ANALYZING THE HOUSEHOLD DETERMINANTS OF POVERTY AND THEIR IMPACT ON PUBLIC PRIMARY SCHOOL DROPOUTS IN RURAL SINDH, PAKISTAN

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ABSTRACT
This study aims to analyze the household determinants of poverty and their impact on public primary school dropout rates in rural Sindh, Pakistan. Primary data was collected from the parents of children living in the villages of Matiari and Badin districts, and multiple linear regression analysis was performed comparing split and combined samples of these two rural districts. Study results found that the selected determinants of poverty, such as personal income, age, land-cultivation, land-holding, household migration, elderly children's education and distance to market, significantly influenced public primary schools dropouts on the whole, however, the significance of the same variables varied across these districts. Dropouts in Badin district are more influenced by the rural economy based determinants of poverty than the same in Matiari, where semi urban economy based determinants of poverty are relatively more important. Our findings, therefore, suggest that policies aimed at discouraging primary school dropout rates must tackle these issues in a distinct way, keeping in view varying significance of the determinants of poverty and their impact on dropouts across different districts of Sindh province.

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Keywords: Household Poverty, Primary School, Dropout, Education, Multiple Lnear Regression.

INTRODUCTION

There is nothing steady in Pakistan whether the political process, policy implementation and resulting economic progress. The gross domestic product (GDP) witnessed a remarkable growth rate of 7.7 percent during 2004-05, but fell down to mere 0.36 percent during 2008-09, though progressed to 5.28 percent in 2016-17 (Government of Pakistan, 2016-17). In 1983, population growth was 3.36 percent, which came down to 2.04 percent in 2007 and then gradually rose and fell down to 1.9 percent in 2016. Surprisingly, the only GDP per capita income of Pakistan increased steadily over a decade from US$ 371.5 in 1990 to US$ 533.86 in 2000, whereas in the subsequent years it impressively increased to US$ 1468.2 by the year 2016. Also, poverty headcount ratio at US$ 1.90 a day in Pakistan dramatically rose to 28.65 percent of its population in 2001, but

unfortunately declined to 6.07 percent in 2013 (World Bank, 2016). Over the last few decades, all these macroeconomic determinants indicate that developing countries like Sri Lanka, the Maldives, Indonesia, Malaysia, and South Korea made significant progress in economic growth and development primarily because of their progress in primary education or vice versa (Malik, 2002). In case of Pakistan, however, these macroeconomic determinants do not precisely demonstrate a micro-state of poverty across the country, specifically in rural areas where the determinants of poverty adversely and severely affect households' living standards and their access to public services, including mainly public primary education and health, in very different ways (Wan and Francisco, 2010).

Among all public services, education plays a major role in human development and economic growth (Mike, *et.al.,* 2008). Hence, having access to primary education is the fundamental human right of every child in any country around the world (Khan and Niazi, 2016; Zakar *et.al.,* 2013). Due to its global importance, primary education has now been termed as Universal Primary Education (UPE) and set as a part of the Millennium Development Goals (MDGs) by the United Nations. The Constitution of Pakistan in its article 25-A emphasizes that it is the responsibility of the state to provide free and compulsory education to all the children falling between the age group of 5 to 16 years (UNESCO, 2011) and this was done through Eighteenth Constitutional Amendment in 2011 to bring about noteworthy changes in the education sector. Committing itself to the achievement of UPE goal and strengthening specifically its primary education system, Pakistan prepared two policy directions before the implementation of the National Education Policy 2009, which was finally shaped through the implementation of a series education sector reforms during the years 2000-2005. However, UPE goal has not been achieved in the country even after 2015 (Zakar *et.al.,* 2013) because of low enrolment and high dropout rates of children in public primary schools which explicitly affects a country's literacy rate and its succeeding contribution to the economy (Malik, 2002).

