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WHY CHILDREN STUDY, WORK OR STAY IDLE?
Some Evidence from Rural Pakistan

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Abstract

In this study, we examine what does determine children's decisions regarding schooling, work, and idleness in rural areas of Pakistan. In particular, we are interested in looking at the effect of children's illness/disability on parental time allocation decisions with regard to their children. While using Pakistan Rural Households Panel Survey [PRHPS (2012)], we employ the Multinomial Logit Model in order to find the determinants of children's activities. We find that child health is an important determinant of child time allocation. Children's previous education and age, parental education, land ownership enhances child schooling and discourages child work/idleness. About child work, especially of girls, is significantly lower in households having educated mothers. Likewise, child disability and illness result in a decline in the likelihood for children to go to school or work. Alternatively, child disability and illness result in an increase in the likelihood of children idleness. In this regard, girls are more affected.

Keywords: Child Schooling, Work, Idleness, Child Health.
JEL Classification: I20, J13, J22, O15.

I. Introduction

This study explores the determinate of parental decisions concerning their children's time allocation in rural Pakistan. In particular, we are interested in looking at the effect of children's disability/illness in this regard. Children as an asset deserve all the opportunities and basic facilities for their physical, mental and social growth. As childhood is the constructive phase of human life; therefore, serious considerations should be given to children's activities [Ali, et al. (2012)]. Education, educational institutions, investment in education, and the access to and quality of education plays an important role in the economic prosperity of nations [Chaudhry and Rahman (2009)], Chamarbagwala and Techernis (2010)]. In this regard, developing countries have some generalized characteristics. First, in most developing countries, children are deprived

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of basic facilities like education and health [Ranjhan (2004)]. Second, there is a trade-off between child schooling and work. As in developing countries, most of the people are living below the subsistence level; so, they want their children to work rather than going to school [Bacolod and Ranjan (2008)].[1] Third, there is also a large number of children in these countries who neither work nor go to the school that are referred to as idleness [Deb and Rosati (2002)]. Lack of school facilities, high school fees, chronic illness or disability, low wages at work due to child labour are all potential reasons of child idleness in societies [Biggeri, et al. (2003), Ranjan (2004)].

In this study, we want to find the interaction between schooling, work and idleness in case of Pakistan. In particular, we want to find the main determinants of children's activities at an earlier age. Pakistan today is paralyzed with the low literacy rate, which is only 58 per cent while the Net Enrolment Rate (NER) at primary level is only 54 per cent [Government of Pakistan (2018)]. In addition, most of the children drop out from schools at early ages due to the higher opportunity cost of education in terms of child paid work [Ahmed (2012), Qureshi (2012)]. Pakistan has been one of the countries of the World, which are characterized by high dropout rates from schooling. For instance, in total, 73 per cent of children aged 5-16 (classes 1 to 10) drop out before reaching the final grade of secondary school [Mughal, et al. (2019)]. This problem is especially serious in rural areas as far as the dropping out from public school is concerned. The Academy of Educational Planning and Management [AEPAM (2013)] asserts that, out of the total enrolment in class 1 at age 5, only 63 per cent progress through the primary level (1–5), 40 per cent progress through middle school level (6–8), and only 27 per cent to secondary level (9 and 10). In particular, the dropout rate at the secondary school level (aged 14 to 16) in rural areas of the country is highest nearly 14.5 per cent [ASER-Pakistan (2017)]. Due to these statistics, only 33.2 per cent of the country's population has secondary education [UNDP (2014)]. Child labour is the main reason for such high dropout rates. For instance, according to Zubair and Qureshi (2016), the majority of children in Pakistan are working in order to support their families financially. This implies that these children are deprived from education due to child labour [Shafqat (2014)].

Numerous factors can be attributed to child activity decisions. However, mostly, they vary from country-to-country and, even, within regions of the same country. Poverty is considered as the main factor that results in child labour in developing countries. Alternatively, children compromise on their education and health in order to provide financial support to their families [Siddiqi and Patrinos (1995), Blunch and Verner (2000)].[2] There are three obvious channels through which poverty interacts with child

[1] Bacolod and Ranjan (2008) explain that child ability and household wealth both decide the child working and schooling decision.

[2] For instance, Blunch and Verner (2000) find that poverty enhances child labour in Ghana. In particular, girls from both urban and rural areas are more likely to engage in harmful child labour as compared to boys.

labour. First, financial or credit constraint is considered as the main factor in this regard. We don't have a universal agreement as far as the impact of financial constraints on child labour is concerned. For instance, Hazarika and Sarangi (2008) find that access to microcredit enhances child labour and has an adverse impact on child schooling in Malawi.[3] However, Dehejia and Gatti (2002) and Jacoby and Skoufias (1997) find that there is an inverse relationship between access to credit and child labour. Second, the ownership and size of the land is another factor which can affect child labour. Bhalotra and Heady (2003) while providing evidence from Ghana and Pakistan find that children of households with larger land size are more likely to work in farms and are less likely to be in school as compared to the children with small land size. However, Rosati and Tzannatos (2006) find that households' cultivable land increases the probability that children will mix between schooling and work. Third, child health is also considered important in the dynamics of poverty and children activities. For instance, Basu (1999) explain that cognitive development and abilities of the children can be obtained by better subsistence and child health. However, poverty and nutritious problems have been the main obstacles in this regard.[4]

Besides poverty, households' socio characteristics are important in the decisions regarding children activities. For instance, the gender of the households' head is considered a critical factor in this regard. However, in this regard, we have contradictory opinions. Psacharopoulos (1997) and Ray (2000) find that, in households which are headed by females, male children work due to higher dependency ratio and restrictions on the work of the females.[5] However, Bammeke (2013) find that children who belong to households from female headship are more concerned about their children's education; and therefore, it is less likely for them to go to work. Parental education is another socio characteristic of households which plays a role in decisions with regard to children activities. Cigno and Rosati (2000) find that, for rural mothers in India whose education is less than the primary level, it is highly likely that their children to be in full-time work.

