their reach both nationally and internationally and develop transparent and efficient payment systems.[1] While it might be beneficial to adopt policies that formalize channels of remittances and create a structure that enhances the use of remittances for investment and entrepreneurial purposes, these policies might also provide government with an incentive to free ride. Thus, to correctly project the impact that policies such as PRI have on growth, it is essential to understand the relationship between private transfers of income between individuals and their impact on public services through a change in government behavior. If districts that have received a large number of remittances have increased their development rankings over the years (Muhgal 2013), is this entirely due to private channels? If remittances provide people with revenue for private alternatives to public services, does that give government an excuse not to deliver sufficient public services? It is important to answer these questions so that the role of remittances on government's long-term development strategy can be correctly evaluated. Pakistan's role as one of the biggest historical recipients of aid is another reason to look at this country. International aid, while once seen as the solution to the great divide between rich and poor nations, is now understood to have several negative repercussions, as it does not encourage the right incentives for governments. It is important to apply similar skepticism to remittances. While remittances differ from aid in that they are sent from within the household, recent literature indicates that they have an impact on the public sphere that is positive in certain cases and negative in others.

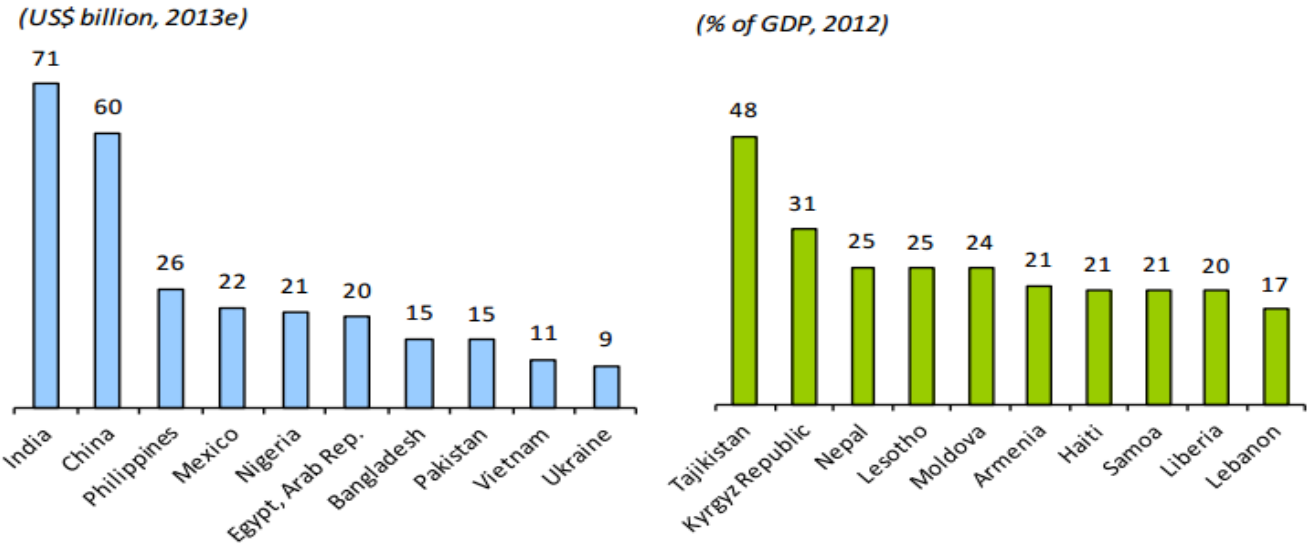
In the remainder of this paper, I will first discuss relevant literature on the political and macroeconomic effects of remittances that motivate my question. Next, I will provide background information on education and health in Pakistan. After a discussion of the survey dataset and econometric specifications of the model, I will analyze the results of this study and conclude with research suggestions for the future.

II. Literature Review

The academic literature on remittances looks at a wide range of effects caused by such financial flows. On the one hand, studies observe the positive effect of remittances on growth both at the macro level (e.g. reducing

[1]Pakistan. State Bank of Pakistan, Ministry of Overseas Pakistanis and Ministry of Finance. Pakistan Remittance Initiative: A Brief. By Najam-us-Saqib Shabbir. Islamabad. Jan 2010

Figure 2: *Top Remittance-Receiving Countries (Source: World Bank)*

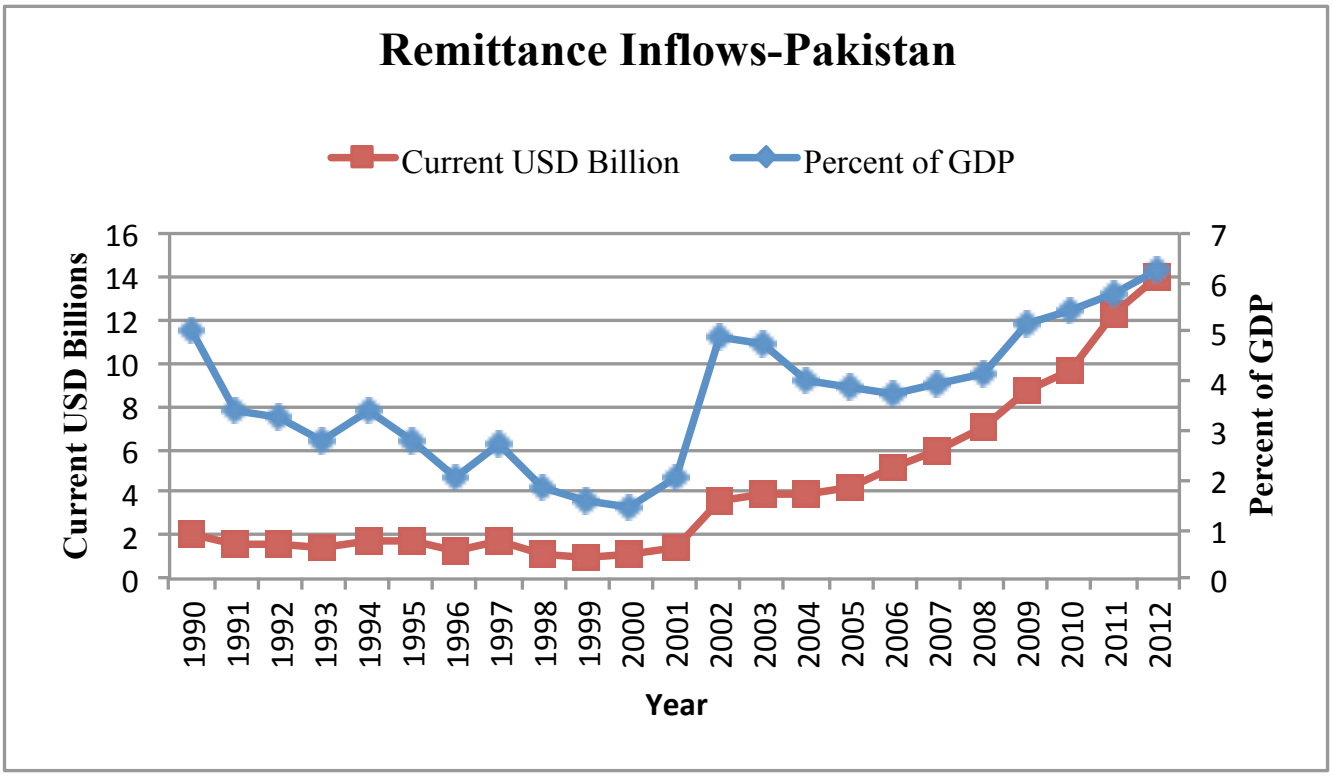


poverty) and at the micro level (e.g. smoothing consumption and increasing savings). On the other hand, fewer studies analyze the negative effects of remittances, including Dutch Disease and the private moral hazard problem where recipient households have incentives to supply less labor. Research has also been conducted on the various motives to send remittances, including altruism, social insurance, social contract between family members, and form of paying back the migration debt. One of the areas that has received less attention, however, is remittances and their impact on government through public services.

The public moral hazard problem, as defined by Ebeke (2012), refers to the negative effect of remittances on the public provision of social services. While the relationship between these two ideas is not obvious, the two arguments put forth to explain it are: first, remittances, by acting as a private subsidy, provide governments an incentive to reduce public subsidies and second, the recipients of remittances lose interest in pressuring the government for public services as they can meet their own demands (Ebeke). Similarly, Abdih et al. (2008) define the effect of remittances on government as analogous to the natural resource curse. They argue that remittances, by increasing the revenue base available to the household, increases the likelihood of corruption because corruption is less costly for that household to bear. Furthermore, Ahmed (2012) looks at another way to explain the effect of remittances on government by likening remittances to foreign aid, as both sources are unearned government revenues. I argue that due to the non-taxable nature of remittances, government responds by diverting its available pool of funds to selfish purposes, what Ahmed calls the substitution effect. While these studies focus on government specifically, Catrinuscu et al. (2006) more generally claim that remittances can be invested more efficiently if government policy enhances the quality of institutions. Abdih et al. (2008) provide a theoretical model that maps the relationship between remittances and government. They show that "taking the level of government provision [of the public good] as given, private purchases of the public good are increasing in household disposable income . . . and decreasing in the government's provision of the good" while the "public provision of the public good is increasing in the tax base but decreasing in the amount of (non-taxed) remittances." Combining these together we can see that "remittance depends positively on the remitter's income and degree of altruism, negatively on the recipient's income and on the government's proclivity to divert resources for its own consumption" (Abdih et al. 2008). A similar model, provided by Ahmed (2012), predicts, "government's optimal provision of welfare goods is increasing in income and unearned government income (aid) and decreasing in unearned household income (remittances)."

A number of studies have tested this effect empirically. Ebeke (2012) found that levels of public social spending on health and education decreased as remittances flowed into countries with bad governance from 1996 to 2007. Abdih et al. (2008) run a similar empirical study between 1990 and 2000, across 111 countries, and find that remittances increase the level of corruption within a country. Ahmed (2012) finds that while remittance and foreign aid have no statistically significant individual effects on government turnover, the combi-

Figure 3: *Remittance Inflows-Pakistan (Source: World Bank Dataset on Remittance Inflows)*



nation of aid inflows and remittances do decrease the likelihood of government turnover.

