NEGATIVE ECONOMIC SHOCKS AND CHILD GRADE ATTAINMENT: EVIDENCE FROM RURAL PAKISTAN

Aqsa Anwar
14/MPhil-DS/PIDE/2015

Supervised by:
Dr. Muhammad Jehangir Khan

Department of Development Studies

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS ISLAMABAD
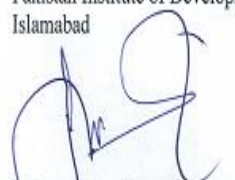
MAY, 2018

CERTIFICATE

This is to certify that this thesis entitled: "*Negative Economic Shocks and Child Grade Attainment: Evidence from Rural Pakistan*" submitted by Aqsa Anwar is accepted in its present form by the Department of Development Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Development Studies.

Supervisor:

Dr. Muhammad Jehangir Khan
Assistant Professor
Department of Development Studies
Pakistan Institute of Development Economics
Islamabad

External Examiner:

Dr. Javed Iqbal
Assistant Professor
Department of Economics
Quaid e Azam University
Islamabad

Head,
Department of Development Studies:

Dr. Zulfiqar Ali
Assistant Professor
Pakistan Institute of Development Economics
Islamabad

DEDICATION

This effort of mine is especially dedicated to my parents who supported me and give me the opportunity to study in Pakistan Institute of Development Economics (PIDE) which is one of the best institution in Pakistan with such a good teaching staff. Without the support of all these people it would not have been possible for me to complete this thesis. I dedicate this thesis to my beloved parents.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

ABSTRACT

This study is an attempt to investigate the impact of economic shocks on child educational attainment. This effect has been evaluated for the rural area of Pakistan. We have estimated the shocks impact on child grade attainment using censored ordered probit model. The empirical evidence is reported for the rural areas of Punjab, Sindh and KPK. The data is taken from Pakistan Rural Household Panel Survey (PRHPS-2012, round 1). The results show that shocks at household level are inversely affecting child grade attainment. Conversely, the effect of community level shocks on child grade attainment is insignificant for the whole sample as well as at disaggregated level. These results suggest that the support network should focus on both individual level and community level shocks. The household level shocks are of importance as these shocks are adversely affecting expenditure and consumption pattern of household concerned. Those households which face adverse shocks have lower wellbeing on multiple dimensions as compared to other households.

Key words: shocks, grade attainment.

CHAPTER 1

INTRODUCTION

Around the world households are exposed to various types of shocks both at household level and at aggregate level (Dercon, 2002). Both types of shocks may have significant impacts on the behaviors and investments of household in both physical and human capital (Hyder et al., 2015).

Economics shocks creates financial disturbance to the households and this disturbance may impact the investment in education of their children. This is the channel through which shocks affect children education (Fitzsimons & Mesnard, 2007). Households in low income countries are vulnerable to negative economic shocks. The income volatility also occurs as a result of these shocks. The shocks resulted in disrupting the consumption and investment of households (Machin, 2002).

The typology of shocks is of covariate and idiosyncratic shocks. Idiosyncratic shocks are those which are at individual level for example crop failure, job loss, transfers death of household, illness etc. These idiosyncratic shocks may be much localized. Covariate shocks are at community level, regionally or by the whole economy are known as aggregate shocks affecting larger group of households at the same time and in the same area for example market fluctuations and wealth adversity (Dercon, 2002).

The insurance mechanism in developing countries is lacking behind. The undeveloped insurance mechanism of these countries make households more vulnerable when exposed to negative shocks. Due to lack of formal insurance markets, households adopt different shock coping mechanisms. Individuals may lower their

investment in children education by not sending their children to school or by decreasing the quality of schools or by sending the children to work to compensate the effects of shocks in short run.

The impact of these shocks found to be different among different countries. Ferreira and Schady (2009) found the impact of aggregate economic shocks in different countries ranging from low income, middle income and developed countries. Child schooling get better in United States due to their well-developed insurance markets system. Goldin (1999) come out with the results that graduation rates and high school enrollment get increased in the times of great depression 1928-1938 because of the better functioning insurance markets.

Child education is considered to be an important aspect of human development. Child schooling completion plays a very important role in social and economic development. Kurosaki (2004) states that Pakistan as a developing country in South Asian region lacks in human development. Most of people living in Pakistan are depending on agriculture. Rural household's incomes mostly depend on agriculture. So any fluctuation in the agricultural sector affects incomes of individuals. Due to these income risk there exists fluctuations in their consumption as they lack in other safety net program. Haq (2012) argues that as the majority of the people in Pakistan lives in rural areas they are in contact to various shocks like floods, droughts as covariate shocks and illness, death and job loss as idiosyncratic shocks. Rural households use different shock coping mechanisms like selling their assets, taking loans, using their savings or by sending their children to labor market.

1.1 Research Gap

A huge amount of previous research has been conducted showing how negative economic shocks effect child schooling. Parent's decisions regarding the schooling of children have been examined in previous studies. In view of the previous empirical and theoretical literature, few studies in Pakistan have addressed the effects of negative shocks on child grade attainment. So in case of Pakistan further research is needed along this research domain. Children may get enrolled in schools but they may not complete their schooling and have to leave school for some reasons. So the progress of their grades need serious consideration. The present study will evaluate the effects of negative economic shocks on grade attainment. Previous studies only focused on the enrollment rate while examining the effect of negative shocks on child education. So the current study differs from previous studies as it considered both household level and community level shocks and analyze the impact on child grade attainment. This study has taken data from Pakistan rural household panel survey (2012) to find out the impact of negative economic shocks on child education attainment in rural Pakistan.