In the recent era of economic development, the role of human development is well understood in terms of human capital formation resulting from an excellent higher education, which is almost impossible without providing equal and quality primary education. In Pakistan, the national and provincial governments have holistically recognized that primary education is severely affected by out-of-school children rates resulting from low enrolment and high dropouts from public primary schools. According to UNESCO (2015) report, it is estimated that there are 6.7 million out-of-school children in Pakistan, with 3.1 million in Punjab, 1.9 million in Sindh, 0.48 million in Khyber Pakhtunkhwa, and 0.56 million in Baluchistan provinces, respectively. Bilquees and Saqib (2004) in their study

estimated that about 23 percent of boys and 21.1 percent girls dropped out of primary schools across the country.

Accordingly, dropouts in the public (or government) primary schools in Pakistan have become a major concern at policy level since over the last two decades. At the public level, the government authorities have identified various factors influencing primary school dropouts[1] (Imtiaz, 2014; Shah, 2010). These mainly include inadequate financial resources, lack of good governance, poor policy implementation, inadequate professional development, and curriculum issues. Simultaneously, many research studies also identified a number of factors influencing low enrolment and dropout rates among primary school children (Shah, 2010; Khan *et.al.,* 2011; Farooq, 2013; Zakar *et.al.,* 2013; Malik, 2002). These include household poverty and its related factors such as low income, the number of dependents, child labour, parents' education, land cultivation, and land holding (or asset). Our study, therefore, investigates the determinants of poverty at both household and individual levels and their impact on children dropout enrolled in the public primary schools in Sindh province of Pakistan.

LITERATURE REVIEW

Earlier, several studies have been conducted in Pakistan to identify the relationship between children dropouts from public (or government) primary schools and poverty-related factors adversely affecting their basic right of having access to primary education. In earlier studies, authors such as Havinga *et.al.,* (1989), Ahmed and Ludlow (1989), Mahmod *et.al.,* (1991), identified and analysed various determinants of household poverty, which included unequal income distribution, household size, the large number of dependents, age and low level of education, occupation and economic activities, internal and external migration, and government's inadequate budget allocation for education. These studies mainly addressed the issue of poverty in both urban and rural areas of Pakistan. Later, Malik (1996) studied the role of landholdings on the living standard of rural people in Punjab province using cross-section data of 100 households located in the villages of Bhakkar District. He observed that the likelihood of households encountering poverty is influenced by its various determinants, including land holding, education, household size, family structure, gender and age of household members.

Siddiqui (2009) applied Probit, Logit and Extreme Value models to examine the determinants of poverty using the data from Pakistan Social and Living Standard Measurement Survey (PSLSMS), 2004-05, and concluded

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[1] From now onwards, the terms dropouts and dropout rates will be used interchangeably.

that the provision of public services, such as education, skills, health and road facilities, improve the living conditions of the poor population. On the contrary, Murtaza (2013) explained individual poverty as un-affordability of poor parents, who cannot have enough income to buy nutritious food, clean drinking water, safe environment and house, quality education and recreation. Awan *et.al.,* (2011) analysed the time-series data of Household Integrated Economic Survey (HIES) for the years 1998-99/2001-02 in order to examine the relationship between education and poverty in Pakistan and found that both are inversely related, which means that the number of poor persons in the population rises if their education level declines or vice versa. This indicates that individuals or household members being illiterate remain less productive and subsequently become poor because of doing low-paid work (Thapa, 2013). Thus, people's low socio-economic status at individual and household levels affects their family members, mainly women, and children in many ways, including their children's drop out of primary schools.

In the context of Sindh province, Bilqees and Saqib (2004) studied the dropout rates and inter-school movement and concluded that the goal of Universal Primary Education (UPE) could not be achieved due to high dropout rates and low enrolment rates. They suggested that the enrolled students could be saved from dropouts with the proper implementation of education policy, which addresses weaknesses in the educational system and brings about improvements in the primary education in Pakistan, specifically in Sindh province. Their study revealed that the children from poor families with less education have the highest dropout rate in primary schools across the province; however, children of educated parents with relatively high income have the higher chances to move from government primary schools to private schools because of quality education being offered by the later.