In comparison, for mothers who have an education equivalent to the middle level, their children mix between school and work. However, they find no effect of fathers' education on children activities.[6] Beaman, et al. (2012) presents some interesting findings, while using data from a randomized natural experiment in India, that female political leadership influences adolescent girls' educational attainment and career

[3] Islam and Choe (2013) find similar results in rural Bangladesh.

[4] According to Ranjhan (2004), the adverse effects of poverty and nutrition problems on the abilities of children can be reduced by investments in nutrition and health of the poor households.

[5] Ray (2000) examined children activities in Bolivia, and Psacharopoulos (1997) investigated children activities in Peru and Pakistan.

[6] Ravallion and Wodon (2000) also find that the mother education's effect on child activities is stronger than that of father's education.

aspirations. Their results further show that girls' time spent on household chores has significantly decreased and the gender gap in adolescent educational attainment is declining. Whereas, Brollo and Troiano (2016) report that female mayors in Brazilian municipalities are less likely to engage in corruption as compared to men mayors, suggesting efficient use of public budget affecting education policies.

Furthermore, in terms of adult migration in relation to the retention and drop out in poor rural Pakistan, Mansuri, (2006) reports that children in migrant households are more likely to remain in school or attend school, hence, accumulating more school years compared to those in non-migrant households. But girls are still more likely to drop out as compared to boys in migrant-households headed by women. Hazarika and Bedi (2003) investigate the relationship between schooling costs, child labour and schooling access while using data from the 1991 Pakistan Integrated Household Survey (PIHS). Their findings reveal that schooling costs positively affect extra-household child labour, so the likelihood of children working outside the household was low when schooling costs were lowered. Whereas, child labour within the household was insensitive to changes in the costs of schooling, meaning that reduction in schooling as no effect on the likelihood of children working within their households.

Family size is another socio characteristic of households which may affect households' decision regarding children activities. For instance, family size causes tiny divisions of land in developing countries which results in poverty and deficiency [Ali (2010)]. In the same way, poor households might want to have more children to earn money in order to meet their expenditures.

Finally, characteristics of children are also important determinants of their activities. With respect to gender, Bhalotra and Heady (2003) find that girls' participation in farm activities is larger as compared to boys in Ghana and Pakistan.[7] Alternatively, parents invest in boys' education due to higher expectation from boys for their old-age benefits. Likewise, the age of the children might play a role in decisions regarding children activities. Maitra and Ray (2002) find that children of older age have more chances to go for work as compared to school in Pakistan. Similarly, Canagarajah and Coulombe (1997) find children between the age of 7 and 14 increase both schooling and work with the increase in their age.

There is a bunch of studies that examine the factors of child schooling and child labour in Pakistan.[8] However, the focus on child idleness has been rare in Pakistan. However, most of the previous studies neglect the role of child health as an important determinant of parents' decision making about their children time allocation. This study focusses on the determinants of child activities including child health while using Pak-

[7] Khan (2003) finds that boys have more chances to mix between work and schooling in Pakistan. Similarly, Canagarajah and Nielsen (2001) find that boys have more chances to study as compared to girls in Zambia; however, there is no gender disparity in case of work decisions.

[8] See, for instance, Khan (2003); Maitra and Ray (2002); Bhalotra and Heady (2003); Ahmed (2012); Qureshi,(2012); Shafqat, (2014) etc.

istan Rural Households Panel Survey (PRHPS) of (2012) which is a rich source of information on variables that might affect children activities.

The remainder of the paper is organized as follows. In Section II, we discuss the data and methodology. Section III reports the empirical results and discussion, while Section IV concludes the paper.

II. Data and Methodology

1. Data

We take the data from Pakistan Rural Household Panel Survey (PRHPS) (2012), which is conducted by the International Food Policy Research Institute (IFPRI) and Innovative Development Strategies (IDS). We use the first round of the survey, which covers 2090 households across the 19 districts of the three provinces in Pakistan.[9] The survey comprises extensive information from the households which cover around 13378 members. For instance, we have information regarding households or individual levels characteristics like expenditures, income, employment, demographic characteristics and the education status of the children. As far as the education status of the children, we have data on enrolment, the current level of education and dropout etc. Since we focus on the data of the children of age 5-15 years living in rural households, so, the sample size shrinks to 3896 children from 1447 households. The summary of the education status is given in Table 1. Overall, 54.2 per cent of children complete Katchi/Pacci class. Likewise, 35.6 per cent of the children complete primary education, and 8.9 per cent of the children complete the middle level. The high school and higher secondary school is only completed by 1.2 per cent of the children. In terms of gender, it depicts that males dominate females in terms of the completed years of education.