However, literature evaluating this effect is not conclusive. While several studies inspect this phenomenon worldwide, less work has been conducted on individual effects within countries, with the exception of Mexico. Adida and Girod (2010) show that the effect of remittances on hometown's private access to public utilities is positive and statistically significant between 1995 and 2000. Tyburski (2012), in his study of Mexico, shows that remittances decrease corruption by changing structural incentives in two ways: first, by allowing recipients to exert political power and hold government accountable and second, by incentivizing governments to institute corruption reforms to meet the demands of the people. The paper finds that the relationship between remittance income and corruption index across Mexican states is statistically significant and negative. This idea is further explained by Kapur (2003) who mentions that "remittances can be viewed as a political weapon of the weak," as people can use this resource to migrate (exit) or make political demands (voice). Thus, this literature predicts that remittances have a positive effect on government.

These studies, however, overlook the relationship between remittances and the use of available public services. Implicit in these arguments is that the availability and size of remittances increases a family's preference for private substitutes of public goods and affects their consumption patterns accordingly. Ponce, Olivie, Onofa (2008) study the impact of remittance on development in Ecuador by analyzing health and education spending. They find that increasing remittances by ten US dollars increases household education spending by 18 percent and household health spending by 25 percent. An increase in remittances by the same amount also increases the probability of attending a private school by 6 percent, providing evidence for the transfer from public to private schools. Conversely, they find no significant effects on private health insurance and private health center. Sosa and Medina (2006) show that remittances increase household education spending in Colombia and find evidence for a substitution effect from public to private schooling for ages five through thirty as the probability of attending a private educational institution is 24 percent to 25 percent higher in families that receive remittances compared to those that do not. Their research also suggests that remittances do not impact the consumption of health services. These two studies from Ecuador and Colombia indicate that remittances positively impact education, particularly private education, yet have no influence on usage of health services.

Health and education institutions, whose provision

falls under both the public and the private sector, together play an essential role in the socio-economic progress of a nation. Due to these development implications, exploring the impact of remittances in these sectors is especially interesting as remittances are being hailed as the new way to combat development issues in impoverished communities. Influenced by the studies from Ecuador and Columbia and the work of Ebeke (2012), the aim of this study is to measure the effect of remittances on public education and health for the particular case of Pakistan, a country where remittances have gained prominence in the last decade or so.

III. Background

In Pakistan, several systems of education exist side by side. While government schools are known for their poor facilities and learning outcomes, private schools are known for their cost-effectiveness and high quality (Ravish 2012). The dataset for this research corroborates this as those attending private educational institutions cite the largest problem as being the high cost while those attending public educational institutions cite the shortage of teachers, poor quality and distance being hindering factors.

Differences in private education are evident across urban and rural areas and between the four provinces. An article in the DAWN newspaper claims that while the superiority of private schools is an "established fact" in cities and towns of Pakistan, this trend is now expanding to the rural sector as citizens believe private sector education is of a higher quality (Abbasi). Ravish (2012) points out the differences that exist between provinces: in KPK, 34 percent of children between the ages of six and sixteen attended private schools while 65 percent attended government schools and in Punjab, 67 percent attended government schools while 31 percent attended private schools. Ravish (2012) also points out the wide range of facilities among provinces in government schools, showing that public schools in Punjab were ranked the highest yet their standards were still below those of private schools (Ravish 2012). This difference is influenced by the varying amounts of public spending on education by provincial authorities. The quality of public and private schools is not entirely independent as provinces with good government schools, such as Punjab, also have good private schools (Ravish 2012).

In terms of healthcare, facilities are largely lacking in rural areas of Pakistan because, according to Irfan and Ijaz (2011), most are located in the urban areas. Their study shows that in terms of perception of service quality, private hospitals rank above public hospitals across all provinces. The dataset for this paper corroborates this as those using private healthcare cite the high cost of treatment as the largest problem, while those using public healthcare cite the unavailability of doctors and medicine and unsuccessful diagnoses as hindering factors. This is essentially possible as private facilities do not have the same set of issues as government schools, particularly not the lack of commitment or poor management (Irfan and Ijaz 2011).

Essentially, the aim of the private sector is to fill the gap left by the public sector and run these operations for some profit. The competitive edge of private education and health facilities essentially arises from the need to attract demand and profits by providing a standard above the government benchmark. Although in some cases this allows private facilities to be of a higher quality than public facilities, in other cases private facilities might provide only a slightly higher standard to attract enough students (Abbasi).

IV. Data and Methodology

I. Hypothesis and Assumptions

This paper aims to analyze the impact of remittances on the usage of health and education facilities through the issue of the public moral hazard. The public moral hazard problem assumes that remittances are correlated with a shift from public facilities to private facilities. Thus, this study will test the hypothesis that household remittances are negatively correlated with public schools and hospitals and positively correlated with private schools and hospitals.

It is important to keep in mind, however, that this argument assumes a poor quality of available health and education public services, and that citizens prefer private goods whenever they are able to consume them. This does not necessarily mean that public services are consistently of a lower quality than private services, and it simply means that people perceive this to be the case. Studies mentioned in previous sections indicate that private counterparts to public good are generally of a higher quality, as their starting point is the government benchmark. Furthermore, since private schools and hospitals depend on customer satisfaction to generate demand and financial profits, their competitive edge rests on providing a high quality service.

II. Data

The dataset employed for this research study is made up of cross-sectional data from two surveys that were conducted jointly by the Pakistan Bureau of Statistics:

Household Income and Expenditure Survey (HIES) and Pakistan Social and Living Standards Measurement Survey (PSLM). Since the HIES survey contains indicators for income and consumption of households, and has information on remittances, it is relevant for this study. Since the PSLM survey contains indicators of health, education, and other development indicators, it is relevant for this study as it has information on public versus private services.

While these two surveys are generally carried out for separate sample sets, they were conducted jointly in 2004-2005 and 2010-2011 for the same set of households at the provincial level. As indicators for remittances, along with education and health services, are spread across both surveys, this provides us with only two years of analysis for the question at hand. This dataset includes households that receive remittances as well as those that do not, in addition to households that use various types of education and health services.

Utilizing representative household data to account for remittances allows the inclusion of such transfers that might otherwise be neglected by official statistics if remittances are sent through unofficial means. As the map depicts, the sample set excludes certain conflict-ridden northern regions of Pakistan such as FATA and Jammu Kashimir (the regions in light blue) which might otherwise skew the average. However, since these surveys have been conducted at the provincial level, there is no mechanism through which this analysis can be extended to the district level, which would allow us to compare effects across smaller areas.

III. Data Analysis

It is not only intuitively interesting to analyze the impact of remittances on the utilization of schools and hospitals for development purposes, but it is also pragmatic in the sense that differences between public and private versions of education and health facilities are easily identifiable. Focusing on other public goods such as roads would be difficult as the distinction between public and private roads is not clear. Since this analysis aims to determine the shift from public to private services, there are several variables of interest that will be discussed in the following sections.

III.1 Dependent Variables

As this model aims to explain the impact of remittances on the consumption of the type of services used, the dependent variable will be indicators of public or private schools and hospitals.

The indicators on education are available at the individual level by households through the PSLM survey (see Appendix B). Figure 5 below indicates the various types of schools individual members of households attend. It is evident that the majority of individuals attend government schools followed by private schools. Other school types include those set up by religious bodies (masjid schools or deeni madrissas), NGOs, and schools providing non-formal basic education. Since the latter makes up a small portion altogether, they have been ignored for this analysis. The public school variable used for this datatset includes government schools while the private school variable includes the private school as well as private exam category of school type.

Similarly, health indicators are also available at the individual level through the PSLM survey (see Appendix B). Figure 6 portrays individual hospital visits by type of hospital. Here, we observe that, unlike schools, the majority of hospital visits belong to private hospitals followed by public hospitals. Various local herbalists and religious doctors also make up a small portion of total hospital visits and have been ignored for this analysis. For this research the variable 'public hospital' includes government hospitals as well as Basic Health Units/Rural Health Centers (BHU/RHC) which are under the jurisdiction of the local municipalities while the private hospital variable includes only private hospitals.

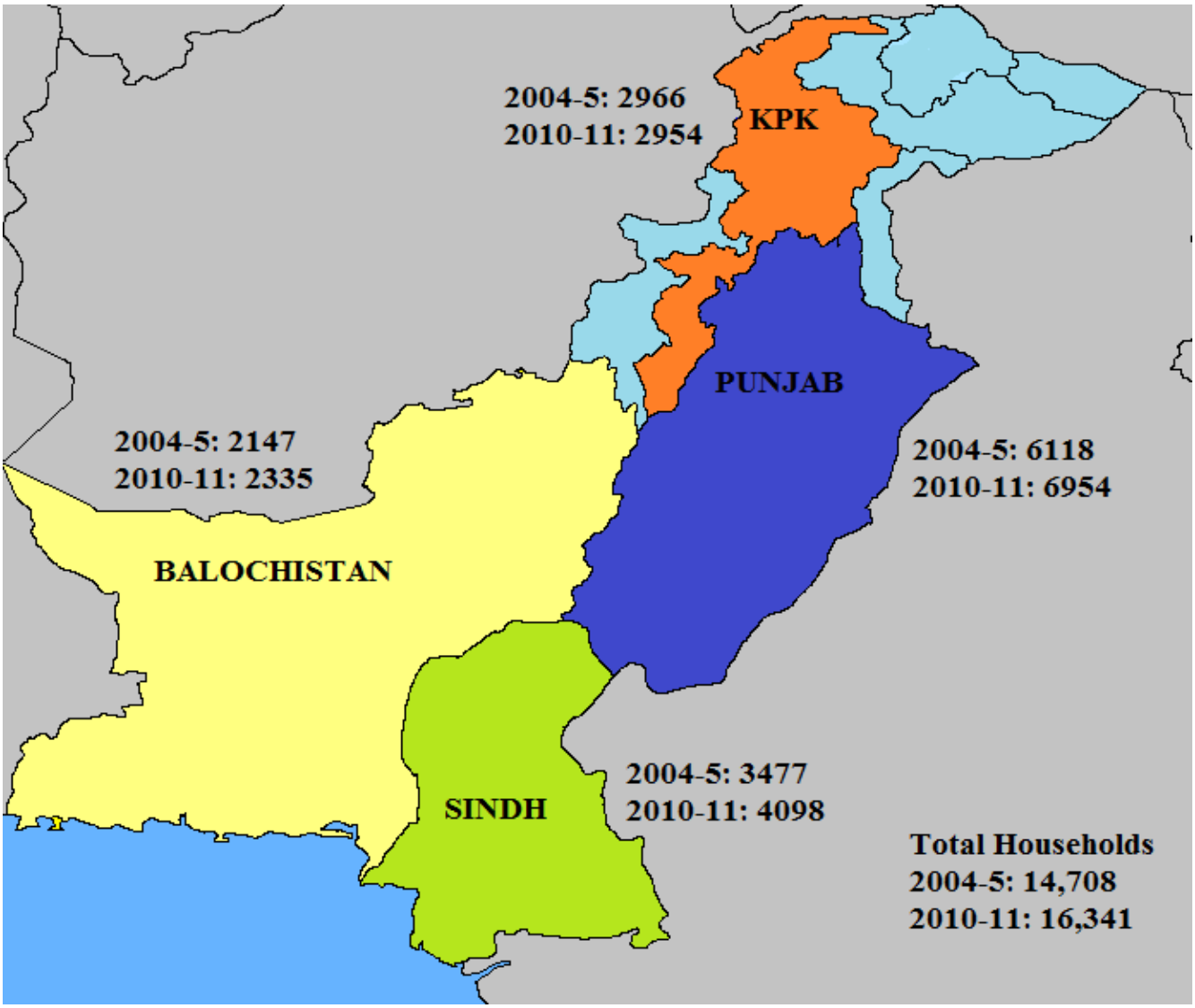
Since all this information is available at the individual level, it has been aggregated at the household level for the purposes of this study into the following dependent variables.