1.2 Research Question

What effect do negative economic shocks have on child grade attainment?

1.3 Objectives of the Study

The present study have following objectives to be fulfilled:

➢ To examine the impact of negative economic shocks on child grade attainment in Pakistan.

➢ To find out the gender disparity in child grade attainment.

1.4   Statement of the Problem

The current study is related to Pakistan which is a developing country. The importance of education sector for any economy is due to the fact that it increases the efficiency and productivity of human which lead to the path of sustainable development for any country. The improvement in education sector is not only by increasing the enrollment rates but also by improving the grade attainment of children. In the case of Pakistan like many other developing countries education sector is not very effective which can be one of the reasons behind the slow progress of the country. The poor performance of education sector in Pakistan is due to the low enrollment rates at primary level, high level of grade repetition, high dropout ratio, high regional and gender disparities, quality of schooling, poor infrastructure and many other. The current study is interested in finding out the effect of negative economic shocks on child grade attainment.

1.5   Motivation of the Study

Education is one of the key component of economic growth for a country. In case of Pakistan as the best of my knowledge human capital investments in Pakistan are performing poorly. The main reasons of low human capital performance are the high dropout ratios, low enrolment rates and gender gaps in education. The research in education sector of Pakistan to find out the causes of these problems is required. The present study is trying to find out the reason behind the low educational attainment of children in rural Pakistan. There is a need to find out those factors which are affecting household's decisions regarding child education attainment. In the current study I am focusing on negative shocks to which households' decisions get affected. These shocks may not allow child to proceed to next grade and their current attendance also get low.

This study is important as it is focusing on the effects of individual and aggregate level shocks on the grade attainment of children in rural Pakistan.

1.6   Plan of the Study

The organization of the study has been in the following sequences. Chapter 1 discusses the introduction to the topic. Chapter 2 includes the literature about the topic of the study. The literature include the international as well as national studies. The next chapter 3 consist of the methodology and data source which the current study follow. The data used is taken from Pakistan rural household panel survey PRHPS (2012). The explanation of variables is also included in this chapter. Chapter 4 discuss the results of the analysis done by the current study while the last Chapter 5 is the summary and conclusion of the study.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

Education is compulsory and basic need for children as provided by the constitution of Pakistan. Education is an important and central factor for human capital development. The ranking of Pakistan in terms of human capital index is reported to have dropped from 109 to 113 out of 124 countries (Afridi, 2016). According to a report 47 percent of the children aged from 5-15 years are out of schools, 69 percent of children continue their schooling reach to primary level and those who continue their schooling till secondary are only 28 percent (Chaudhry, 2016). So children educational attainment problem need to be addressed. In Pakistan the percentage of children moving to higher grade levels is low. The study is conducted to find out one of the many reason behind the low educational attainment of children in rural Pakistan. Negative shocks are considered as one of the factor to which affect their decisions related to children education. Negative shocks affect child grade attainment by not letting the children progress to next grade level. The review of the previous literature regarding negative shocks and child grade attainment is presented here which help us in our study.

Zamand and Hyder (2016) tried to determine how negative shocks disturb human capital development. Data from four different countries is taken such as Ethiopia, Peru, Vietnam and India. The study shows the effect of two main climatic shocks such as excessive rainfall and droughts on the children aged 14-16 years in four countries. All of these countries have diverse background. In this context they take human capital as both schooling outcome and health. Different types of shocks are considered socioeconomic shocks such as (death of parents and divorce), economic shock for instance (unemployment and livestock loss) and climatic shocks for instance

6

(floods and droughts). By affecting the incomes of households they effect children's welfare in the short run. They do effect child development when it occur in the critical stages of children development.

Ge (2015) analyzed the impact of economic reforms of State Owned Enterprises (SOEs) in China in mid-1990s which has labor earning distribution and incomes of families in urban areas. Due to these reforms there comes an earning gap between the workers of SOEs and non- SOEs worker. The paper aims to find out the difference between the educational attainment of children whose fathers are SOEs worker and the children whose fathers are non-SOEs worker. The children of SOEs workers are less likely to attend their high school and college as compared to the children of non-SOEs children. The difference in the educational attainment of these children is due to the increase in earning gap between SOEs and non- SOEs workers. The evidence in the paper shows that the impact of shocks of economic restructuring on the educational attainment of children of next generation is adverse. Difference model is used to estimate the effect of economic shocks.

Thai and Falaris (2014) attempted to investigate that there are adverse effects of rainfall shock on child school entry and school progress of children. During the pregnancy and the third year of early childhood the rainfall shock negatively affects the human capital of children. The regional differences are also estimated which show that region where families have less consumption smoothing ways in shocks are adversely affected. The estimation is done by using the reduced form equations. The study is conducted at Vietnam which is a developing country and it has significant level of poverty and malnutrition problems. Institutions in Vietnam are not that effective which

could help rural households to survive with adverse wealth shocks. The adverse rainfall shocks affect the child health which then effect child schooling.

Colmer (2013) stated that future income shock is being measured by using climate change as a proxy. The study showed that how parental income fluctuation due to negative aggregate climatic shocks effect children education and working hours. The effect of such climate change on education is not found means that variability of climate change does not alter decision regarding school enrollment and the educational performance of children. Households increase child labor in farms to minimize the effect of future negative shock on incomes. This increase in time spent by children on farm activities effect their performance in schools. As due to climate variability children have to work both in farm and at home which lead to less time devoted to their studies.