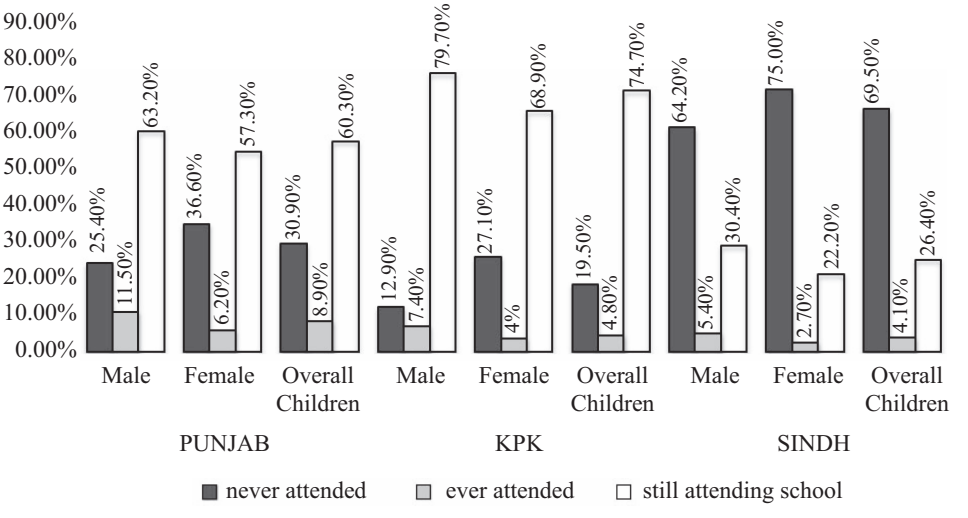
TABLE 1

Completed Years of Education (Percentage)

Highest Class Completed	Gender		
	Male	Female	All children
Katchi/Pacci	45.2	63.5	54.2
Deeni Madrassa	0.3	0.1	0.2
Primary	39.8	31.1	35.6
Middle	12.6	5.0	8.9
9 to 11	2.0	0.3	1.2
Total	100	100	100

Source: Calculation based on PRHPS (2012).

[9] The survey covers the provinces Punjab, Sindh and Khyber Pakhtunkhwa (KPK).

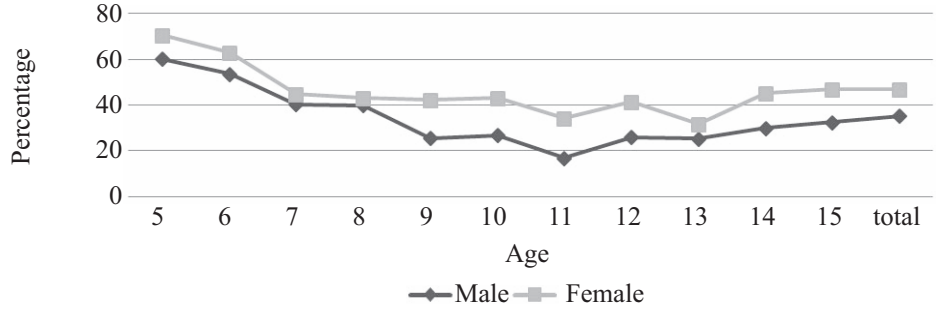


Source: Calculation based on PRHPS (2012).

FIGURE 1

Child Attendance by Gender and Provinces

About attendance, the comparison across gender and provinces is shown in Figure 1. Again, even in terms of attendance, males dominate females across all the provinces. For instance, the highest enrolment rate exists among male children in the province of KPK, which is 79.7 per cent. In terms of province wise comparison, KPK is superior in terms of enrolment rate while Sindh struggles in all categories. Likewise, Figure 2 depicts the comparison by non-enrolment rate. It shows fluctuations in non-enrollment rate with the increase in the age of the children. Female children's non-enrollment rate is rising more as compared to the male children that are highest with 70.7 per cent in the age of 5. Onwards, it is declining and raising again at the age of 10.



Source: Calculation based on PRHPS (2012).

FIGURE 2

Non-Enrolment Rate of Child by Age and Gender

There are numerous reasons for the dropout from schools, as is shown in Table 2. It shows that overall, 26.6 per cent of the children are dropped out from school due to poor financial conditions. Likewise, 24.5 per cent of children dropped out from school due to the closure of the school for unknown reasons. 9.9 per cent of the children left school due to work. It translates that around 10 per cent of the children across all the provinces are indulged in child labour. Around 32 per cent of the children are characterized by idleness.[10] 11.7 per cent of them leave schooling due to the incentive effect, i.e. they think that schooling is useful in future life due to lower returns to education.