Bajwa (2011) reported that the ratio of out of school, excluding dropouts, children in public primary schools in Sindh province is 29.5%, which is highest among all provinces of Pakistan. However, the dropout ratio in Sindh province is 6.2%, which the second highest after Punjab province (ASER, 2011). She identified various socio-economic and cultural factors adversely affecting these primary school dropouts in rural areas of the province. Not surprisingly, the factors she identified were mostly poverty-related, including income, gender, child labour, the migration and economically disadvantaged areas.

SURVEY METHODS AND IMPLEMENTATION

This study aims to analyse the determinants of poverty and their impact on dropout rates in the public (or government) primary schools in rural areas of Sindh province of Pakistan. For this purpose, two rural districts of Sindh

province, including Matiari and Badin, were selected due to time and resource constraints. Using secondary data and field observations, various determinants of poverty were identified which eventually affect primary school dropouts in rural Sindh. Based on these selected determinants of poverty, a questionnaire was designed for a primary data collection from these districts. After the survey implementation and data cleaning, a combined sample of 240 respondents was made ready for the data analysis, including 150 respondents from district Badin and 90 from district Matiari, respectively. We used STATA 14 for data analysis pertaining to multiple regression and hypotheses testing.

For primary data collection, face-to-face interviews were conducted using our structured questionnaire, which was primarily tested during the initial stage of field surveys. During the interviews, respondents on average took 15 minutes to complete the questionnaire. For sampling, multi-stage cluster sampling was adopted, through which firstly Union Councils (UCs) from various *Talukas* of districts Matiari and Badin were randomly chosen and later from within each UC, villages were randomly selected. After the selection of villages, field interviewers randomly approached households, who were the parents of school going children. During interviews using questionnaires, information was obtained pertaining to respondents' socio-economic characteristics and the dropout rates of their children from the public primary schools situated in the same or other nearby villages.

ECONOMETRIC SPECIFICATION

As our explained (or dependent) variable, which represents the number of school children dropped from the public primary schools, was neither a count variable with a specific time interval nor even a binary (or dummy) qualitative variable, obviously both Poisson and Binary Logit models when applied appeared with a lower model fit statistics, respectively[2]. Alternatively, we therefore applied a multiple regression using the following econometric specification:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots + \beta_k X_{ki} + \varepsilon_i \forall i = 1, 2, \ldots, k$$

Where β_0 is an intercept (or constant), $\beta_1, \beta_2, \beta_3 \ldots, \beta_k$ are the coefficients of explanatory variables capturing the impact of the determinants of household poverty (or their rate of change) on primary school dropouts, $X_{1i}, X_{2i}, X_{3i}, \ldots, X_{ki}$ represent explanatory variables, such as household size, personal income, household income, age, education, etc., and ε_i is the stochastic error (or disturbance) term. Based on the review of

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[2] Results derived from both Poisson and Binary Logit models are available with the author on request.

previous studies and our own field observations, we selected and tested a number of explanatory variables representing the determinants of the household poverty in districts Matiari and Badin and analyzed their impact on dropout rates of children from the public primary schools (see Table 1, Appendix). Using multiple regressions analysis, we therefore propose to test the following hypotheses:

Hypothesis 1: The sample mean (or average) descriptive values of the coefficients of the determinants of poverty affecting primary school dropouts are overall similar (or equivalent) across both districts

Hypothesis 2: The *beta* values of the coefficients of the determinants (or control variables) of poverty affecting primary school dropouts are statistically significant in a similar (or an equivalent) way across both districts