Hyder, Behrman and Kohler (2012) conducted study to check the impact of shocks on child schooling. The determinants of child schooling in this study are child current status of schooling and child grade attainment gap. Both types of shocks such as idiosyncratic and community level shocks are included in the current study. The children of age 6-15 has been taken for doing analysis in the study. The panel data is taken from Malawi household survey from two years. Results show greater impact of community level shocks on child schooling as compared to individual level shocks. This is due to the community support network for idiosyncratic shocks. The probit model is used for the estimation. The grade attainment gap for female is lower than that of male. Investment in female education is affected more than that of male individuals.

Hunter and May (2011) conducted a study in South African region which shows whether or not the schooling of children get disrupted by household's shocks. The study investigates the reason behind children drop out from school and grade repetition in

8

South Africa. The collected data shows no association between children schooling disruption and shocks.

Espino and Sanchís (2010) examined the impact of economic shocks in the form of economic crisis on the social well-being of five Latin American countries i.e. Brazil, Argentina, Jamaica, Mexico and Peru. Different indicators of health, mortality, education and poverty were considered. Different methodologies were used and data was taken from past crisis also. In the analysis the economic shocks variable is defined as the decline in the GDP per capita in the respective countries. The results of the study indicates that child health and child mortality are negatively correlated to economic shocks. Ambiguous results have been found in case of education. Education level gets increase in some of these countries because of the recession caused in labor markets so parents prefer to send their children to school. Also the demand for educated people rises in the economies so to get benefit in the long run parents do not lower the expenditure of the education of their children rather they reduce the investment in child health.

Vásquez and Bohara (2010) evaluated the effect of negative shocks i.e. socioeconomic shocks and natural disasters on child education and child labor in Guatemala. The study uses the aggregate level shocks to determine the impact on child schooling. The poor household in Guatemala rely on child labor as a strategy to buffer when face some kind of socioeconomic shocks. The results shows no evidence on child schooling reduction by households to buffer shocks. The estimation are done by using bivariate probit model. Evidence has been found an increase in schooling in case of natural disaster. The comparison of results has been made with previous studies.

Pedro et al. (2010) investigated the impact of the global crisis on human capital development. The assessment of development indicator get affected by the past economic shocks is done. It is determined that the impact varies with countries defined along the axis of rich, middle and high income countries. In the times of any economic crisis rich countries education and health indicators get enhanced but the indicators of human development get lowered in the poor countries. This difference is due to the institutional difference in these countries as developed countries have better institutional structure than those of poor countries. Insurance markets in developed countries are working better than those of poor countries insurance market. As household have the buffering strategy in terms of the formal insurance markets so their investment in human capital may not get decreased even in the times of shocks.

Debebe (2010) conducted a study in Ethiopia to observe how the agriculture shocks affect children i.e. child schooling and labor. In Ethiopia parents use their children to compensate the effect of shocks as the income of households depends on the agriculture so any kind of negative agricultural shocks affect their income which then effect consumption and investment. As education is considered to be an investment in human capital so if household's income get affected due to some negative shocks then the effect passes to their investment in children. To buffer the effect of shocks parent make their children to work with them in farms. But the results found shows that the negative agricultural shocks may not affect the schooling of children as they somehow manage to attend school as well as their work in farms. So the agricultural shocks may increase their work in farm but do not disturb their schooling attendance.

Kim and Prskawetz (2010) determined the impact of idiosyncratic household shocks impact on the educational expenditure, fertility and household consumption.

The study found that the mechanism to buffer shock are much efficient for the individuals facing some sort of negative shocks. But in the case of an unemployment shock Indonesian households use children for consumption smoothing by sending them to labor market and making them to earn. The unemployment of parents compelled them not to spend on children education. The shocks of unemployment lead to loss in child human capital in the long run by affecting the expenditure of children education.

Fernandez et al. (2010) illustrated that in five different Latin American countries how the global crisis effected the social indicators of education, mortality, health and poverty. Ambiguous effect have been found on child education. The ambiguity in results is due to the fact that some countries shows that the recession crisis delays child schooling but other countries child attendance seems to get increased due to crisis.

Kim and Garcia (2010) referred to the negative economic shock which is the economic downturn in Jamaica that effect the human development indicators of education and health. During the slowdown of economic growth in Jamaica the children school enrollment in primary schools get decreased but the school attendance of children get increased controlling all kind of endogeneity for growth. Results are showing mixed impacts of such economic fluctuations. So the economic shock does not affected the school attendance but affected school enrollment.

Edmonds et al. (2009) founded evidence for the increase in the school attendance and decrease in the child labor in urban India. This change in that time allocation of children was due to the economic changes in the economy. During this period of time trade liberalization occurred in India. The effect of trade liberalization is greater in urban area than in the rural parts of India. This macroeconomic shock has

positively affected schooling of children while negatively affected labor of child. The different results found is also due to the nature of a shocks which is a positive shock.

Ferreira and Schady (2009) studied the impact of aggregate economic shocks on child schooling. Ambiguous impact has been found due to the tension between income and substitution effect. The impact of aggregate shock varies across different countries. In rich countries like USA, the education of children gets improved in the times of recession. The impact of aggregate shock is negative on child schooling in poor countries of South Africa and low income Asian countries. The education of middle income countries also get negatively affected by the aggregate economic shocks. The reduction in the schooling of children will lead to low human capital for poor countries

Guarcello et al. (2009) used a unique data set to assess the effect of idiosyncratic shocks and credit constraints on the decisions related to child time allocation. Results find that schooling decisions and children's work has a determinant of credit constraint discussed. Any kind of shock exposure forces parents to make decisions to send their children to work and the buffering strategies like insurance leads to increased schooling and decreases the chances of child entering to market. Separately the effect of credit constraint and shock are estimated on child schooling decision and child labor supply. Findings of this study suggest the importance of credit rationing in decisions about child schooling.