2. Methodology

a) Theoretical Framework

Based on the framework given in Becker (1965), DeTray (1973), and Rozenwieg and Evenson (1977), we represent the choices of child schooling and other activities as a reduced form function of individual, family and community characteristics. According to Becker (1965), and Becker and Lewis (1973), the household is presumed to maximize utility in terms of the quantity and quality of children, the consumption of

TABLE 2

Reasons of Children Drop-Out from Schools

Reasons behind Going out of School (5-15)	Frequency	Per cent
Had completed available grades	13	4.6
Had to work	28	9.9
Not useful later in life	33	11.7
School too far	4	1
Poor infrastructure quality	8	2.8
Poor teaching quality	11	3.9
Would not be manageable	2	0.7
Family pressure	9	3
Not interested	20	7
School was closed	69	24.5
Poverty	75	26.6
Due to illness	2	0.7
Illness of family member	3	1.06
Marriage	3	1.06
Don't know	1	0.35
Total	281	100

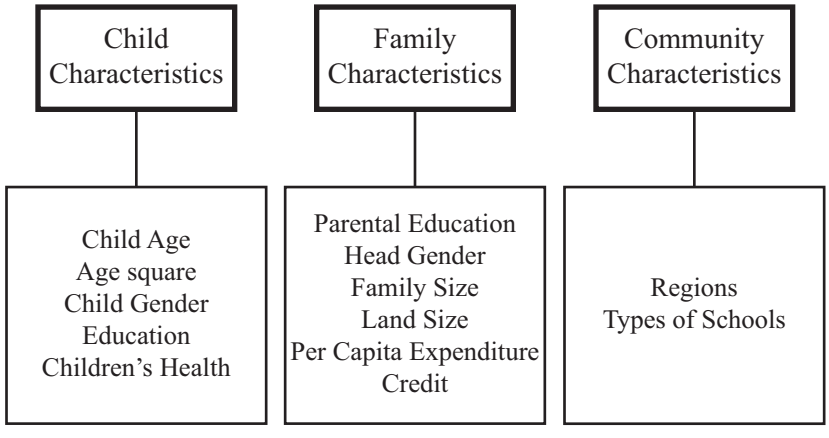
Source: Calculation based on PRHPS (2012).

[10] Characterize idle as those who neither work nor go to school.

other household goods and services produced, and leisure. The household ith child activity, W_i, is specified as:

$$W_i = w\,(X_i, X_h, X_c, v_i) \quad (1)$$

In Equation (1), X_i is assumed as the vector of child-level characteristics like a child's age and gender, and X represents parents' characteristics like parents' education, parents' occupation. Likewise, X_c represents community-level characteristics that may affect children activities like schooling attributes in the community. In contrast, v_i represents the vector of the individual, household and community-specific unnoticeable attributes that might affect child activities. This reduced form of the equation contains only those variables which are exogenous. There are mainly three activities which usually children undertake, i.e. work, school and idleness. However, some of the children might mix between school and work. Figure 3 shows a summary of a different child, family, and community-level characteristics that might affect the decisions regarding child activities. Child characteristics that include gender, age, age square, child chronic illness or disability and level of education.[11] Family characteristics include heads' gender, parental education, family size of the household, household expenditures, credit availability etc. Finally, community-level characteristics include factors like the region and the types of schools.



Source: Authors' development.

FIGURE 3

Theoretical Framework

[11] The inclusion of Children education in the above model is justified that as our dependent variable is categorical, schooling, work, work and school or idleness, so the dependent variable in this case do include drop-out children. Furthermore, the completed years of education of the child is likely to influence child work participation conditional on age. For instance, if returns to school increase with the number of school years or if there are sheepskin effects then parents may concentrate investments in one child rather than spread schooling investments across children in the household.

b) Econometrical Model

We use the Multinomial Logit Model to find out the determinants of our dependent variables, i.e. work, study, the mix of work and study, and idleness. Let Y_i denotes the polytomous variable with multiple unordered categories and supposes there are j mutually exclusive categories with their associated probabilities as P_{i1}, P_{i2}, P_{i3}…… .... P_{ij}. Here, we have four categories:

j= 0: if the child works only (work).
j= 1: if the child goes to school only (study).
j= 2: if a child is mixing between work and school (a mix between work and study).
j= 3: if a child neither goes to work nor school (idleness).

These four categories are associated with the following probabilities. Here we consider work as the base category.

$$P_r(Y_i = 0/x_i) = P_{i0} = \frac{1}{1 + exp(x_i'\beta_1) + exp(x_i'\beta_2) + exp(x_i'\beta_3)} = \text{Probability of work}$$

$$P_r(Y_i = 1/x_i) = P_{i1} = \frac{exp(x_i'\beta_1)}{1 + exp(x_i'\beta_1) + exp(x_i'\beta_2) + exp(x_i'\beta_3)} = \text{Probability of study}$$

$$P_r(Y_i = 2/x_i) = P_{i2} = \frac{exp(x_i'\beta_2)}{1 + exp(x_i'\beta_1) + exp(x_i'\beta_2) + exp(x_i'\beta_3)} = \text{Probability of the mix between work and study}$$

$$P_r(Y_i = 3/x_i) = P_{i3} = \frac{exp(x_i'\beta_3)}{1 + exp(x_i'\beta_1) + exp(x_i'\beta_2) + exp(x_i'\beta_3)} = \text{Probability of idleness}$$

In these equations β_1, β_2, β_3 are the covariate effects of the response categories study, mix between study and work and neither work nor study (idleness) respectively with reference category work $j = 0$ where $\beta_0 = 0$. So, in general form, the probability can be modelled for an outcome Y_i with j set as:

$$P_r(Y_i = j/x_i) = P_{ij} = \frac{exp(x_i'\beta_j)}{1 + \sum_{i=1}^{j-1} exp(x_i'\beta_j)} \quad \text{for j>0}$$