RESULTS

Descriptive Statistics: The average household size is 6.76 persons per household across both districts, which is very similar to the average household size in rural Pakistan, equivalent to 6.51 persons per household (GoP, 2011-12). The average personal income, which is Rs.6,847 per month, is a little lower than the average household income, which is Rs.7,812 per month, across both districts, whereas the average household income of first quintile is Rs.13,221 in rural Pakistan, so the overall average household income in our case study area is quite closer to its national average as mentioned above (GoP, 2011-12). Moreover, the average age of the respondent interviewed is around 40 years, with 2.56 average years of their schooling and 1.70 average years of their spouse' schooling, who were mostly females. This reveals that females on average attain less years of schooling, simply because the overall dropout rate of girls is higher than the boys enrolled in public primary schools in Sindh province. Elderly children's income is Rs.373 a month on average, which possibly indicates its contribution to the household income, which is little higher than the personal income. Elderly children's education, which is averaged to 1.69 years of primary schooling, is almost similar to that of spouse education, showing the severity of dropouts issue among the parents, when they used to be school going children (Table-1).

The distances from primary school and water are also important variables influencing children dropouts. From their home to public primary schools, children on average take a walk of 4.93 kilometers, which is in fact two-way distance of 9.86 kilo-meters when children return to their home. Likewise, the two-way distance on average for fetching water is 2.94 kilometers (=2x1.47) across both districts. Moreover, the maximum landholding of the respondents is 11 acres with an average of 1.69 acres,

whereas its cultivation is averaged to 0.76 acres in both districts. The maximum number of male children involved in child labour is 6 with an average of almost its half equivalent to 2.62. The households have on average 2.49 number of livestock animals with its maximum number equal to 25 livestock animals, which mostly included cows, goats, sheep and camels (Table-1)

HYPOTHESES TEST RESULTS
In order to test our first hypothesis, independent samples *t* tests were applied to compare the statistical significance of the differences (or equality) in the sample mean (or average) descriptive values of the coefficients representing the determinants of poverty across Badin and Matiari split samples. In both samples, mean (or average) household size, which is 6.7 persons per household, is similar, whereas average personal monthly income in district Matiari is significantly higher at 5% level than the same in district Badin (Table-2). Also, the average age of the respondent in Badin is a little higher than that in Matiari at 1% level of significance when comparing their sample average values. These estimates reveal that there are significant differences pertaining to personal income and age of the respondents across both districts at 5% and 1% levels (Table-2).

Likewise, respondents' education in terms of completing school years on average is 3.2 in District Matiari, which is relatively higher than the same in district Badinat 5% level of significance, suggesting significant difference in their sample mean value. Spearman correlation between respondent's education and personal income is 0.43 in Matiari as compared to 0.23 in Badin, which is almost two times higher than that of Badin. As one of the possibilities, this indicates that education has a greater impact on higher earnings in district Matiari than the same in district Badin. Likewise, the sample mean (or average) descriptive value of spouse education is also significantly different at 10% level across both districts.

For other household determinants of poverty, including elderly children's education, their income, distances from schools and drinking water availability, and land-cultivation, we fail to reject the equality of mean (or average) of sample descriptive values, which shows that variations in these variables are not significantly different to affect primary school dropouts across these districts. In terms of land holding, male child labour and having livestock animals, we once again reject the equality of their sample average descriptive values at 1% and 5% levels of significance, respectively (Table-2).

Largely, a series of hypotheses using *t* tests reveal that the differences in the sample mean values of the determinants of household poverty (i.e. which are not obviously beta coefficients as estimated in the multiple

regression analysis in Table-3), affecting primary school dropouts in the rural Sindh are not significant. Empirically, this therefore suggests that there exist statistical significant differences among the mean values of these determinants of poverty across both districts. We infer that there exists statistically significant differences in the sample mean values of seven coefficients, including personal income, age, respondent's education, spouse education, land holding, male child labour and owning livestock animals, whereas the remaining seven coefficients of the determinants of household poverty, including household size, household income, elderly children's education, their income, distances from school and water, and land cultivation, there are no significant differences when comparing average sample values of these determinants of poverty across both districts (Table-2). So, we therefore reject the null hypothesis that the sample mean values of the determinants of poverty affecting primary school dropouts are overall similar across both districts for the seven coefficients as mentioned above, whereas we cannot reject the same null hypothesis for the remaining seven coefficients.