In African countries there is a tradition of child fostering, biological parents due to certain reasons send their children to other families. One of the reasons to send the child to other family is living in risky environment. Any kind of idiosyncratic shock will force parents foster their child. This child fostering phenomenon can negatively

affect the child welfare which includes child schooling. The author finds that parent's child fostering decision also gets affected due to idiosyncratic shocks evidenced from Burkina Faso. The household's ability to foster their children gets affected by these kinds of shocks (Akresh, 2009).

The study of Woldehanna and Hagos (2009) investigated the impact of both idiosyncratic and covariate shocks on the children dropping out of primary school using accelerated time hazard model. The shocks defined in this article were death, crop failure, and drought, the death of a livestock or the death of member of a household. The results have found significant effects of shocks on children dropping out of school.

Agricultural volatility in low income countries affect the investment on children by their parents. In most of the low income countries people in rural areas are dependent of agricultural incomes. The adverse weather conditions that affect badly the agricultural position due to which the agricultural incomes falls. The decline in agricultural income decrease parental investment in children schooling. Evidence shows that the school enrolment of children suffering from adverse agricultural conditions decline. These economic shock have lasting impacts on human development of a country (Jensen, 2009).

Dillon (2008) determined that children activities like schooling, market and domestic production get affected from Household level idiosyncratic shocks. Children do have multiple domestic and market production activities for their households which help household in the improvement of their income and they do not have to overwork for their livelihood. Child labor if it's not worse enhances the human skills of child but it also affect the quality and quantity of child schooling. The effect of shocks is important to study for the welfare of children and for the substitution effect on children.

Weekly hours of work by child get increased by large shocks in production and the schooling time gets reduced due to small shocks in production. The idiosyncratic shocks faced by households increase hours spent on work which will then reduce schooling.

Escobal (2007) evaluated that how the human capital investment is affected by economic shocks in Peru. By using the data taken from living standard measurement of Peru since 1997-2000 the estimations has been done. The study resulted in finding the impact of shocks on quality of schools but no significant effect have been found on the quantity of schools. As a result of shocks parents decrease the educational expenditure by sending their children to government schools rather than private schools. The government schools are not much efficient than those of private schools. Parents also asked their children to join market which then effect the quality of schooling.

In Brazil children time allocation for schooling and employment has been measured using bivariate probit regression analysis. If the male headed household get unemployed the child girls from age 10-14 may enter into labor force and decrease grade advancement probability. Although the effects of unemployment of household were found out to be statistically significant but it has still a very small magnitude. While in case of gender the impacts on boys is very small and not significant statistically. Households use female child to buffer the transitory shocks (Duryea, Lam and Levison, 2007).

Christiaensen and Asad (2006) found the impact of crop failure shocks on children schooling as quality and nature. They found that the shocks majorly affect the investments of households in children. The gender discrimination element also comes out as a result. The crop shocks adversely affect the enrollment of females as during the period of shocks the enrollment of girls is 12 percent less than that of boys. Also the

schooling outcomes of boy's do not get affected by these shocks but the decline in enrollment and completion rates of girls is clearly shown.

During the crises of 1990's in Russia, income and consumption patterns get highly fluctuated. Many household faces the wage arrears after the crisis. Several studies shows that Russian consumption gets affected due to the income shocks households faced. The ability of household with better education is more than less educated people or people with no education. So human capital development is necessary to cope with these types of income shocks. More educated households know how to smooth their consumption. Two step method has been used to estimate the effects. Russian households partially protect their consumption from the income shocks and the effectiveness increased with more human capital and wealth (Mu, 2006).

The idiosyncratic shocks in Mexico during the peso crisis effects schooling. Job loss of a head of a household does not shows any significant impact on schooling of their teenage children. Although some evidence shows higher probability that teenage girl's may not be able to attend school. This is due to the reason that female partners started working as a coping mechanism for such kind of idiosyncratic shocks in Mexico due to which the domestic chores need to be done by teenage females but still this does not affect their schooling performance (Skoufias and Parker, 2006).

Rucci (2003) determined the impact of economic crisis in Argentina (1998) on the decision of enrollment of child. The survey used in the study is the permanent household survey from 1996-2002 and covered the 29 major cities of Argentina. The drop out of children from school get increased due to the crisis and it also effected the school attendance of children. The incomes of households fell by 55 percent which caused a decline in the probability of school joining of children aged 12-17 years from

4.7 to 12 percent. Those children who belonged to poor households were majority affected by this income shock and the re-enrollment rates of these children were found to be very low.

Siddique (2002) examined the effect of income shocks on intra-household decision making. Rainfall is used as a variable of shock. By using the techniques of ordinary least square OLS and instrumental variable estimation methods data related to the time spent on different activities is analyzed. The gender disparity element was found in the results. The effect of shocks on boys and girls educational are found to be different. The education of females is affected more than that of males. As due to this shock households are reluctant to invest in their female child and they invest more in their male child. The gap between males and female educational attainment gets enlarged.

Emmanuel and Parker (2002) said that the aggregate level shocks also affect the children and adult time allocation. Mexico peso crisis shocks in the labor market affected the time allocation of adults and children. The shocks increased the probability that children might not be able to attend school in the next year. The difference regarding gender difference is also being found in the results. Macroeconomic crisis affect the labor income directly and the indirect way of affecting labor household purchasing powers by the keeping the salaries low and raising the inflation rate. Data was being collected from the survey in the urban areas of Mexico for the purpose of current research. The model used is intertemporal model of labor supply. Girls schooling get more affected by these shocks. So economic crisis not only increased the intergenerational poverty level but also the inequality and gender based preferences.