- 'Private school' is the proportion (between 0 and 1) of current school-going household members that attend a private school (those members not going to school are excluded). Similarly, 'private hospital' is a proportion (between 0 and 1) of sick household members that have visited a private hospital.

- 'Public school' is the proportion (between 0 and 1) of current school-going household members that attend a public school. similarly, 'public hospital' is a proportion (between 0 and 1) of sick household members that have visited a public hospital.

- 'School attendance' is the proportion (between 0 and 1) of household members above the age of four who are attending a school. This includes the whole spectrum of education: primary, secondary, and tertiary education. Similarly, 'hospital attendance' is the proportion (between 0 and 1) of household members who have been ill or injured in the last weeks and have visited a hospital.

Figure 4: *Map of Pakistan with Survey Sample*



III.2 Independent Variables

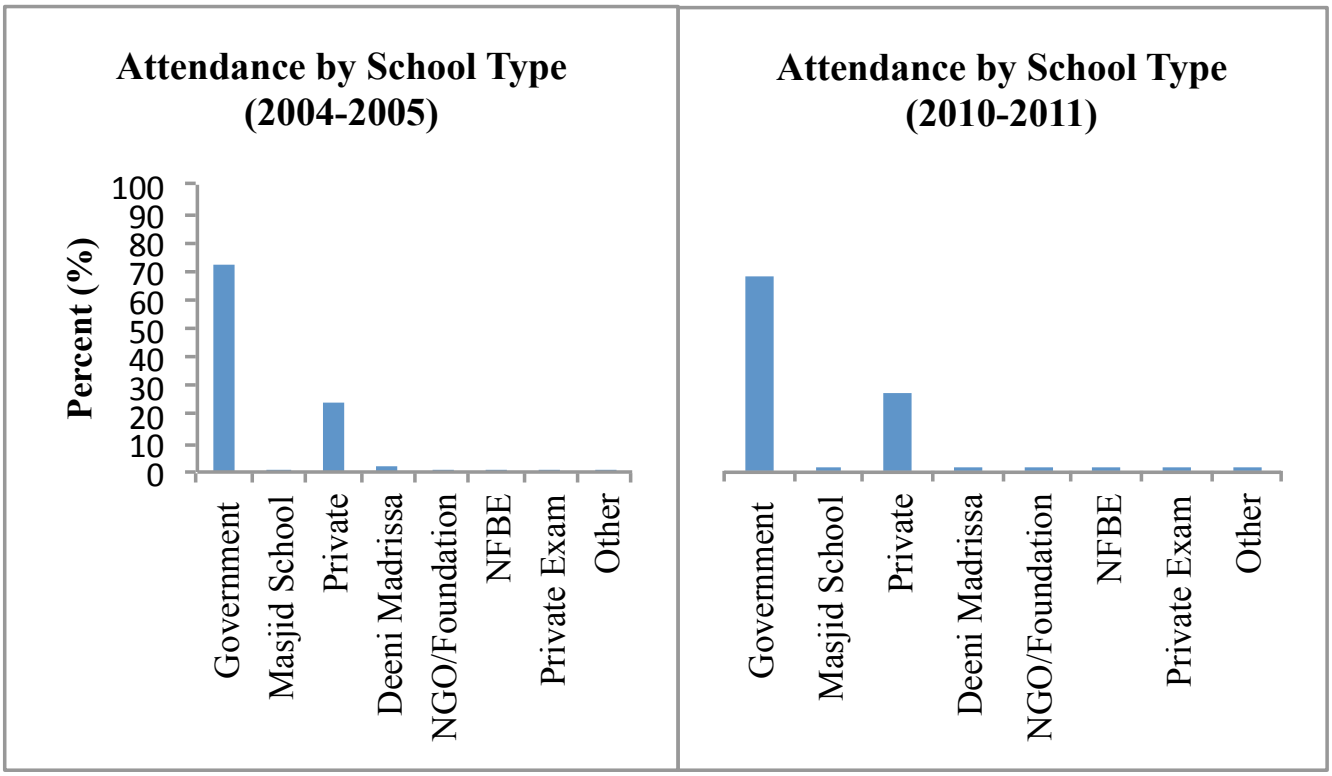
As this study aims to determine the impact of unearned foreign income, the main independent variable is an indicator for remittances. The information for this variable is available in the income section of the HIES survey (see Appendix B). Figure 7 below shows the proportion of households that receive remittances. Specifically, remittance- receiving households make up around 4.6 percent and 5.6 percent of all households in 2004-2005 and 2010-2011 respectively. Household remittance aggregated to 63,044,632 PAK Rupees in 2004-2005 and 174,768,000 PAK Rupees in 2010-2011. This increase is in line with the remittance literature which shows that this form of income has been increasing in the last decade.

- 'Foreign remittances', measured in Pakistani Rupees, records the amount of income the family receives from outside of Pakistan annually. The natural logarithm of foreign remittances is used as the primary independent variable to scale the regression coefficient according to the proportional dependent variables so that we have a meaningful estimator. As there are many households that do not receive remittances, the log of 1 + foreign remittances has been taken.

III.3 Control Variables

Although this paper analyzes the correlation between remittances, education, and health facilities, there is a range of factors that impact this decision at the household level. The following variables have been accounted for to control for those factors.

Figure 5: *Types of Schools in PSLM Dataset*



- 'Income', measured in Pakistani Rupees, aggregates the annual income of the household and includes salaries, business profits, government benefits, and implied rental income (see Appendix B). This variable is included to control for the impact of financial resources that determine whether a household member goes to school or not, and determine if they attend a private or a public school. This aggregation of income excludes remittances to avoid the issue of multicollinearity in the analysis.

- 'Improvement of household' and 'improvement of locality' are binary variables that further control for the socio-economic conditions surrounding the family. 'Improvement of household' is given a value of 1 if household members believe that they have improved economically in the past year. 'Improvement of locality' equals a value of 1 if the household members believe their local area has improved economically in the past year.

- A set of distance and transport variables have been included to capture the effect of availability of service on the usage of that service. 'Distance' measures the distance to a certain type of facility in minutes. 'Transport' measures the mode of transportation the household requires to reach to that particular facility.

- Variables such as 'number of children and women' in the household along with the 'household size' have been included to capture the impact of any family specific factors.

- To control for the impact of demographic factions, variables such as 'language' and 'province' have been included to take into account any cultural, ethnic or regional differences in utilization of these services. The variable 'urban' is a binary variable that captures the difference between urban and rural areas in term of usage of education and health facilities. These three variables, however, are only available for the 2010-2011 dataset.

IV. Econometric Specification

This study will employ empirical methods to test the above hypothesis and more specifically observe the difference in utilization of public and private services with respect to remittance income. Since the dataset for this study is cross-sectional, an econometric model called the Ordinary Least Squares Model will be utilized. This allows for simple ceteris paribus, marginal effects interpretations of the impact of the various variables on the

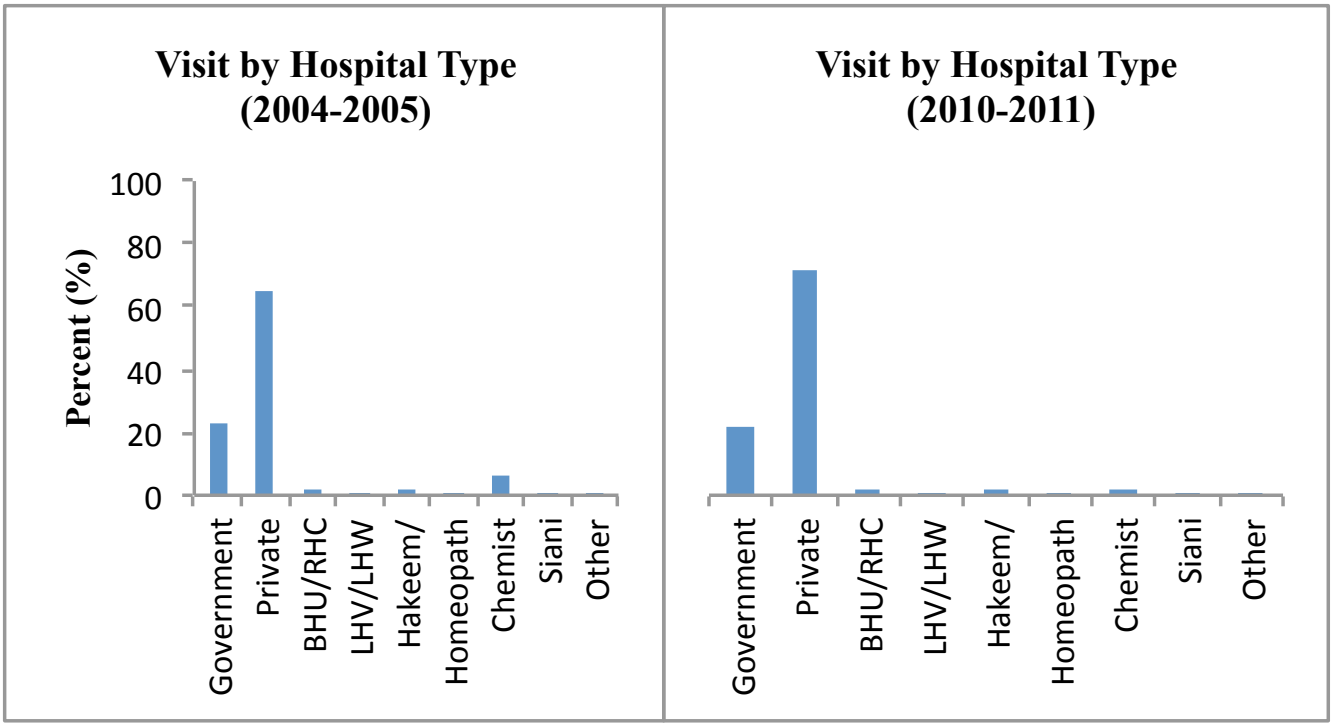


Figure 6: *Types of Hospitals in PSLM Dataset*

dependent variables. The specification can be characterized by:

$$Y = \alpha + \beta X + \epsilon \tag{3.1}$$

In equation (3.1), Y is the vector of response values, β is the vector of parameters, X is the vector for explanatory variables and ϵ is the vector for errors. As PSLM and HIES is survey data, the regression of these functions is weighted by the sample weights of the primary sampling units (PSUs).

Although OLS does provide simple interpretations, due to the nature of the dependent variables, the assumptions under the Gauss-Markov Theorem are violated. Since the dependent variables are bounded on the interval [0,1], the impact of the independent variables on the dependent variable is non-linear (Moeller 2013). These dependent variables are also not normally distributed (i.e. asymmetric), as the frequency around the 0 bound is high. Furthermore, the error variance also tends to be heteroskedastic as it approaches 0 around the boundaries of 0 and 1 (Moeller 2013).

To account for these issues, a certain specification of the Generalized Linear Model (GLM) can be utilized. This subsection of GLM, termed the quasi-maximum likelihood estimator (QMLE) was introduced by Papke and Wooldridge (1996). In their paper, Papke and Wooldrige explain how utilizing the quasi-likelihood method through the Bernoulli log-likelihood function is optimal for fractional dependent variables as this function is easy to maximize and provides consistent and normal estimators regardless of the distribution of the dependent variable (discrete, continuous, or both). Moeller explains that this approach "allows a linear model to be related to a response variable that follows a non-normal distribution" (2013). Through the method of maximum likelihood estimation, which essentially maximizes the probability of observing the recorded dependent variables, GLM models mean proportion with the independent variables (Moeller 2013). The model specification can be characterized by:

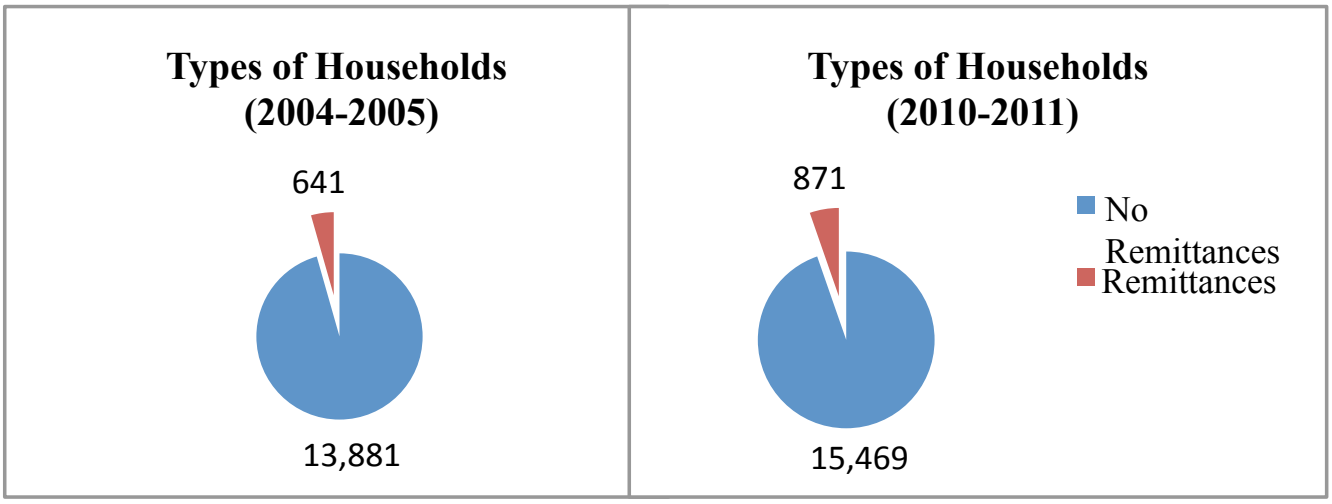
$$g(E(Y)) = \alpha + \beta X + \epsilon \tag{3.2}$$

where g is $\log \frac{\pi}{1-\pi}$

In equation (3.2), g is the link function, which for the case of binomial variables (proportional variables fall under this category) is the logit function. This study will look at the marginal effects of the QMLE (or GLM) estimators which allow for interpretation similar to that of OLS estimators.

Another econometric issue that might be present in this study is measurement errors. Since remittances are monetary income, respondents might have an incentive to either overstate or understate their true value.

Figure 7: *Types of Households by HIES Dataset*



V. Results

The hypothesis in this study is that remittances have a negative relationship with consumption of public services, particularly health and education, as people turn to private alternatives as financial resources increase.

I. Effect on School Attendance

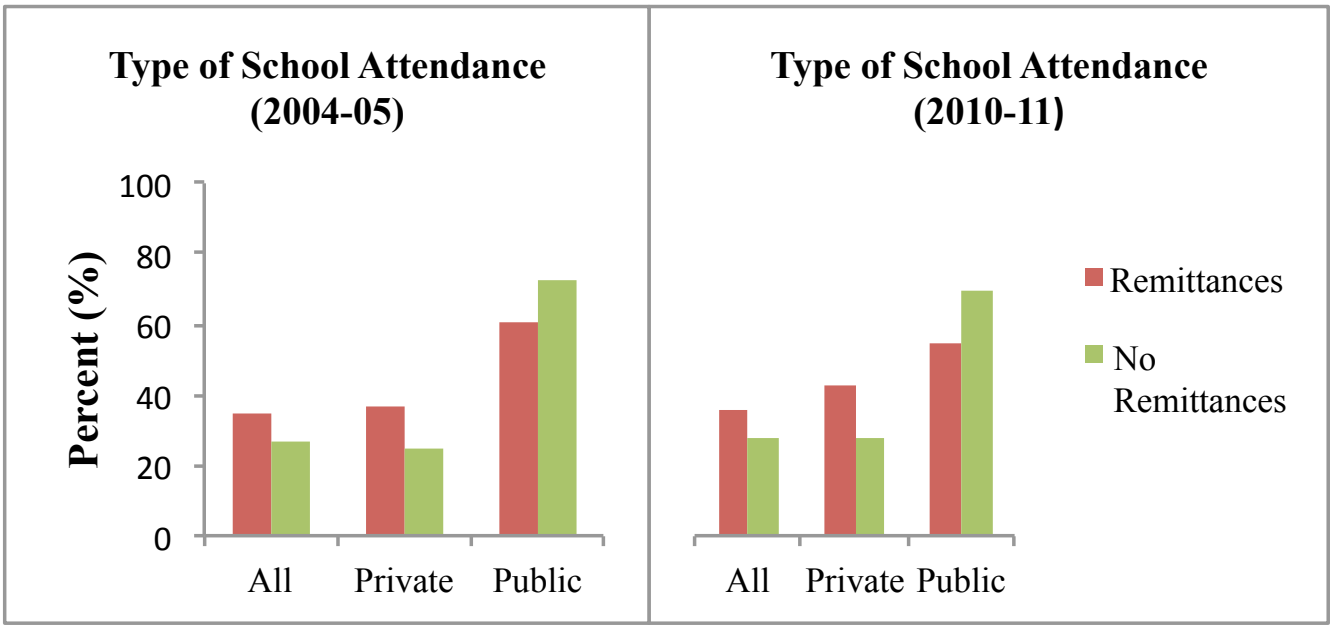
Looking at the preliminary results in Figure 8 we see that remittance-receiving households make up a larger portion of the households whose members attend school. Specifically, Figure 8 shows that out of the individuals that belong to remittance-receiving households, around 34 percent are attending schools in both 2004-2005 and 2010-2011, which is higher than the number of individuals belonging to households that are not receiving remittances. In both years we also observe more individuals in remittance-receiving households attending private schools and less attending public schools as compared to individuals whose families don't receive remittances. These findings are in congruence with the hypothesis. In both years we also observe more individuals in remittance-receiving households attending private schools and fewer attending public schools as compared to individuals whose families don't receive remittances. These findings are in congruence with the hypothesis.

Regression analysis allows us to quantify the relationship between the amount of remittances received and the type of school attendance while controlling for several factors. The OLS and GLM results presented in Table 3 show the correlation between the proportion of household members going to private school and remittances across the two survey years. Here, we observe that the coefficient on log of remittances is positive and statistically significant at the 99 percent confidence interval across models and survey years. Under the OLS model, in 2004-2005, a 1 percent increase in remittances coincides with a 0.0000816 unit increase in the portion of household members attending private school. In 2010-2011, this effect decreases to a 0.0000540 increase in the dependent variable. Under the GLM model, however, a 1 percent increase in remittances coincides with 0.0000541 and 0.0000438 unit increase in the dependent variable in 2004-2005 and 2010-2011 respectively. This means that the OLS estimators are overestimating the effect of an increase in remittances on private school attendance.

With exception of improvement of locality, most of the explanatory variables are significant in Table 3. Income and improvement of household from the previous year are positively correlated with the proportion of household members attending private schools, which provides support for the idea that people turn to private goods as financial status increases. Household size is negatively correlated which can be explained by the fact that as more members depend on the bread winners of the family, the cost of education increases greatly and less family members go to school. The significant and positive difference between urban and rural areas can be attributed to the fact that private schools are more concentrated in metropolis areas.