The statistical differences in the sample average values pertaining to respondent's education, male child labour (e.g. involved in the work offered at the restaurants, factories, petrol pumps, etc.) and having number of livestock animals (i.e. dairy farms), not only suggest that district Matiari is relatively a semi-urban based economy, but socio-economically it is much better than the rural-based economy of district Badin, where landholdings supporting semi-feudal based economy matters much. As a resulting impact of these determinants of household poverty, as mentioned earlier, the dropout ratio in the public primary schools of district Badin is around 77.8% higher than the same in district Matiari, however, ASER (2011) has not conducted an empirical study to investigate the factors influencing primary school dropout rates. To bridge the gap, our study therefore analyzed various determinants of household poverty affecting these dropouts and concludes that, other than the supply-side factors such as availability of primary schools, non-availability of teaching staff, quality of teaching staff, etc. influencing dropouts, the demand-side factors including mainly household determinants of poverty as empirically tested in our study also encourage the dropouts in the public primary schools situated in rural areas of Sindh province.

TABLE-1
DESCRIPTIVE STATISTICS (BOTH DISTRICTS)

Variables (or Determinants)	Mean	St. Deviation	Minimum	Maximum
Household size (No. persons)	6.76	1.68	3	11
Personal income (PKR thousands/month)	6847	4561.08	1250	16666
Household income (PKR thousand/month)	7812	5348.10	2083	20884
Age of respondent (Years)	39.95	11.98	19	65
Education of respondent (No. schooling years)	2.56	3.19	0	10
Education of spouse (No. schooling years)	1.70	2.90	0	8
Elderly children's income (PKR thousand/month)	373	1176.31	85	6250
Elderly children's education (No. schooling years)	1.93	2.53	0	10
Distance from school (Km)	4.93	4.61	2	30
Distance from water(Km)	1.47	2.52	1	15
Land holdings(Acres)	1.69	2.09	0	11
Land cultivation(Acres)	0.76	0.26	1.6	3.5
Male children labour (No. of male children)	2.62	1.33	0	6
Livestock animals (No of livestock animals)	2.49	3.38	0	25

Note: The differences in the above mean (or average) values of the determinants of poverty calculated from split samples of district Matiari and Badin were statistically compared using independent sample *t* tests of equality in Table 2.

TABLE-2
SIGNIFICANCE OF DIFFERENCES IN DETERMINANTS OF POVERTY
(THE SAMPLE MEAN OR AVERAGE VALUES)

Determinants of Poverty or Explanatory variables (Average values)	**Badin sample**	**Matiari sample**	**Combined sample**	**Average (Badin) = Average (Matiari)**	**Reject equality?**
	Average	*Average*	*Average*	*t-value (p-values)*	*Yes / No*
Household size	6.7	6.7	6.7 6	0.079 (0.937)	No
Personal income	7347	6013	6847	2.210 (0.028)**	Yes
Household income	7930	7615	7812	0.440 (0.659)	No
Age	38.4	42.5	39.9	- 2.605 (0.009)***	Yes
Respondent's Education	2.2	3.2	2.5	- 2.418 (0.016)**	Yes
Spouse education	1.9	1.3	1.7	1.728 (0.085)*	Yes
Elderly children's education	1.9	1.9	1.9	0.401 (0.688)	No
Elderly children's income	411	311	373	0.636 (0.524)	No
Distance from school	5.23	4.45	4.93	1.283 (0.200)	No
Distance from water	0.15	0.05	0.11	1.289 (0.198)	No
Land holdings	4.3	3.1	3.8	1.536 (0.126)***	No
Land cultivation	0.9	0.5	0.7	2.680 (0.007)	Yes
Male child labour	1.6	1.9	1.7	- 2.008 (0.045)**	Yes
Livestock animals	3.3	4.7	3.8	- 2.299 (0.022)**	Yes
N (Respondents)	150	90	240		

Note: Asterisks ***, ** and * refers to 1%, 5% and 10% significance levels in the mean (or average) values of the determinants of poverty. These values are sample mean (or average) values and do not be confused with beta values of the coefficients of the determinants of poverty in Table 2 displaying multiple regression analysis.