Frankenberg, Thomas and Beegle (1999) found that the economic crisis in Indonesia affected many of their development indicator one of which was education. During the years of 1997 and 1998 enrollment rate of children aged from 13-19 years declined. The enrollment rate declined from 33 percent in 1997 to 38 percent in 1998. The two year crisis also impact the percentage of child drop out (aged 7-12 years) which got tripled due to Indonesia crisis. The impact of the crisis is larger on the poor children than on rich one. In the similar way the schooling drop out ratio of children from poor background got more affected more than that of children with better background.

Child schooling depends on the parent's capability to invest in child human development. Economic shocks affect the parent's capacity to invest in human capital. Positive relation was found between parental income and child schooling. Pakistan as a developing country has not very effective insurance mechanism system against any kind of shock. Households make their investment decision relying on their income. Any shock disturbing the parental income will itself lead to negatively impacting children's education decision (Burney, Irfan, 1991).

2.2   Conclusion

The above literature shows that around the globe various studies have been conducted to determine the importance of negative economic shocks as a key determinant for households in making decisions about their children education. The vulnerability of poor households due to these shocks make parents to decide whether to send their children to school or work. The effect of shocks varies across different countries. The developed countries due to the well-structured insurance markets are able to cope with these shocks. Studies conducted in developing countries on the other way round have resulted in showing negative relationship between negative economic

shocks and child schooling which means that due to the occurrence of any negative economic shocks child schooling decreased. Positive relation has been found between child labor and negative economic shocks in the previous literature. In rural areas parents are not much educated and they are not aware of the importance of education and when they get hit by these negative economic shocks they find it more useful to involve their children into economic activity than to send them to schools. Most of the previous studies focused only on the enrollment status of child but this study is focusing on child grade attainment which is measured by years of schooling completed. The PRHPS survey gives details information on both these variables. The present study also incorporated both individual level and aggregate level shocks. The literature about child educational attainment decisions in the times of negative economic shocks is not very extensive in case of Pakistan. There is a need to explore more in this area of study.

Poor households are typically exposed to broad array of shocks in rural communities. The loss of income may be caused by the illness or unemployment of an adult household member. Any family member illness can require unexpected health expenditures. Those households whose livelihood is directly or indirectly related to agricultural activities may get their income affected by shocks such as floods, droughts, hurricanes, crop failure, and fire. Households response to these shocks for the protection of family consumption consist of wide range of coping strategies that mostly include taking loans, drawing down liquid assets held by the household, and asking for assistance from informal insurance structure. Another shock coping instrument include children. Children can be sent to work to assist the households to absorb shocks and taken out of school to save on costs when the sustenance of consumption of households is difficult. Children may get involved in household chores, can work on home-based enterprises or can work in labor markets. The problem arises when those children

however temporarily taken out of school may less likely to return to schools so in that way they are not able to attain higher educational grades. So these shocks have permanent effect on children future earnings and child human capital development when parents take their children out of schools.

CHAPTER 3

METHODOLOGY AND DATA

This chapter discusses the methodology we are going to use in this study and the related variables and data source. Section 3.1 demonstrates the estimation techniques which include the censored ordered probit model for child grade attainment.

Section 3.2 shows different type of variables used in this study. There are two types of variables i.e. dependent and independent variables. Child grade attainment is taken as dependent variables and for independent variable we are taking two types of shocks namely aggregate and individual level shocks and we also include some control variables for our study. Section 3.3 consists of the details about data source from which we collect our data and the description of the data.

3.1 Estimation Strategy

To examine the impact of shocks on child grade attainment we are using censored ordered probit model. As a dependent variable we are taking years of schooling completed as a measure of child grade attainment. One of the advantages of using grade attainment instead of school enrolment is that it gives the representation of growing investment in child schooling.

We have developed a probit model to check how shocks impact child education attainment and model of grade attainment is given below as eq.1

$$y_{ih} = \alpha_\circ + \alpha_1 S_{ih} + \alpha_2 C_{ih} + \alpha_3 H_h + \alpha_4 U_{ih} + \varepsilon_{ih} \dots\dots \quad \textbf{1}$$

In eq. 1 y_{ih} is the dependent variable which shows the grade attainment of child i, household h. S_{ih} is the independent variable which represent two type of shocks namely idiosyncratic and aggregate level shocks. C_{ih} Variable indicate the characteristics of

child that include age, gender where H_h is the variable of household characteristics i.e. parental education, household head gender and household per capita expenditure; U_{ih} is the provincial differences; ε_{ih} is the error term.

The censored ordered probit model addresses some problem related to the measurement of grade attainment. First of all the censored ordered probit model considered the fact that the grade attainment is representative of ordered discrete choices that whether a child will move to the next grade level or will withdraw from school (Holmes, 1999). Grade attainment is considered to be right censored. Right censoring occurs for those children who are currently enrolled in school, the final grade attainment of these children is unknown. To treat the grade of currently enrolled children by taking it equal to those who have stopped at same grade level that would give biased estimates for true grade attainment (Glick and Sahn, 2000). The censored ordered probit model deals with this problem in measuring grade attainment of children, these are the reasons because of which we are using the censored ordered probit model. Other techniques like OLS and 2sls do not address these issues. The problem while using Ordinary Least Square (OLS) is that these techniques do not consider this censoring and take it as identical with those who are currently enrolled in school and children who have completed their years of schooling. This may lead to biased estimates of the impact of shocks on child grade attainment (Mckenzei and Repoport, 2007). As we know that the years of schooling attained is a series of ordered discrete choices. The techniques of OLS assume a continuous distribution for dependent variable i.e. years of schooling attained. For the continuation of next level of education (i.e. primary to middle) and to continue for an extra year of schooling once an individual has reached a certain level of education (i.e. secondary level) are two different choices and should be modeled differently.