In 2010-2011, we also observe that the provinces of Sindh and Balcochistan have negative coefficients while KPK has a positive coefficient in comparison to the base province of Punjab. Ravish (2012) mentions in his comparative study of public and private schools that the provinces of Punjab and KPK have the highest involvement of private education sector as private enrollment

Figure 8: *Type of School Attendance by Households*



is 31 percent and 34 percent respectively in comparison to the 13 percent and 7 percent of Sindh and Balochistan respectively. The coefficients on various provinces in Table 3 provide evidence for these findings.

Similarly, Table 4 shows the correlation between the proportion of household members going to public school and remittances across the survey years. Since the coefficients are negative and significant at both the 90 percent and 95 percent confidence interval, remittances are negatively correlated with public school attendance. In the OLS model, in 2004-2005, a 1 percent increase in remittances coincides with a 0.0000231 unit decrease in the portion of household members attending public school while in 2010-2011 it coincides with a 0.0000207 unit decrease in the response variable. Here, the OLS model is slightly underestimating the effect as the results of the GLM model indicate that a 1 percent increase in remittances coincides with a 0.0000242 and 0.0000208 unit decrease in 2004-2005 and 2010-2011 respectively.

In Table 4, income is statistically significant and negative which suggests that an increase in income reduces the proportion of household members attending a public school. This falls in line with the perception that as the financial status of people increases, they are less likely to choose a public service. Here, various linguistic groups in comparison to Urdu are positively correlated with public school attendance. Since Urdu is not the first spoken language of the majority of the population, it makes sense that the majority of the population attends public schools. The difference between the provinces of Balochistan and Punjab is positive and significant, which might be due to the fact that in Balochistan there are more public schools than other types of schools. It is interesting to observe how the different types of schools affect the direction of the results drastically. Overall, the marginal effects of the GLM coefficients are similar to the OLS estimators and significance is maintained across the models. These results indicate that remittances are positively correlated with private school attendance and negatively correlated with public school attendance. While this provides evidence that remittances influence households to substitute private schools for public schools, the magnitude of the coefficients indicate the lack of economic significance of remittances on the dependent variable.

Perhaps, families receiving remittances are instead increasingly sending their members to school for the first time and not differentiating between the varieties of facilities in their area. Table 5 contains regression results between remittances and overall school attendance across the survey years. Again, the coefficients are positive and significant at the 99 percent confidence interval, which indicates a positive correlation between remittances and the portion of household members attending school. Specifically, a 1 percent increase in remittances coincides with a 0.0000955 and 0.0000518 unit increase in the overall school attendance in 2004-2005 and 2010-2011 respectively, in the OLS model. In the GLM model, the coefficient on the outcome variable is slightly less than in 2004-2005 and slightly higher

than in 2010-2011. Ultimately, the low values indicate that the decision to utilize a certain type of school is largely independent from the flow of remittances.

While one reason for the low magnitude of remittances in Table 5 can be compulsory education, the National Assembly in Pakistan only introduced compulsory free education in November 2012.[2] The two largest reasons that individuals do not attend school according to this dataset are either that they are not willing to go to school or that the household member cannot attend due to employment. The former reason is uncorrelated with financial resources and can help explain the low magnitude of the estimators on remittances.

In Table 5 variables that are positively correlated with school attendance are income, number of children, and being located in an urban area. The difference between the languages of Urdu and Sindhi and between Urdu and Pashtu are negatively correlated with school enrollment. Since Sindhi and Pashtu can serve as proxies for ethnic groups that are known to be conservative in Pakistan, it makes sense that school enrollment will be lower among those groups. This is confirmed by the negative difference between the province of Sindh and Punjab but is slightly contradicted by the positive difference between KPK and Punjab.

One issue that comes up in utilizing these variables is the lack of differentiation between the types of education. Ravish (2012) shows how enrollment rates are different across various age groups and that specifically in the pre-school years, more children are attending private schools and fewer are attending public schools for both KPK and Punjab. Future analysis should take this distinction into account, as it might be the reason behind low coefficients in this study.

II. Effect on Hospital Visits

Looking at the preliminary results we see that there is not much difference between households that are receiving remittances and those that are not, in terms of whether individuals visit a hospital when they are sick. Figure 9 shows that in 2004-2005, around 22 percent people belonging to remittance-receiving households visited a public hospital while 26 percent of people belonging to households not receiving remittances visited a public hospital. In 2010-2011, the opposite pattern exists as more members of remittance-receiving households go to public hospitals and less to private hospitals by comparison. The observations of 2004-2005 adhere to the hypothesis of this paper, whereas those of 2010-2011 do not.

Regression analysis allows us to further quantify the relationship between the amount of remittances received and the type of hospital visited while controlling for several factors. Table 6 contains the regression results for the proportion of household members visiting a private hospital across both survey years. Here the coefficient on log of remittances and log of income is not significant under both the OLS and GLM model in both 2004-2005 and 2010-2011. While socio-economic improvement of the locality from the past year was not significant for schools, here, it is negative and significant across both years, which might indicate that hospital visits depend largely on the economic status of the local area one lives. Similarly, the household size is also negatively correlated which makes sense as the aggregate cost for a family is higher with private hospital fees. Since urban areas have more private health facilities, it makes sense that the difference between urban and rural areas is positive and significant.

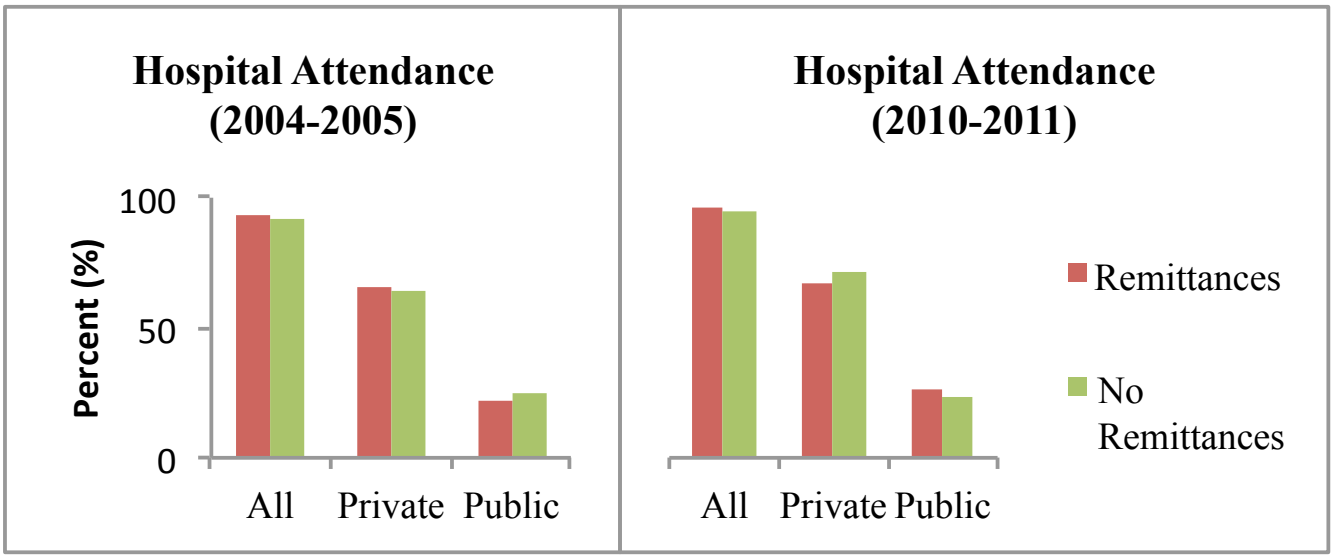
Table 7 contains the regression results for the proportion of household members visiting a public hospital when sick, for both survey years. In 2004-2005, an increase of 1 percent in remittances decreases the portion of household members attending a private hospital by 0.0000106 units in the OLS model and 0.0000132 units in the GLM model. While these estimations are significant at the 90 percent confidence interval, there is no significance among the results for 2010-2011. Again, income is not significant across both specifications and both years. Socio-economic improvement at the household level, a measure of wealth, is significant and negative which suggests that public hospitals are an inferior good. The difference between the province of Punjab and Sindh is negative while the difference between Punjab and KPK and Punjab and Balochistan is positive which might suggest differences in provision or quality of these services among the provinces.

Overall, in these two regression tables there is no significant effect of remittances on the decision to send a household member to either a private or private hospital, holding everything else constant. Even though we do observe that remittances are negatively correlated with public hospital in 2004-2005, which falls in line with the hypothesis, this is not economically significant. These results suggest that not only remittances but also other forms of income do not impact the decision to go to a hospital.

Perhaps, the lack of significance is due to the fact that remittances do not impact the decision to visit a public or a private hospital. Table 8 contains informa-

[2] "NA Passes Right to Free and Compulsory Education Bill." The Express Tribune (with the International New York Times) [Islamabad] 13 Nov. 2012: Web. 26 Apr. 2014.

Figure 9: *Type of Hospital visit by Household*



tion on the impact of remittances on overall hospital attendance in both survey years. Here again, results for 2004-2005 are lacking any statistical significance. For 2010-2011, a 1 percent increase in remittances coincides with a 0.0000192 unit decrease, in the OLS model, and a 0.0000219 unit decrease, in the GLM model, in the proportion of household members attending a hospital when sick. The directions of these coefficients, which are significant at the 99 percent confidence internal, indicate that remittances are negatively correlated with hospital visits. The improvement of the household from last year is negative and significant in 2004-2005. This suggests that households that are better off financially, are less likely to go to a hospital if individuals get sick. In Table 8 we also see that the differences between Urdu and the languages of Pashtu, Balochi and Sindhi are negative and significant at the 99 percent confidence interval, which can serve to show that certain conservative ethnic groups prefer home care. However, the lack of economic significance due to the small magnitude of this result indicates that the impact is minimal if any.

This overwhelming lack of statistical evidence can be attributed to income inelasticity of health. Akbari, Rankaduwa and Kiani (2009) analyze the demand for public health care and show that income elasticity with respect to outpatient visits per capita is statistically significant only for the provinces for Sindh and Punjab. Furthermore, they claim that since the coefficients for Sindh and Punjab are below unity, essentially health expenditure is income inelastic among all the four provinces. They also point out that public healthcare is viewed as being of lower quality than private healthcare in Sindh, which explains the negative coefficient on Sindh in Table 7. Intuitively, income inelasticity might be due to the fact that sickness and injury are not planned events in one's life. Furthermore, because there is no distinction between the level of sickness and injury, it might be the case that individuals are self-medicating. While this study finds that income is inelastic for demand of public hospitals, the logic can be extended to private hospitals and hospitals in general.