And

$$P_r(Y_i = j/x_i) = P_{i0)} = \frac{1}{1 + \sum_{i=1}^{j-1} exp(x_i'\beta_j)}$$

Now we will estimate this model for the sample size *n*. All the n individuals fall into the *j* categories. We assume X_i as the vector of the explanatory variable, which includes child, household and community-level characteristics.

c) Measurement of Variables

The dependent variables in this study are the activities of children. In order to measure or define the activities of children, we consider the primary and secondary job and the mutually exclusive categories of the children. If the primary and secondary job of a child is study; it indicates that children are student only, i.e. he doesn't have any secondary profession. Likewise, if a child's primary and secondary job is work; it indicates that he works only. Third, if the primary and secondary job is mutually exclusive in terms of study and work; then he is mixing between work and study. All categories, other than these three categories, are classified as idleness. Given these categorizations, Table 3 reports the province wise distribution of activities of the children in our sample. Overall, in our sample, around 40 per cent study only; 20 per cent work only; 15 per cent mix between work and study while 28 per cent are idle. Schooling or study is highest in KPK, which is 51 per cent, followed by Punjab with 43 per cent, and Sindh with 20 per cent. The mix between work and study and idleness are high in Sindh, which are 27and 47 per cent, respectively.

The explanatory variables are classified into three categories, i.e. characteristics of children, characteristics of households, and community-level characteristics. A detailed description of these characteristics is given Table A-1 in the Appendix.

TABLE 3

Child Activities by Provinces (Percentage)

Province ID	Child Activities				
	Study	Work	Work and Study	Idleness	Total
Punjab	42.8	19.0	17.5	20.7	100.0
Sindh	20.0	27.0	6.5	46.6	100.0
KPK	51.5	9.0	23.2	16.4	100.0
Total	36.9	20.4	14.8	27.9	100.0

Source: Calculation based on PRHPS (2012).

III. Results and Discussion

In this section, we discuss the findings of our analysis. In this paper, the dependent variable is referred to as the time that is spent by children in different activities. Values are assigned in such a way:0 is given to those children who go to work; 1 is assigned to those children who go to school; 2 is assigned to those children who mix between work and study, and 3 is assigned to those children who are idle. We employ the Multinomial Logit Model in order to find the probabilities of work, study, mix between work and study, and idleness. The summary statistics of variables are shown in Table 4.

Tables 5, 6, 7 and 8 show marginal effects for study, idleness, work and mix between study and work, respectively. Marginal effects measure the expected instanta-

TABLE 4

Summary Statistics (Mean and Std. Deviation)

Child Activities	Mean	Std. dev	Min	Max
Child Characteristics				
Child age (years)	9.75	3.15	5	15
Child gender (male)	0.51	0.49	0	1
Child education	1.02	1.16	0	4
Child health (ill or disable)	0.09	0.28	0	1
Family Characteristics				
Head gender (male)	0.98	0.1	0	1
Father education	0.45	0.49	0	5
Mother education	0.65	1.06	0	5
Family size	3.49	1.57	1	9
Per capita expenditures	19963.71	26464.8	475	391970.3
Land ownership (yes)	0.35	0.48	0	1
Credit (yes)	0.32	0.46	0	1
Community Characteristics				
Primary (yes)	0.02	0.16	0	1
Secondary (yes)	0.02	0.22	0	1
KPK	0.097	0.29	0	1
Punjab	0.61	0.48	0	1
Sindh	0.29	0.45	0	1
Observations	3896			

Source: Calculation based on PRHPS (2012).

neous change in the dependent variable as a function of a change in a particular explanatory variable while keeping all the other covariates constant. It is measured by the partial derivative of the prediction function with respect to the explanatory variable of concern.

1. Child Characteristics

As stated earlier, Child characteristics include age, gender, age square, education of children and child health. These are the important factors for the parents in order to

TABLE 5

Marginal Effect (Schooling)

Variables	Boys		Girls		Overall	
	dy/dx	S. E	dy/dx	S. E	dy/dx	S. E
Child Characteristics						
Child age	0.156***	-0.0417	0.130***	-0.0315	0.156***	-0.023
Child age sq.	-0.007***	-0.0015	-0.008***	-0.0012	-0.009***	-0.012
Child Edu	0.197***	-0.0117	0.189**	-0.012	0.692***	-0.026
Child health	-0.132*	-0.072	-0.159**	-0.0721	-0.146**	-0.065
Child gender (male)	-	-	-	-	0.0614**	-0.019
Family Characteristics						
Gender head (male)	-0.031	-0.257	-0.024	-0.133	-0.0634	-0.075
Father Edu	0.065**	-0.0331	0.091***	-0.0328	0.0801***	-0.026
Mother Edu	0.0711***	-0.0213	0.102***	-0.0362	0.087***	-0.033
Family size	-0.074**	-0.0329	-0.0477**	-0.0221	-0.0673*	-0.041
Per capita exp	0.000723**	-0.00031	0.00062**	-0.00024	0.0008*	-0.00039
Land owning (yes)	0.0732***	-0.0234	0.103***	-0.0212	0.0154***	-0.003
Credit (yes)	0.0158	-0.0323	0.0451	-0.0175	0.0623**	-0.029
Community Characteristics						
KPK	0.118**	-0.058	0.0953***	-0.0178	0.112***	-0.012
Punjab	0.152**	-0.0721	0.203***	-0.0576	0.217***	-0.02
Primary (yes)	0.0225	-0.639	0.028**	-0.013	0.095*	-0.057
Secondary (yes)	0.683	-0.831	0.0323	-0.0612	0.0781	-0.052