To test our second hypothesis, we used multiple linear regressions to estimate individual coefficients of the household determinants of poverty in terms of their expected signs, magnitude and statistical significance comparing split samples of two rural districts of Badin and Matiari in Sindh province, and their combined sample. In the combined sample, all the coefficients are statistically significant at 1% and 5% levels (Table-3). As expected, all the coefficients have their appropriate signs as expected (Table-A, Appendix), however, household size, personal income, and household income have overall larger coefficients, suggesting a relatively larger influence on dropout rates. Among all variables, household size coefficient, which is highly significant at 0.1% level, has the largest size, suggesting that it positively and dominantly affects dropouts. This means the larger is the household size (or the number of dependents in the family), the greater is the likelihood of children's dropouts from a public primary school. Moreover, both personal income and household income have negative and positive signs respectively; however, their statistical significance varies across both districts. This indicates that an increase in parents' income compels them to send their children to schools in both districts, however, an overall increase in household members' income discourage the same children attending primary schools in district Matiari, whereas this is not the case in district Badin, since household income coefficient is insignificant in district Badin's sample. The coefficients, estimated for elderly children's income and their education, have negative signs, which indicate that both these variables discourage younger children's dropouts; however, their statistical significance varies across both districts. The coefficient estimated for elderly children' education is statistically insignificant in district Badin sample; however, the same coefficient is highly significant at 0.1% level. Besides, the coefficients estimated for the male child and livestock animals in the split samples and combined sample are highly significant at 0.1% and 5% levels, and both have positive signs, suggesting that male child labour in rural areas is mostly used for earning an additional household income (Table-3).

Likewise, respondent's education, in this case mostly father, is found to encourage their children's dropouts, whereas spouse education, in this case mostly mother, is found to discourage their children's dropout rates in the public primary schools. This means fathers who are farmers and labourers need their male children's child labour to support their work required for cultivating agricultural lands and doing manual labour, respectively. This empirical evidence is further supported by the statistical significance of the coefficient for land cultivation and land holdings. Besides, coefficients estimated for the distances from school and drinking water positively and negatively affect primary school dropout, respectively. This means that children's dropout rates will rise if the distance from school increases.

However, this is not true if the distance from drinking water availability increases, which means the higher the distance of fetching water, the lower the probability of children's dropouts.

Interestingly, mostly all the coefficients in combined sample are highly significant, however, their individual significance statistically varies across both districts (Table-3). For instance, household income, elderly children's education, and land holdings are not statistically significant in Matiari district, but the same determinants are significant at 5% and 1% levels in Badin district. On the contrary, respondent's education and distance from water are not significant in Badin district; however, both the determinants are highly significant at 1% level in Matiari district. These results indicate that primary school dropouts in Badin district are more influenced by the rural economy based determinants of poverty than the same in Matiari, where semi urban economy based determinants of poverty are relatively more important. Overall, according to *F*-statistic, both the combined and split models are highly significant at 1% level; however, regression for Matiari district has a higher R^2 and lower Mean Squared Error (MES) of residuals, which reveals relatively better model fit than the same for Badin district. Besides, there is no multi-co-linearity in our multiple regression models. We applied a Variance Inflation Factor (VIF) test to our combined multiple regressions model and found that the mean VIF is equal to 1.98 (Table-B, Appendix). In majority of cases, a more conservative level is 2.5; if there is no multi-co-linearity (i.e. our explanatory variables are not correlated). Our VIF value suggests that there is no multi-co-linearity issue. So, therefore, we reject the null hypothesis and conclude that the determinants of poverty, although varyingly significant, do not affect primary school dropouts in a similar (or an equivalent) way across both districts.