Tables 6-8 show the lack of a statistically significant correlation between remittances, hospital visits and types of hospitals visited. While there is some evidence that suggests remittances coincide with a decrease in visiting public hospitals and hospitals overall, ultimately remittances seem to have almost no effect on these decisions at the household level which is similar to the results found in remittance studies in Ecuador and Colombia.

III. Implications and Limitations

Academic literature on the impact of the remittances on government behavior assumes that remittance-receiving households find private solutions to needs unmet by the public sector. The results of this study show, however, that remittances seem to have little or no impact on the type of public services consumed. Why is this so?

One possible explanation for the low magnitudes in the results might be the lack of access to a private education or health facility in certain rural areas or certain provinces in Pakistan. This means that even if people can afford and want to send their children to private schools, they cannot do so as there is no such school in their area. In this situation the decision to use these fa-

cilities might be independent from household financial resources. Since there is no variable that indicates the amount and types of schools that exist in each province from the supply side, this is a limitation of this model.

Even if we assume that the distribution of public and private services is equal across Pakistan, there is no way to control for the quality of schools. It can be the case that in certain areas the quality of public education is better than private education. Not only that, but there might be variations of quality within private facilities and public facilities themselves. For example, while private schools are better than public schools up until the high school level, public universities are of a higher quality than private universities particularly in the sciences (excluding the several large private universities such as Lahore University of Management Sciences and Aga Khan University whose fees are very expensive).[3] For hospitals, it might be the case that public hospitals in metropolis areas are better than those hospitals in rural areas. This analysis does not control for heterogeneity within groups.

Another explanation for little or no impact of remittances can be attributed to the amount of remittances received by the households. Perhaps, these amounts are not large enough to cause a shift from the use of public schools and hospitals to private substitutes, which are more costly. Furthermore, as change in consumption patterns might occur across time the effect of remittances on household decisions pertaining to education and health can only be understood through time series analysis.

It is also possible that remittances are instead being used to meet demand in gaps of public provision of services such as electricity, gas and water (there are a lack of indicators on these services in the HIES and PSLM surveys). Given the lack of adequate infrastructure as well as energy crisis in Pakistan, this explanation seems most plausible as for example, lack of running water is arguably a more pressing need than education. Furthermore, since 2004-2005 and 2010-2011 coincide with natural disasters in Pakistan, this might affect the dataset and in turn the estimators.

Keeping these limitations in mind, the results of this study question the assumption that remittance-receiving households find private solutions to public services that are inadequately provided by the government. Literature discussing the public moral hazard problem assumes that households change their consumption patterns from public to private services when they receive remittances from abroad. The evidence from Pakistan in 2004-2005 and 2010-2011 portrays that this might not be the case. Remittances are not impacting the household's decision to utilize private facilities, particularly private schools.

VI. Conclusion

Given the rise in inflows of remittances to the developing world, several empirical studies point to the increasing importance of the public moral hazard problem in developing countries. One channel to track the government behavior with respect to movement of unearned income is through the provision of public services. This line of thinking, however, assumes that remittance-receiving households substitute private goods for public goods. However the results from the analysis of 2004-2005 and 2010-2011 household survey data from the Pakistan Bureau of Statistics, shows that remittances have no statistically significant impact on consumption of private hospitals (except in 2004-2005) and no significant economic impact on consumption of private schools.

Although these results do not fall in line with the predictions of the public moral hazard problem, they do not necessarily violate them either. While remittance-receiving households might be shifting to private schools and private hospitals, these results indicate that there is either little or no effect of remittances on these decisions. The public moral hazard problem could still occur as the government might falsely predict that remittance-receiving households do substitute their needs for public services by turning to non-state actors. This, in turn, might encourage the government to supply less public schools and hospitals. Remittances should not impact government's provision of public services, as this source of income does not change the demand of those services.

To correctly understand the phenomenon of the public moral hazard it is important that researchers and policy-makers take this research further. While several papers have studied this phenomenon worldwide, it is important to analyze countries receiving large flows of remittances in depth. For example, conducting a district level analysis instead of provincial level will not only allow for a control of heterogeneity by location but also quantify how places such as Kharian are able to develop in comparison.

Despite establishing correlations, this paper does not identify a causal mechanism between remittances and usage of public or private schools and hospitals. One problem that arises when utilizing remittance data is that of endogenity caused by reverse causality. While remittances can increase or decrease consumption of

[3] This I have deduced from my conversations with friends and family in Pakistan

public services such as health and education, it is also possible that because a certain household member had access to private substitutes of these services, they were able to migrate and thus, remit income.

Inherent in these issues is the self-selection bias. Remittance-receiving households have members living abroad, who are sending a portion of their income back to Pakistan. Since these individuals living abroad choose to migrate and then choose to send money back there is a self-selection bias in this dataset. There might be some specific characteristics of remittance-receiving households that are unobserved and not controlled for in this model, introducing a bias in the results too. Thus, further research on this topic should tackle the problem of endogenity by utilizing an instrumental variable.

Another area that further research can explore is various econometric specifications such as the tobit model. While the GLM model was introduced here to better incorporate the data at hand, the marginal effects of this model were similar to those of the OLS model. Perhaps, using a tobit model which takes into account data that is truncated or censored might fit this dataset better due to the existence of many zeros in the coefficients of dependent variables.

Ultimately, this research does not invalidate the argument that inflows of remittances can act as a recourse curse despite being private forms of financial flows. As remittances increase as a percentage of Pakistan's GDP and are further encouraged through policies of the government of Pakistan, the possibility of such moral hazard behavior, given the historical incident of corruption, might occur. Since private purchases of a public good do not have to go hand in hand with less purchases of a public good, it is important to further analyze this issue instead of blindly assuming that remittances only have a positive effect in the development of a country.

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VII. Appendix A: Tables

Table 1: *Summary Statistics for 2004-2005 Dataset*

VARIABLES	Type of Variable	Observations	Mean	Standard Deviation	Min	Max
		Dependent Variables				
Overall School Attendance	Proportion	14,522	0.242	0.23	0	1
Private School Attendance	Proportion	9,273	0.104	0.177	0	1
Public School Attendance	Proportion	9,273	0.267	0.202	0	1
Overall Hospital Visits	Proportion	14,522	0.0757	0.132	0	1
Visits to Public Hospital	Proportion	5,198	0.0538	0.111	0	1
Visits to Private Hospital	Proportion	5,198	0.136	0.147	0	1
		Independent Variables				
Foreign Remittances (log)	Continuous	14,522	0.491	2.295	0	13.7
Foreign Remittance	Continuous	14,522	4,341	28,038	0	890,000
		Control Variables				
Non-Remittance Income (log)	Continuous	14,522	11.34	0.867	0	15.27
Non-Remittance Income	Continuous	14,522	115,117	136,638	0	4,261,935
Improvement of Household	Binary	14,455	0.223	0.416	0	1
Improvement of Locality	Binary	13,647	0.26	0.438	0	1
Distance to Primary School	Categorical	14,522	2.02	1.261	1	5
Transportation to Primary School	Categorical	14,522	1.061	0.324	1	3
Distance to Middle School	Categorical	14,522	2.02	1.261	1	5
Transportation to Middle School	Categorical	14,522	1.468	0.81	1	3
Distance to High School	Categorical	14,522	2.247	1.339	1	5
Transportation to High School	Categorical	14,522	1.886	0.904	1	3
Distance to Hospital	Categorical	14,522	2.261	1.339	1	5
Transportation to Hospital	Categorical	14,522	1.758	0.941	1	3
Distance to Health Unit	Categorical	14,522	2.512	1.391	1	5
Transportation to Health Unit	Categorical	14,522	1.993	0.97	1	3
No. of Children in Household	Continuous	14,522	2.265	1.966	0	21
No. of Women in Household	Continuous	14,522	3.365	1.926	0	22
Household Size	Continuous	14,522	6.932	3.295	1	42

Table 2: *Summary Statistics for 2010-2011 Dataset*

VARIABLES	Type of Variable	Observations	Mean	Standard Deviation	Min	Max
		Dependent Variables				
Overall School Attendance	Proportion	16,340	0.26	0.23	0	1
Private School Attendance	Proportion	10,852	0.123	0.188	0	1
Public School Attendance	Proportion	10,852	0.26	0.206	0	1
Overall Hospital Visits	Proportion	14,522	0.0757	0.132	0	1
Visits to Public Hospital	Proportion	5,198	0.0538	0.111	0	1
Visits to Private Hospital	Proportion	5,198	0.136	0.147	0	1
		Independent Variables				
Foreign Remittances (log)	Continuous	16,340	0.635	2.683	0	15.89
Foreign Remittance	Continuous	16,340	10,696	82,784	0	8,000,000
		Control Variables				
Non-Remittance Income (log)	Continuous	16,340	1,019,000	3,722,000	0	19.67
Non-Remittance Income	Continuous	14,522	115,117	136,638	0	350,100,000
Household Situation	Binary	16,283	0.147	0.354	0	1
Local Situation	Binary	15,572	0.0875	0.283	0	1
Distance to Primary School	Categorical	16,340	1.198	0.613	1	5
Transportation to Primary School	Categorical	16,340	1.043	0.265	1	3
Distance to Middle School	Categorical	16,340	1.625	0.995	1	5
Transportation to Middle School	Categorical	16,340	1.363	0.733	1	3
Distance to High School	Categorical	16,340	1.813	1.115	1	5
Transportation to High School	Categorical	16,340	1.524	0.84	1	3
Distance to Hospital	Categorical	14,522	2.261	1.339	1	5
Transportation to Hospital	Categorical	14,522	1.758	0.941	1	3
Distance to Health Unit	Categorical	14,522	2.512	1.391	1	5
Transportation to Health Unit	Categorical	14,522	1.993	0.97	1	3
No. of Children in Household	Continuous	16,340	2.005	1.834	0	16
No. of Women in Household	Continuous	16,340	3.272	1.833	0	20
Household Size	Continuous	16,340	6.666	3.051	1	38
Province	Categorical	16,340	2.041	1.084	1	4
Language	Categorical	16,340	2.622	1.705	1	7
Urban	Binary	14,340	0.403	0.491	0	1