Source: Authors' estimation based on PRHPS (2012).
***indicates that coefficients are significant at 1 per cent level., **indicates that coefficients are significant at 5 per cent level. *indicates that coefficients are significant at 10 per cent level.

choose the type of activity for their children. The explanatory variable child age is significantly enhancing schooling. Its probability is increasing at a decreasing rate because the opportunity cost of schooling increases in terms of children work; those children who have more ability and capacity now can earn more money. Alternatively, age has a diminishing effect on schooling. For instance, calculating its effect for all children, with an increase in age by one year the probability of schooling increases by 13.8 per cent [0.156-2 (0.009) (1)=0.138], which is worth less than the previous year (Table 5). Similarly, age is inversely affecting idleness, i.e. its probability is decreasing at an increasing rate, implying that children are less likely to stay idle with the increase in age

TABLE 6

Marginal Effect (Idleness)

Variables	Boys		Girls		Overall	
	dy/dx	S. E	dy/dx	S. E	dy/dx	S. E
Child Characteristics						
Child age	-0.224***	-0.074	-0.229***	-0.033	-0.234***	-0.0207
Child age sq.	0.0099***	-0.0042	0.0075***	-0.0027	0.0086***	-0.0021
Child Edu	-0.220***	-0.0091	-0.233***	-0.0099	-0.56***	-0.0218
Child health	0.075**	-0.0381	0.089**	-0.0415	0.0682*	-0.0405
Child gender (male)	-	-	-	-	-0.0688***	-0.017
Family Characteristics						
Gender head (Male)	-0.089	-0.284	0.185*	-0.0719	0.052	-0.0636
Father Edu	-0.051*	-0.026	-0.054*	-0.0331	-0.047**	-0.0216
Mother Edu	-0.063**	-0.0312	-0.095**	-0.0461	-0.078**	-0.0313
Family size	0.00549	-0.0201	0.0232*	-0.0116	0.0095*	-0.0058
Per capita exp	-0.00031***	-0.0001	-0.00062***	-0.00021	-0.00024***	-0.00012
Land owning (yes)	-0.0891***	-0.0201	-0.0896***	-0.0209	-0.0889***	-0.0145
Credit (yes)	-0.0241*	-0.0135	-0.048*	-0.0273	-0.033**	-0.015
Community Characteristics						
KPK	-0.024**	-0.0051	-0.110***	-0.0191	-0.098***	-0.0116
Punjab	-0.046**	-0.0211	-0.280***	-0.0309	-0.269***	-0.019
Primary (yes)	-0.211**	-0.099	-0.131*	-0.073	-0.162**	-0.0686
Secondary (yes)	-1.088	-49.58	-0.0753	-0.0807	-0.063*	-0.0371

Source: Authors' estimation based on PRHPS (2012).

*** indicates that coefficients are significant at 1 per cent level., ** indicates that coefficients are significant at 5 per cent level. * indicates that coefficients are significant at 10 per cent level.

(Table 6). The estimated effect of age on the likelihood of child work is decreasing at an increasing rate (Table 7). Table 8 shows that the coefficient of the mix between study and work is positive and significant. Like the case of the only study, its probability is increasing at a decreasing rate; however, the impact of age on the mix between study and work is less as compared to the impact of age on the only on study.

Furthermore, the estimated effect of age on schooling, work, work and school, and idleness for boys and girls is almost the same numerically and as well were not statistically different than zero (see Table 5, 6, 7 and 8). As far as age is concerned, our results are in congruence with Burki, et al. (1998) and Khanam and Ross (2008).

TABLE 7

Marginal Effect (Work)

Variables	Boys		Girls		Overall	
	dy/dx	S. E	dy/dx	S.E.	dy/dx	S.E.
Child Characteristics						
Child age	-0.047**	-0.0203	-0.058*	-0.0325	-0.038**	-0.0183
Child age square	0.0037***	-0.0011	0.0034***	-0.0013	0.00347***	-0.000883
Child Edu	-0.0948***	-0.00826	-0.0691***	-0.0121	-0.0986***	-0.0076
Child Health	-0.058**	-0.0251	0.068**	-0.0334	-0.1106***	-0.0241
Child gender (male)	-	-	-	-	-0.0420**	-0.0135
Family Characteristics						
Gender head (Male)	0.0944	-0.117	0.0442	-0.115	0.064	-0.053
Father Edu	-0.0142*	-0.0076	-0.017***	-0.0028	-0.059***	-0.0182
Mother Edu	-0.043**	-0.0211	-0.0522**	-0.0213	-0.063***	-0.0092
Family size	0.00085*	-0.00046	0.0034**	-0.0012	0.0034**	-0.0017
Per capita exp	-0.0002**	-0.0001	-0.000034*	-0.00002	-0.000039**	-0.00002
Land owning (yes)	-0.0667***	-0.0149	-0.0569**	-0.0209	-0.0591***	-0.013
Credit (yes)	-0.0054	-0.0157	-0.0068	-0.026	-0.012	-0.0137
Community Characteristics						
KPK	-0.055	-0.148	-0.074***	-0.0195	-0.064***	-0.0116
Punjab	-0.038	-0.204	-0.079**	-0.0288	-0.052**	-0.0159
Primary (yes)	-0.067*	-0.0411	-0.088*	-0.0473	-0.091**	-0.0454
Secondary (yes)	-0.112	-6.728	-0.0163	-0.0653	-0.036*	-0.0199