TABLE-3
MULTIPLE REGRESSION RESULTS
(BETA VALUES, STANDARD ERRORS AND THEIR P-VALUES)

Explanatory Variables	Badin sample		Matiari sample		Combined sample	
	Coefficient (p-values) (St. Error)		*Coefficient (p-values) (St. Error)*		*Coefficient (p-values) (St. Error)*	
Constant	4.556**(1.792)	(0.012)	0.953 (1.787)	(0.595)	2.365* (1.270)	(0.064)
Household size	1.863***(0.436)	(0.000)	2.711*** (0.582)	(0.000)	2.267*** (0.339)	(0.000)
Personal income	- 1.582*** (0.535)	(0.004)	- 0.437** (0.191)	(0.025)	- 0.704*** (0.178)	(0.000)
Household income	1.144**(0.519)	(0.029)	0.272 (0.210)	(0.199)	0.419** (0.186)	(0.025)
Age	- 0.012 (0.008)	(0.144)	- 0.022 (0.013)	(0.101)	- 0.017*** (0.006)	(0.005)
Respondent's Education	0.040 (0.028)	(0.158)	0.108*** (0.040)	(0.010)	0.068*** (0.022)	(0.002)
Spouse education	- 0.092*** (0.034)	(0.008)	- 0.157*** (0.048)	(0.002)	- 0.144*** (0.027)	(0.000)
Elderly children's education	- 0.214*** (0.038)	(0.000)	- 0.086 (0.054)	(0.116)	- 0.146*** (0.031)	(0.000)
Elderly children's income	- 0.245** (0.096)	(0.013)	- 0.445*** (0.136)	(0.002)	- 0.256*** (0.076)	(0.001)
Distance from school	0.262** (0.124)	(0.037)	0.718*** (0.195)	(0.000)	0.388*** (0.101)	(0.000)
Distance from water	- 0.127 (0.159)	(0.426)	- 0.815*** (0.284)	(0.005)	- 0.415*** (0.132)	(0.002)
Land holdings	- 0.201*** (0.063)	(0.002)	- 0.109 (0.082)	(0.049)	- 0.106*** (0.039)	(0.008)
Land cultivation	0.075** (0.033)	(0.025)	0.053** (0.026)	(0.190)	0.061*** (0.020)	(0.003)
Male child	0.474*** (0.074)	(0.000)	0.615*** (0.107)	(0.000)	0.496*** (0.060)	(0.000)
Livestock animals	0.101** (0.039)	(0.013)	0.040** (0.019)	(0.044)	0.037** (0.015)	(0.020)
Model Fit statistics						
F-statistic	25.93***		16.13***		37.97***	
R^2	0.72		0.75		0.70	
Root MSE	0.934		0.879		0.948	
N (Individuals)	150		90		240	

Note: Coefficients with aestricks ***, **, * are significant at 1%, 5% and 10% levels, respectively, whereas coefficients without these aesricks are not significant.

MSE refers to the mean squared error of residuals.These coefficients are beta (or rate of change) values of the determinants of poverty and must not be confused with sample average (or mean) values of the determinants of poverty displayed in Table 1.

CONCLUSIONS AND POLICY RECOMMENDATIONS

In this paper, we empirically analyzed the household determinants of poverty and their impact on children's dropout rates in the public (or government) primary schools in two rural districts of Sindh province of Pakistan, including district Matiari and Badin. Through multi-stage cluster random sampling procedures, the survey was implemented to collect primary data from the parents of primary school going children living in the rural villages of these two districts. Using both split and combined samples, we applied multiple regression analysis and compared the estimated coefficients representing the determinants of poverty across both rural districts.