Table 3: *Proportion of Household Members Attending Private Schools*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	0.00816***	0.000541***	0.00540*	0.00438***
	(0.00125)	(0.000692)	(0.000815)	(0.000580)
Non-remittance Income (log)	0.0355***	0.0331***	0.0104***	0.0140***
	(0.00480)	(0.00380)	(0.00205)	(0.00296)
Improvement of Household	0.0210***	0.0171***	0.0343***	0.0269***
	(0.00612)	(0.00509)	(0.00697)	(0.00600)
Improvement of Locality	-0.00639	-0.00462	0.00938	0.00818
	(0.00646)	(0.00453)	(0.00873)	(0.00657)
Distance to Primary School	0.00377	0.00848	-0.000172	0.00461
	(0.00613)	(0.00483)	(0.00904))	(0.00101)
Transportation to Primary School	0.0526***	0.0359***	-0.00705	-0.00920
	(0.0108)	(0.00596)	(0.0120)	(0.0131)
Distance to Middle School	-0.0139***	-0.0184***	-0.0231***	-0.0335***
	(0.00430)	(0.00461)	(0.00504)	(0.00743)
Transportation to Middle School	0.00384	0.00210	0.00109	-0.00701
	(0.00519)	(0.00505)	(0.00638)	(0.00708)
Distance to High School	-0.0193***	-0.0184***	-0.0231***	-0.0335***
	(0.00408)	(0.00505)	(0.00425)	(0.00564)
Transportation to High School	-0.0185***	-0.0113***	-0.00212	0.00158
	(0.00437)	(0.00377)	(0.00535)	(0.00529)
No. of Children in Household	0.00146***	0.00136***	0.0243***	0.0217***
	(0.00169)	(0.00140)	(0.00185)	(0.00143)
No. of Women in Household	0.00732***	0.00720***	0.00155	0.000312
	(0.00190)	(0.00177)	(0.00193)	(0.00190)
Household Size	-0.0184***	-0.0176***	-0.0174***	-0.0195***
	(0.00143)	(0.00130)	(0.00134)	(0.00131)
Urban			0.0641***	0.0633***
			(0.00772)	(0.00549)
Language (base Urdu)				
Punjabi			-0.0301***	
			(0.0989)	
Sindhi			-0.0984***	
			(0.0120)	
Pashtu			-0.111***	
			(0.00937)	
Balochi			-0.0537***	
			(0.00937)	
Kashmiri			-0.150***	
			(0.0215)	
Other			-0.0538***	
			(0.0118)	
Province (base Punjab)				
Sindh			-0.0139	
			(0.0132)	
KPK			0.0336**	
			(0.0170)	
Balochistan			-0.112***	
			(0.0112)	
Constant	-0.196***		0.119***	
	(0.0540)		(0.0341)	
Observations	8,720	8,720	10,338	10,338
R-squared		0.136		0.192

Table 4: *Proportion of Household Members Attending Public Schools*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	-0.00231*	-0.00242*	-0.00207**	-0.00208
	(0.00138)	(0.00133)	(0.000847)	(0.000913)
Non-remittance Income (log)	-0.0172*	-0.0167***	-0.0118***	0.0118***
	(0.00412)	(0.00361)	(0.00725)	(0.00703)
Improvement of Household	-0.00226	-0.00250	-0.0286***	-0.0295***
	(0.00712)	(0.00672)	(0.00725)	(0.00703)
Improvement of Locality	0.00766	0.00765	0.00297	0.00853
	(0.00758)	(0.00641)	(0.00896)	(0.00913)
Distance to Primary School	-0.0163***	-0.0159***	0.00516	0.00198
	(0.00627)	(0.00468)	(0.00984))	(0.00610)
Transportation to Primary School	-0.0478***	-0.0570***	-0.0175	-0.0196
	(0.0105)	(0.0116)	(0.0128)	(0.0119)
Distance to Middle School	0.00737	0.00716	-0.00523	-0.00404
	(0.00633)	(0.00440)	(0.00735)	(0.00550)
Transportation to Middle School	-0.00815	-0.00807	-0.00866	-0.000602
	(0.00650)	(0.00518)	(0.00802)	(0.00602)
Distance to High School	0.00523	0.00514	0.0120**	0.0128***
	(0.00606)	(0.00396)	(0.00585)	(0.00420)
Transportation to High School	0.0165**	0.0163***	0.00304	-0.000633
	(0.00534)	(0.00423)	(0.00679)	(0.00484)
No. of Children in Household	0.00559***	0.00570***	0.00370*	0.00521***
	(0.00187)	(0.00175)	(0.00198)	(0.00165)
No. of Women in Household	0.00559***	0.00570***	0.00204	0.000487
	(0.00230)	(0.00233)	(0.00223)	(0.00222)
Household Size	-0.00211	-0.00224	-0.00358**	-0.00195
	(0.00155)	(0.00153)	(0.00161)	(0.00148)
Urban			-0.0499***	-0.0647***
			(0.00804)	(0.00572)
Language (base Urdu)				
Punjabi			0.0240**	
			(0.0104)	
Sindhi			0.0705***	
			(0.0129)	
Pashtu			0.0641***	
			(0.0168)	
Balochi			0.0370**	
			(0.0179)	
Kashmiri			0.148***	
			(0.0470)	
Other			0.00671	
			(0.0147)	
Province (base Punjab)				
Sindh			-0.00522	
			(0.0136)	
KPK			-0.00298	
			(0.0162)	
Balochistan			0.107***	
			(0.0166)	
Constant	0.506***		0.418***	
	(0.0469)		(0.0344)	
Observations	8,720	8,720	10,338	10,338
R-squared		0.028		0.079

Table 5: *Proportion of Household Members Attending School*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	0.00955***	0.00853***	0.00518***	0.00568***
	(0.00133)	(0.00111)	(0.000932)	(0.000780)
Non-remittance Income (log)	0.0359***	0.0405***	0.00469***	0.00685***
	(0.00400)	(0.00432)	(0.00174)	(0.00210)
Improvement of Household	0.0359***	0.0343***	-0.000425	0.00170
	(0.00672)	(0.00612)	(0.00649)	(0.00647)
Improvement of Locality	0.00182	0.00153	0.0146	0.0226***
	(0.00676)	(0.00552)	(0.00939)	(0.00820)
Distance to Primary School	-0.0152***	-0.0195***	-0.0114*	-0.0115*
	(0.00411)	(0.00454)	(0.00646)	(0.00644)
Transportation to Primary School	-0.00236	-0.00547	-0.0158	-0.0172
	(0.0103)	(0.00864)	(0.00998)	(0.0121)
Distance to Middle School	-0.0146***	-0.0164***	-0.00941	-0.0131**
	(0.00516)	(0.00427)	(0.00715)	(0.00586)
Transportation to Middle School	0.00256	0.00266	-0.0121*	-0.0189***
	(0.00644)	(0.00503)	(0.00687)	(0.00609)
Distance to High School	-0.0149***	-0.0148***	-0.00787	-0.00924**
	(0.00487)	(0.00379)	(0.00540)	(0.00439)
Transportation to High School	-0.0136**	-0.0136***	-0.00193	-0.00406
	(0.00531)	(0.00409)	(0.00565)	(0.00474)
No. of Children in Household	0.0264***	0.0262***	0.0360***	0.0337***
	(0.00174)	(0.00157)	(0.00173)	(0.00155)
No. of Women in Household	-0.00280	-0.00279	-0.00181	-0.000543
	(0.00227)	(0.00212)	(0.00216)	(0.00211)
Household Size	0.00287*	0.00197	0.00522***	0.00363***
	(0.00151)	(0.00139)	(0.00145)	(0.00135)
Urban			0.0326***	0.0305***
			(0.00695)	(0.00536)
Language (base Urdu)				
Punjabi			-0.0146	
			(0.00959)	
Sindhi			-0.0430***	
			(0.0115)	
Pashtu			-0.0695***	
			(0.0167)	
Balochi			-0.0127	
			(0.0208)	
Kashmiri			-0.00851	
			(0.0655)	
Other			-0.0727***	
			(0.0147)	
Province (base Punjab)				
Sindh			-0.0515***	
			(0.0128)	
KPK			0.0431***	
			(0.0163)	
Balochistan			-0.0496***	
			(0.0153)	
Constant	-0.138***		0.200***	
	(0.0469)		(0.0285)	
Observations	13,633	13,633	15,552	15,552
R-squared		0.130		0.144

Table 6: *Proportion of Household Members Visiting Private Hospitals*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	0.00124	0.000990	0.000247	-0.000722
	(0.000998)	(0.000883)	(0.000741)	(0.000710)
Non-remittance Income (log)	-0.00648	-0.00425	6.00e-06	0.000308
	(0.00676)	(0.00476)	(0.00298)	(0.00250)
Improvement of Household	0.00455	0.00333	0.0307***	0.0303***
	(0.00665)	(0.00650)	(0.0107)	(0.00943)
Improvement of Locality	-0.0166**	-0.0164***	-0.0157*	-0.0250***
	(0.00678)	(0.00568)	(0.00902)	(0.00740)
Distance to Hospital	-0.00521*	-0.00508**	0.00185	0.00121
	(0.00305)	(0.00230)	(0.00401)	(0.00279)
Transportation to Hospital	0.00479	0.00509	0.00612	0.00690**
	(0.00408)	(0.00311)	(0.00390)	(0.00320)
No. of Children in Household	0.00291*	0.00268*	0.00313**	0.00284*
	(0.00164)	(0.00158)	(0.00147)	(0.00165)
No. of Women in Household	0.00225	0.00237	-0.000913	-0.00130
	(0.00171)	(0.00195)	(0.00189)	(0.00202)
Household Size	-0.0157***	-0.0187***	-0.0178***	-0.0211***
	(0.00158)	(0.00171)	(0.00152)	(0.00158)
Urban			0.0111*	0.00951*
			(0.00662)	(0.00532)
Language (base Urdu)				
Punjabi			0.0174*	
			(0.00936)	
Sindhi			-0.0112	
			(0.0127)	
Pashtu			-0.0322*	
			(0.0169)	
Balochi			-0.0840**	
			(0.0330)	
Kashmiri			0.0178	
			(0.0299)	
Other			0.0316**	
			(0.0135)	
Province (base Punjab)				
Sindh			0.0184	
			(0.0136)	
KPK			0.00605	
			(0.0167)	
Balochistan			-0.0159	
			(0.0130)	
Constant	0.327***		0.255***	
	(0.0759)		(0.0423)	
Observations	4,884	4,884	6,210	6,210
R-squared	0.101		0.131	