Source: Authors' estimation based on PRHPS (2012).
*** indicates that coefficients are significant at 1 per cent level., ** indicates that coefficients are significant at 5 per cent level. * indicates that coefficients are significant at 10 per cent level.

Child gender, which is shown by the dummy for male shows that it is enhancing the study and the mix between study and work. Alternatively, males are more likely to study and mix between study and work. For instance, the probabilities of study and the mix between study and work increase by 6 and 5 per cent, respectively, for male children.

Similarly, there is an inverse relationship between child gender and idleness; and as well as work. The probability of idleness decreases by 7 per cent for male children. Gender is also discouraging work. The probability of work for male children decreases by 4 per cent.

TABLE 8

Marginal Effect (Mix between Work and Study)

Variables	Boys		Girls		Overall	
	dy/dx	S. E	dy/dx	S.E.	dy/dx	S.E.
Child Characteristics						
Child age	0.087*	-0.0531	0.0814***	-0.0224	0.0918***	-0.0156
Child age square	-0.0032	-0.0042	-0.0026*	-0.0011	-0.003***	-0.0007
Child Edu	0.127***	-0.0065	0.124***	-0.0071	0.215***	-0.0136
Child Health	-0.044*	-0.0241	-0.064*	-0.0377	-0.084**	-0.0415
Child gender (male)	-	-	-	-	0.048***	-0.0128
Family Characteristics						
Gender head (Male)	-0.048	-0.194	0.094*	-0.0396	0.012	-0.0521
Father Edu	-0.015	-0.0303	-0.057*	-0.0243	-0.034*	-0.0165
Mother Edu	0.0037	-0.031	0.0223*	-0.0107	0.013	-0.0074
Family size	0.000043	-0.0092	-0.014	-0.00805	-0.005	-0.0041
Per capita exp	0.000001	-0.000003	-0.000012	-0.00006	0.00007***	-0.000021
Land owning (yes)	0.073***	-0.0179	0.033*	-0.0171	0.053***	-0.0124
Credit (yes)	0.0083	-0.0181	-0.056**	-0.0174	-0.0099	-0.0121
Community Characteristics						
KPK	0.069***	-0.0154	0.089***	-0.0122	0.058***	-0.0073
Punjab	0.112***	-0.0235	0.136***	-0.0203	0.114***	-0.0136
Primary (yes)	0.124	-0.163	-0.036	-0.0502	0.065	-0.0459
Secondary (yes)	0.193	-9.022	0.047	-0.0391	0.0085	-0.0269

Source: Authors' estimation based on PRHPS (2012).
*** indicates that coefficients are significant at 1 per cent level., ** indicates that coefficients are significant at 5 per cent level. * indicates that coefficients are significant at 10 per cent level.

Coefficients of child earlier education show a positive and significant impact on child schooling. It shows that the current level of education increase the probability of future study of children. Similar is the case with the mix between study and work. Alternatively, with higher earlier education, there are more chances that child will work along with the study due to the increase in educational cost. However, there is an inverse relationship between child earlier education and idleness; and as well as, work as expected. It is generally perceived that due to chronic illness or disability, children remain idle. In our case, the coefficients of health variables indicate that childhood illness and disability have negative and significant impacts on children study [14.6 per cent, see (Table 5)], work [11 per cent, see (Table 7)], a mix between study and work [8.4 per cent, see (Table 8)] and positive impacts on idleness [6.8 per cent, see (Table 6)].

2. Family Characteristics

Like child characteristics, family characteristics are also important for the choice of children activities. As far as the gender of households' head is concerned; male head coefficient for the study is negative but insignificant. Similarly, its estimated effect on work is also insignificant. However, in cases of the mix between work and study, and idleness, it produces impressive results. For instance, the probability of girl's idleness and the mix between work and study increases in households headed by male members. Besides, the households' head gender, the overall family characteristics are also relevant for the activities of children. The marginal effects of mother and father education show that an increase in father and mother's education increases the likelihood of children to study by 8 and 9 per cent, respectively (Table 5). The marginal effect of maternal education is higher, for both girls and boys than that of paternal education. The probability of idleness is negatively related to both parents' education levels (Table 6). Also, the probability of child work significantly decreases in mother education; by more than that of father education (Table 7). As far as the family size is concerned; schooling is decreasing in the size of the household. Likewise, idleness is increasing in household size, but its estimated effect is significant for the whole sample of girls only. As far as its estimated impact in the case of child work is positive and significant; it implies that child work is increasing in household size (Tables 5, 6, 7 and 8).