The main reason for selecting these two rural districts as a case study was because of their relative differences in the socio-economic indicators at household and district levels affecting public primary school dropouts. District Badin is among the poorest districts of the province, where dropout ratio of boys enrolled in public primary schools on average is 4.8%; whereas district Matiari has 2.7% dropout ratio. This shows the dropout ratio in the public primary schools of district Badin is around 77.8% higher than the same in district Matiari. This is obviously because the rural economy of Matiari district is relatively better in terms of its economic determinants, including literacy rate, land productivity, trade and employment (ASER, 2011). Our study results to some extent are also in parallel to these findings.

Coming back to our analysis, our results indicate that all the coefficients estimated for the household determinants of poverty, including household size, parents' education, their income, children's education and their labour, land cultivation and holdings and ownership of livestock animals are statistically significant in the combined sample, which probably represent rural scenario of Sindh province. On the whole, this means that all the determinants of poverty included in the multiple regression analysis influence children's dropouts from primary schools, however, model results vary once the data is analyzed on the basis of split samples of district Matiari and Badin. Surprisingly, household income, elderly children's education, and land holdings are not statistically significant in Matiari district, but the same determinants are significant in Badin district. On the contrary, respondent's education and distance from drinking water are not significant in Badin district; however, both the determinants are highly significant in Matiari district. These varying results across the split samples of both districts suggest that primary school dropout rates in Badin district are more influenced by the rural economy based determinants of poverty than the same

in Matiari, where semi urban economy based determinants of poverty are relatively more imperative.

For the effective implementation of our National Education Policy (NEP) and its goal to achieve Universal Primary Education (UPE) in the near future in Pakistan, our findings offer some policy recommendations. Firstly, demand-side factors which mainly include rural poverty in Sindh province must be addressed properly and broadly at policy levels. Free and quality health facilities, for instance, provision of health insurance card, and livelihood opportunities for rural households or communities, for instance, access to credit, rural enterprises, modernization of agriculture and livestock sectors must take place as one of the first steps towards Pakistan Vision-2025. Secondly, these health and livelihood opportunities must take place in such a way that they must address the specific determinants of poverty varying from one district to another in the province. Economic opportunities for rural farming communities, for instance, the implementation of land reforms matters much more in district Badin than the same in district Matiari, where rural enterprises and modern agriculture are already in their initial stage of development. When these policy suggestions are effectively implemented, it is envisaged that the dropouts of children from public primary schools will decline in the near future.

APPENDIX

TABLE-A
EXPLANATORY VARIABLES AND THEIR DESCRIPTIONS

Explanatory Variable name	Variable description		Expected signs
hhsize	Log (Household size)	(No. of persons)	+
psinc	Personal income	(PKR thousand/month)	−
hhinc	Household income	(PKR thousand/month)	+
age	Age of respondent	(Years)	−
educ	Education of respondent	(No. of schooling years)	+
speduc	Education of spouse	(No. of schooling years)	−
chinc	Log (Elderly children's income)	(PKR thousand /month)	−
cheduc	Elderly children's education	(No. of schooling years)	−
lndist	Log (Distance from school)	(No. of schooling years)	+
lndistwat	Log (Distance from water)	(Kilo-meters)	−
lndcult	Land cultivation	(Acres)	+
lndhld	Land holdings	(Acres)	−
malchild	Male children labour	(No. of male children child labour)	+
lstock	Livestock animals	(No. of goats, sheep and camels)	+

TABLE-B
EXPLANATORY VARIABLES AND MULTI-CO-LINEARITY TEST

Explanatory Variable name	Variance Inflation Factor (VIF)	VIF Tolerance
hhsize	1.81	0.5536
psinc	4.63	0.2195
hhinc	4.49	0.2024
age	1.54	0.6500
educ	1.35	0.7402
speduc	1.71	0.5858
chinc	1.51	0.6614
cheduc	1.61	0.6227
lndist	1.47	0.6780
lndistwat	1.32	0.7594
lndcult	1.29	0.7748
lndhld	1.84	0.5437
malchild	1.33	0.7533
lstock	1.29	0.7748
Mean VIF	**1.98**	

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