Table 7: *Proportion of Household Members Visiting Public Hospitals*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	-0.00106*	-0.00132*	-0.000620	-0.000120
	(0.000569)	(0.000728)	(0.000499)	(0.000532)
Non-remittance Income (log)	-0.000663	-0.000218	-0.00158	-0.00127
	(0.00283)	(0.00203)	(0.00129)	(0.000790)
Improvement of Household	-0.00853*	-0.00786*	-0.00917**	-0.00777**
	(0.00473)	(0.00419)	(0.00390)	(0.00385)
Improvement of Locality	0.00816	0.00735*	-0.00552	0.00283
	(0.00521)	(0.00442)	(0.00494)	(0.00503)
Distance to Hospital	0.00277	0.00233	-0.000451	0.00170
	(0.00219)	(0.00147)	(0.00312)	(0.00200)
Transportation to Hospital	-0.00635**	-0.00553**	-0.00296	-0.00411**
	(0.00254)	(0.00221)	(0.00256)	(0.00188)
No. of Children in Household	-0.00106	-0.00125	-0.000292	8.24e-05
	(0.000927)	(0.00112)	(0.000940)	(0.000978)
No. of Women in Household	-0.00233**	-0.00294**	0.00133	0.00122
	(0.00116)	(0.00144)	(0.00126)	(0.00135)
Household Size	-0.00324***	-0.00396***	-0.00525***	-0.0052***
	(0.000845)	(0.00104)	(0.000944)	(0.00106)
Urban			-0.0104**	-0.0129***
			(0.00473)	(0.00318)
Language (base Urdu)				
Punjabi			-0.00317	
			(0.00611)	
Sindhi			0.0163**	
			(0.00734)	
Pashtu			0.00984	
			(0.0107)	
Balochi			0.0670***	
			(0.0252)	
Kashmiri			-0.0610**	
			(0.0254)	
Other			-0.0111	
			(0.00789)	
Province (base Punjab)				
Sindh			-0.0124*	
			(0.00683)	
KPK			0.0189**	
			(0.00956)	
Balochistan			0.0425***	
			(0.0121)	
Constant	0.0950***		0.108***	
	(0.0327)		(0.0190)	
Observations	4,884	4,884	6,210	6,210
R-squared	0.029		0.039	

Table 8: *Proportion of Household Members Visiting the Hospital When Sick*

	2004-2005		2010-2011	
VARIABLES	(1)	(2)	(3)	(4)
	(OLS)	(GLM)	(OLS)	(GLM)
Foreign Remittances (log)	-0.000403	-0.000435	-0.00192***	-0.0022***
	(0.000567)	(0.000613)	(0.000397)	(0.000503)
Non-remittance Income (log)	-0.00478	-0.00413*	-0.00120	-0.00111
	(0.00315)	(0.00225)	(0.00143)	(0.00107)
Improvement of Household	-0.0111***	-0.0113***	-0.00102	-0.00418
	(0.00378)	(0.00338)	(0.00530)	(0.00473)
Improvement of Locality	0.00544	0.00544	-0.00845*	-0.00560
	(0.00393)	(0.00340)	(0.00496)	(0.00502)
Distance to Hospital	0.000573	0.000638	0.00478	0.00618***
	(0.00185)	(0.00130)	(0.00304)	(0.00165)
Transportation to Hospital	-0.00221	-0.00224	-0.000138	-0.000670
	(0.00256)	(0.00182)	(0.00259)	(0.00187)
No. of Children in Household	0.00253***	0.00270***	0.000410	0.000495
	(0.000882)	(0.000900)	(0.000902)	(0.000945)
No. of Women in Household	0.000502	0.000519	0.000452	0.000287
	(0.00103)	(0.00113)	(0.00112)	(0.00119)
Household Size	-0.00458***	-0.00501***	-0.00476***	-0.0047***
	(0.000808)	(0.000888)	(0.000819)	(0.000903)
Urban			-0.00827**	-0.0095***
			(0.00400)	(0.00316)
Language (base Urdu)				
Punjabi			0.000313	
			(0.00548)	
Sindhi			0.00404	
			(0.00745)	
Pashtu			-0.0330***	
			(0.0114)	
Balochi			-0.0515***	
			(0.0118)	
Kashmiri			-0.0620***	
			(0.0151)	
Other			0.0288***	
			(0.00875)	
Province (base Punjab)				
Sindh			0.0183**	
			(0.00763)	
KPK			0.0486***	
			(0.0112)	
Balochistan			-0.00245	
			(0.0103)	
Constant	0.157***		0.115***	
	(0.0363)		(0.0206)	
Observations	13,633	13,633	15,552	15,552
R-squared	0.011		0.027	

C. Educational Status

Reference No. ☐☐☐☐☐☐☐☐ ☐☐ ☐

	If age is 10 years or more then ask		If age is 4 years or more then ask						
Person	*1. Can this person write & read in any language with understanding ?*	*2. Can solve simple Mathematics Questions?*	3. Was ever admitted in any school or educational institution?	4. What maximum education achieved?	5. Is he/she studying in any institution at present? 1= yes 2= no If no then go to Q. No. 9	6. In which class he/she is studying these days?	7. In which type of educational institution, he/she is going?	8. Is he/she facing any problems in that institution?	9. What are the reasons for not going to school at present? (Ask if age <30) (Can give maximum two reasons)
1	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
2	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
3	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
4	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
5	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
6	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
7	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
8	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
9	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
10	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
11	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
12	☐	☐	☐	☐☐	☐☐	☐☐	☐	☐☐	☐☐ ☐☐
	1= Yes 2= No If age is less than 10 years, then go to Q. No. 3	*1= Yes 2= No*	1= Yes 2= No (Ask the next person)	00= Below Class-I 01= Class-I 02= Class-II 03= Class-III 04= Class-IV 05= Class-V 06= Class-VI 07= Class-VII 08= Class-VIII	**(For 4 and 6)** 09= Class-IX 10= Class-X 11= FA/F.Sc. 12= BA/B.Sc. 13= Degree in Engg 14= MBBS 15= Degree in Computer	16= Degree in Agri. 17= MA/M.Sc 18= M.Phil/ Ph.D 19= Other	1= Govt. 2= Masjid School 3= Private School 4= Religious Institution 5= NGO/Trust 6= NFBE School 7= Private exam 8= Other	1= Satisfied 2= Shortage of teachers 3= Shortage of books 4= Substandard education 5= Far away 6= Education is costly 7= Latrine/water not available	1= Minor/aged 2= Education completed 3= Education is costly 4= Far away 5= Household chores 6= Helping in work 7= Not useful 8= Ill/incapacitated	9=Marriage/pregnancy 10= Employment/Work 11= Substandard school 12= Shortage of male/female teachers 13= Parents do not permit 14= Child is not ready 15= Other

D. Health

Reference No. ☐☐☐☐☐☐☐☐ ☐☐ ☐

Person	1. Had he/she been ill or injured during the last two weeks?	2. Was any one consulted during the illness?	3. Did he/she saw any type of doctor for treatment?	4. How many times he/she received such facilities during the last two weeks?	5. Has he/she faced any problem in seeing____? (Give maximum two answers)	6. Why he/she did not seek medicines/medical facilities during the last two weeks?	Questions regarding the Family
1	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	7. Did any LHW come to this family during the last 30 days? 1. Yes ☐ 2. No ☐ 8. Did any male/female of the family visit a health unit during the last 30 days? 1. Yes ☐ 2. No ☐
2	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
3	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
4	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
5	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
6	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
7	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
8	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
9	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
10	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
11	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
12	☐	☐	☐	☐☐	☐☐ ☐☐	☐☐ ☐☐	
	1= Yes 2= No	1= Yes 2= No (Ask Q. No. 6)	1= Private Dispensary/ Hospital 2= Govt. Dispensary/ Hospital 3= BHU/RHC 4= LHV/LHW 5= Hakeem 6= Homoeopath 7= Chemist 8= One who performs 'Dum' (spiritualism) 9= Other		1= Satisfied 2= Doctor not present 3= Staff non-cooperative 4= Lady staff not present 5= Lack of cleanliness 6= Long wait 7= Costly treatment 8= Staff untrained 9= Medicines not available 10= Unsuccessful treatment 11= Other	1= Not required 2= Costly treatment 3= Far away 4= Unsatisfactory 5= Doctor not present 6= Staff non-cooperative 7= Lady staff not present 8= No cleanliness 9= Long wait 10= Staff untrained 11= Medicines not available 12= Other	

H1. Detail of the Family Income & Expenditure

Reference No. | | | | | | | | | | | |

What were the Family's sources of income during the last year (If he/she did not spend most of his income on household expenses, then do not include his/her income in the Family's overall income) (Write income in Rs.)		What is the detail of Family's expenses incurred during the last year (Write expenses in Rs.)	
1. Crops	□□□□□□□	1. Eatables	□□□□□□□
2. Livestock	□□□□□□□	2. Dress/clothes	□□□□□□□
3. Shop	□□□□□□□	3. Residence	□□□□□□□
4. Other business	□□□□□□□	4. Fuel for lightening and other purposes	□□□□□□□
5. Government service	□□□□□□□	5. Transportation/communication/travel expenses	□□□□□□□
6. Private service	□□□□□□□	6. Healthcare and medicines	□□□□□□□
7. Property (non-agriculture)	□□□□□□□	7. Education	□□□□□□□
8. Gifts/Cash	□□□□□□□	8. Social functions/occasions	□□□□□□□
9. Sale of assets	□□□□□□□	9. *Personal care	□□□□□□□
10. Did the family receive remittances from within the country during the last 12 month. If so, how much	□□□□□□□	10. Purchase of assets/investment/savings	□□□□□□□
11. Did the family receive remittances from abroad during the last 12 month. If so, how much	□□□□□□□	* (For example tobacco, articles of daily use)	
12. Other detail (write)	□□□□□□□		