Income which is measured by households per capita expenditure is one of the important explanatory variables that proxies the poverty level of the household. Its estimates show that there is a positive relationship between income and study. Likewise, there is a negative relationship between income and idleness, work, and the mix between work and study. Alternatively, affordability encourages children to study instead of remaining idle or working or mixing between work and study. Land ownership is another indicator of richness which shows that it encourages to study and mix between the study and work. Its estimated coefficients show that owning the land increases the likelihood of children to study by 1.4 per cent.

Similarly, it increases the probabilities of study for boys and girls by 8 and 10 per cent, respectively. Alternatively, if the supply of schools is available in rural areas; then children of the farmer can attain education and inter-generational tradition of working for the whole family on land may be reduced. In contrast, land ownership discourages children from remaining idle. Access to credit is positive and significant for all children in school, but its estimated effect is insignificant for girls and boys in case of child schooling. Similarly, child idleness, of both boys and girls, is lower in households having access to credit (Tables 5 and 6).

3. Community Characteristics

Our results show that provincial dummies for Punjab and KPK are positively affecting children study. Alternatively, it is highly likely for children from Punjab and KPK to study as compared to Sindh. For instance, being from KPK province increases the probability of children to study by 11 per cent. Likewise, being from Punjab increases the probability for children to study by 21 per cent. Even the chances of children mixing between study and work are increasing in KPK and Punjab.

In contrast, the probability of staying idle is significantly decreased in both the KPK and Punjab. The likelihood of study is increasing because of the availability of primary schools in local villages. The coefficients of secondary school availability in villages are insignificant in all regressions except in case of all children idleness and work. Alternatively, idleness and work are significantly decreased with the availability of primary schools in the villages.

IV. Conclusion and Policy Implications

This study explores the determinates of parental decisions with regard to their children's time allocation in rural Pakistan. In particular, we are interested in looking at the effect of children's disability/illness in this regard. We examine the impact of explanatory variables such as child, household, and community characteristics on children activities, i.e. work-study and idleness. We use a multinomial logit model on 3896 observations for Punjab, Sindh and KPK from the Pakistan Rural Household Panel Survey (PRHPS-2012).

Our results show that an increase in the age of children influences child activities. In the initial age, children are more likely to be in school, but with the increasing age their chances of mixing work with schooling increases. Furthermore, the gender effect shows that the likelihood of study and the mix between work and study is higher for boys as compared to girls. Whereas girls' probability of staying idle and in work is high. The results also show that parental education does matter for child education. The estimates of parental education show that mother education strongly influences children schooling as compared to father education. In contrast, chid work and idleness

is lower in households having educated mothers. Higher-income proxied by the household expenditure (per capita) increases the probability of children school, and its estimated impact is negative for all other activities. Land ownership dummy's impact is positive for schooling and mixing between schooling and work, and it has a negative impact on idleness and works only. The chance of child education is decreasing in the health prospects of the child. With chronic illness and disability of children, the chances of children going to schooling are declining and its more likely that they will stay at home. Furthermore, disability/ill-health affect the education of girls by more than that of boys' education as the correlation demonstrates.

The findings of the study indicate gender disparity in child schooling. To erase the gap in attendance between girls and boys in rural Pakistan, it would require further deliberations. Research is needed to find out policy prescription to erase this gap. The relative role of demand and supply-side factors needs to be assessed in this regard. Likewise, it should be assessed whether the perceived social and economic benefits of girl's education within the household drive this gap. In the same manner, we should research the role of facilities for disabled students. For instance, such facilities or proper support mechanism for disabled children, which may improve their health, would prevent such children from staying at home.

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APPENDIX A

TABLE A-1

Definition of Variables

Dependent Variable	
Pi1=child goes to school only.	1 if child goes to school and not to work, 0 otherwise.
Pi2= if child goes to school as well as work.	1 if child goes to school and for work, 0 otherwise.
Pi3= if child work only.	1 if child does not go to school but to work, 0 otherwise.
Pi4= child neither goes to school nor for work.	1 if children nor go to school nor for work,0 otherwise.
Independent Variable	
Child Characteristics	
Child age	Child's age from 5 to 15 years.
Child gender	1 if child is male 0 otherwise.
Child age square	Age of child squared.
Child education	Child completed level of education (illiterate=0, primary=1, middle=2, secondary=3, higher secondary=4).
Child health	1 if child suffered from illness or injury and disability, otherwise 0.
Family Characteristics	
Head gender	1 if head of household is male, otherwise 0.
Father education	Father completed level of education.
Mother education	Mother completed level of education.
Family size	Number of household members.
Per capita expenditures	Household per capita.
Land ownership	1 if household has land 0 otherwise.
Credit (yes)	1 if household attempted to get loan from lender, 0 otherwise.
Community Characteristics	
Locale	1 if households are from Punjab province, 0 otherwise.
	1 if household from KPK, 0 otherwise.
	1 if household from Sindh, 0 otherwise.
Primary school availability (yes)	1 if there are primary schools in each village, 0 otherwise.
Secondary school availability (yes)	1 if there are secondary schools in each village, 0 otherwise.

Source: Calculation based on PRHPS (2012).