We have use censored ordered probit to model grade attainment. The censored ordered probit was originally developed by King and Lillard (1987) to study grade attainment.

As discussed above the issues of OLS due to which King and Lillard (1987), Glick and Sahn (2000), Holmes (2003), Mckenzei and Repoport (2007), Glewwe and Jacoby (1994), Maitra (2003), Zhao (2010) have used the method of censored ordered probit model which is the extended form of ordered probit model.

Again the model of educational attainment equation 1

$$y_{ih} = \alpha_\circ + \alpha_1 S_{ih} + \alpha_2 C_{ih} + \alpha_3 H_h + \alpha_4 U_{ih} + \varepsilon_{ih}$$

y_{ih} is defined as the variable for completed year of schooling and y^* is defined as the latent desired level of schooling which is dependent on explanatory variable(X) and error (ε).

Now the latent desired level of schooling is given as below:

$$y^* = \beta X + \varepsilon$$

The survey that have used had no data on the latent desired level of schooling, the survey data have the information regarding the years of schooling completed. In practice we do not observe desired level of schooling y^*. For those individuals who have finished schooling, we observe a discrete level of schooling completed y.

$$y = 0 \; if \; y^* \leq \mu_\circ$$

$$y = 1 \; if \mu_\circ < y^* \leq \mu_1$$

$$y = 2 \; if \mu_1 < y^* \leq \mu_2$$

$$y = n \; if \mu_{j-1} \leq y^*$$

Here's μ_i are cut-off points that indicates the transition of education from one level to the other. For example for a probability that a non-enrolled individual observed to have completed two years of schooling $(y = 2)$ is the probability that the value of latent schooling attainment function y^* lies between μ_1 and μ_2. For individuals who have completed their education, we took that lower value of y which falls between two cut-off points. For other individuals who have not been to school y will be normalized to zero. For those Individuals who are currently enrolled will be rightly censored with unknown desired schooling level, and we know that they will at least complete their current level of schooling.

The probability that the values of latent desired level of schooling fall within certain threshold brackets can be written as:

$$P(y = 0) = \emptyset(\mu_{\circ} - \beta X)$$

$$P(y = 1) = \emptyset(\mu_1 - \beta X) - \emptyset(\mu_{\circ} - \beta X)$$

$$P(y = 2) = \emptyset(\mu_2 - \beta X) - \emptyset(\mu_1 - \beta X)$$

$$.$$

$$.$$

$$P(y = n) = 1 - \emptyset(\mu_{n-1} - \beta X)$$

3.2   Variable Description

3.2.1   Dependent Variable

Grade Attainment

The dependent variable in our study is the status of child grade attainment. In order to capture the completed level of education and transition from one education level to another, an ordered discrete variable for schooling has been used. The variable (educational attainment) is classified into six (6) different groups, no schooling, 1-4 years of schooling, 5 years of schooling (completed primary), 6-7 years, 8 years (completed middle), 9 years of schooling, 10 years of schooling and above (completed secondary or above). Those children who are still attending school are included.

3.2.2   Independent Variables

Economic Shocks

The independent variable used in this study includes economic shocks, we include two kinds of shocks in our study. The first type of shock is of aggregate level shocks faced by the overall community represented by dummy variable having value 1 if there exist any shocks otherwise 0. The second type of shocks is dummy variable for individual level shocks created to check out the impact of idiosyncratic shocks on status of child grade attainment. The survey included the information regarding shock faced by households at individual level as well as shocks faced by the community at large.

Child Gender

The control variable of child gender has significant effect on child educational attainment. In developing countries households preferred to send their male children to

school in comparison to their female child. But in case of shocks parents may send their male children to work. The dummy variable is used to capture the impact of child gender on child grade attainment and years of schooling. For measuring the gender variable we use dummy variables having value 1 if the child is male and 0 if female.

Child Age

The other variable is the age of the child. Age also plays an important role in determining children schooling. In this study children of age 5-15 have been considered. Cyril (2004) determines that the higher age children are more likely to get affected at the times of economic crisis. Due to labor markets demand they may have to leave their school to help their family in the times of crisis. The study used the variable of age as a continuous variable.

Parental Education

One of the determinants of children education is the education of parents. They are more concerned about the education of their children's. Also educated parents are less likely to take out their children from school when exposed to shock. Education is an investment of parents in children. Jamal (2014) analyzed that there is a high probability that non- educated parents do not pay attention towards their children's education and they send them to work as they do not consider education as an investment.

Household Expenditure

The per capita expenditure of a household is also an important factor to determine child schooling. Households make decision of education of their children based on their household expenditure. When household gets exposed to some negative

shocks any increase or decrease in the expenditure of household does effect child schooling. A complete section in the PRHPS (2012) gives us the information regarding expenditures of household.

Household Head Gender

The gender of the head of the household is also very important in determining the child educational attainment. The decision in the rural side of Pakistan about children education are made by the head which may not necessarily be the parents of the child because in the rural part of Pakistan there exist a joint family system. So this variable must be included in the current study.

Province

The current study has included three provinces Punjab, Sindh and Khyber Pakhtunkhwa (KPK). The estimates give us information about the differences in child grade attainment of these three provinces.

3.3   Data

3.3.1   Data Source

The study used the data that is taken from Pakistan Rural Household Panel Survey (PRHPS-2012). Households covered by Pakistan Rural Household Panel Survey (PRHPS-2012) are 2090 households in which total members are 13378 in rural areas of the three provinces Punjab, Khyber Pakhtunkhwa (KPK) and Sindh in primary sampling units of 76. Through this survey information on large number of topics such as education, migration, assets and savings, participation in social safety nets, time use, sources of income, loans and credit, nature of employment, consumption pattern, economic shocks and household aspirations were collected. This study sample consists

of 3896 children which are aged from 5-15 years taken from PRHPS-2012. The reason for using this year data is that the information required for the study is not available for the current years.

3.3.2 Data Description

The data of Pakistan rural household survey (2012) contains a set of the questionnaire which include both individual level and community level shock questions asked from households and from the whole community. Community level shocks are events like flood, earthquake, and fire that are included in community questionnaire. The household level shocks are illness, death, loss of employment etc. and there is a separate section about negative events and shocks in household questionnaire. The community questionnaire give information that includes 3 provinces from which total of 19 district were taken and 4 mouzas within each district were selected, this makes the total of 76 mouzas.

Table 1: Community Level Shocks

Community shocks	Did your village face any disaster during last 5 years		Total
	No (percent)	Yes (percent)	
Fire	90	10	76
Flood/typhoon	56.5	45.2	76
Drought	85.5	14.5	76
Earthquake/landslide	100	0	76
Famine	100	0	76
Epidemic	94.7	5.2	76
Civil unrest or violence	100	0	76
Crop Insect/disease outbreak	53.9	46.1	76
Total	518	92	610

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

In the community questionnaire respondents are asked a question about shocks that "did your village faced any disaster during last 5 years" and the responses are given as Yes or No. the current study has included the recent two years shocks. According to the table 1 each of the community shock question was asked in each of 76 mouzas and total number of communities are 610. Table 1 presents the percentages of responses of community level shocks within each village.

The community shocks included in the questionnaire are fire, flood/typhoon, drought, earthquake, famine, epidemic, civil unrest or violence, crop insect/disease. The highest percentage at community level shocks is crop insects/disease outbreak then is flood/typhoon which is 45.2, Table 1 represents the percentages by which the village gets affected by these shocks.

Table 2: Did your Village Faced any Shock during Last 5 Year

Community level shocks	Frequency	Percent
No	69	90.8
Yes	7	9.2
Total	76	100.0

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

Given in the table 2 the household reported affecting the community level shocks in yes or no form. The responses when asked about shocks are that 90.8 percent reported no while 9.2 percent reported yes. This frequency is measured from the number of mouzas i.e. 76.

The questionnaire include different type of negative events or shocks faced by individual level which is not affecting the whole community but it does effect the household. The most common among them are medical expenses due to some injury, house damage and wedding expenses. The individual level shocks are directly affecting the family.

Table 3: Did your Household Face any Negative Shock during Last 5 Years?

Responses	Frequency	Percent
No	712	49.2
Yes	735	50.8
Total	1447	100.0

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

In the household questionnaire respondents are asked a question about shocks that "did your household faced any negative shock during last 5 years" and the responses are given as Yes or No. Table 3 indicates that most of the household faced some kind of negative shock or event at individual level. The total number of households from whom the question about individual level shocks have been asked are 1447. When asked at household level about 50 percent of the household replied with yes and the percentage of households replying no was found out to be 49.2 percent.

The distribution with respect to gender and province of children ever attended school are given in table 4. The data collected in the survey shows that the lowest percentage of children ever attended or enrolled school is found in Sindh when we see the distribution province vise and Punjab is better than Sindh and the highest percentage of children ever attended school is found in Khyber Pakhtunkhwa (KPK) provided by the data of Pakistan rural household panel survey (2012).

Table 4: Gender and Province Vise Distribution of Child Ever attended School

Child Gender			PUNJAB	SINDH	KPK	Total
MALE	ever attended school	No	307	375	23	705
		Yes	894	218	178	1290
	Total		1201	593	201	1995
FEMALE	ever attended school	No	422	421	50	893
		Yes	745	132	127	1004
	Total		1167	553	177	1897

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

The distribution with respect to gender and province of children currently enrolled or attending the school is given in detail in table 5. In case of currently attended or enrolled children the highest percentage of male children who are still attending schools is in Kpk which is 84% and Sindh has the lowest percentage of lowest in male child current enrolment which is 34% provided by the data of Pakistan rural household panel survey (2012).

The lowest percentage of female child enrolment is also found in Sindh which is 18%. Kpk is better than Punjab and Sindh in current child enrolment.

Table 5: Gender and Province Vise Distribution of Child Still Attending

Child Gender			PUNJAB	SINDH	KPK	Total
MALE	still attending school	no	78	16	8	102
		yes	816	202	170	1188
	Total		894	218	178	1290
FEMALE	still attending school	no	132	31	14	177
		yes	613	101	113	827
	Total		745	132	127	1004

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

As given in table 6 on average, the overall rate children enrollment rate is 51.7% in according to the data of Pakistan Rural Household Panel Survey (PRHPS-2012).

Table 6: Gender and Province Distribution of Child School Status

Child Gender			Province ID			Total
			PUNJAB	**SINDH**	**KPK**	
Total	child school status	ever attended	942	843	96	1881
		currently attending	1429	303	283	2015
	Total		2371	1146	379	3896

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

The table 6 represents the gender and province vise distribution of both the currently attending and ever attended children. The graph shown below also depicts the children attendance across the provinces with respect to gender.

Figure 1: Gender and Province Distribution of Child School Status
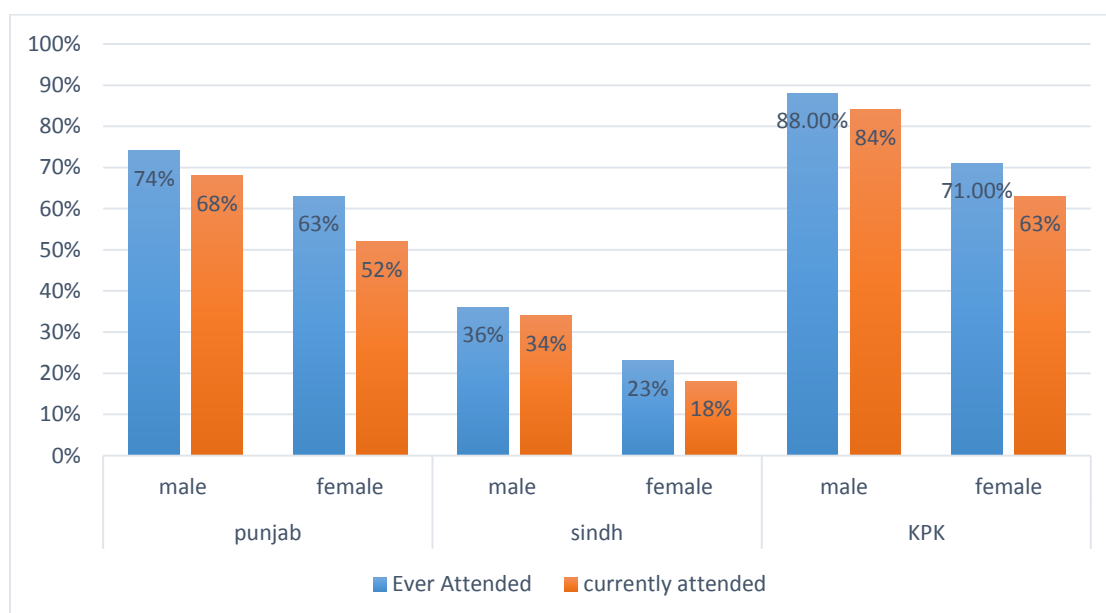
The below table 7 shows the years of schooling completed by children.

Table 7: Child Years of Schooling Completed

Years of schooling completed	Frequency	Percent
Kacchi/Pacci	2111	54.2
Below primary	1116	28.6
Primary completed	277	7.1
Below middle	238	6.1
Middle completed	108	2.8
Below secondary	32	.8
Secondary completed or above	14	.4
Total	3896	100.0

Source: Pakistan Rural Household Panel Survey PRHPS (2012)

We have divided the years of schooling completed by children to six different groups first kacchi / pacci, below primary, primary completed, below middle, middle completed, below secondary and secondary completed. The study has taken children aged 5-15 years and the table shows that about 54.2 percent children have completed kacchi/ pacci class, 7.1 percent have completed primary, and 2.8 percent have completed middle, and 0.4 percent have completed secondary.

3.4   Conclusion

This chapter has detailed about the methodology and the estimation techniques that is used for analysis of the data. The chapter has also provided details about the variables that are being used in the study and also about the importance of these variables. Further this chapter includes the description of data used in the current study for analysis.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter will be discussing the descriptive statistics related to the data and results of the study. The impact of negative economic shocks on child grade attainment in rural areas of Pakistan has been discussed in this chapter. We use censored ordered probit model to investigate the effects of negative economic shocks on child grade attainment.

The descriptive statistics of the study are given in the table 8 stated in the forth coming pages. The results of the censored ordered probit model are represented in tables 9 and the separate results of male and female are given in table 10.

Table 8: Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Min	Max
Shocks					
Household level shocks	3896	0.5023	0.5001	0	1
Community level shocks	3896	0.0236	0.1519	0	1
Child Characteristics					
Age child	3896	9.7543	3.1590	5	15
Gender child (Male)	3896	0.5128	0.4999	0	1
Child years of schooling	3896	0.7854	1.1323	0	6
Child school status	3896	0.5172	0.4998	0	1
Household Characteristics					
Fathers education	3896	0.9651	1.2175	0	6
Mothers education	3896	0.2331	0.6761	0	4
Head gender (Male)	3896	0.9887	0.1057	0	1
Per capita expenditure	3896	19963	26464	475	391970.3
Community Characteristics					
Punjab	3896	.6085729	.4881322	0	1
Sindh	3,896	.2941478	.4557172	0	1
KPK	3,896	.0972793	.2963757	0	1

Source: Pakistan Rural Household Panel Survey PRHPS (2012

The above table 8 represents the descriptive statistics of the data from Pakistan rural household panel survey (2012).

In our study we are taking two type of shocks i.e. household level shocks and community level shocks. Shocks are represented by dummy variable having a maximum value 1 if the respondent response is yes and the minimum value of 0 if the respondent response is no. Age variable represent children aged from 5-15 years old which are included in our study. We have total sample of 3896 children in our study. The gender variable represents the male child with value 1 and female child with value 0. For child years of schooling completed we have classified the completed years of schooling by child into six different groups. The minimum value is 0 and the maximum value is 6. Group represents the kacchi/pacci/ no schooling, first group represents 1-4 years of schooling (below primary), second group represents 5 years of schooling (primary completed), third group represents 6-7 years of schooling (below middle), group fourth represents 8 years of schooling completed (completed middle), group five represents 9 years of schooling (below secondary), group six represents 10 years of schooling or above (completed secondary or above). Child school status is measured by the dummy variable with value 1 for currently enrolled children and 0 otherwise.

Father and mother education is also classified into six different groups of completed years of schooling. Group represents the kacchi/pacci/ no schooling, first group represents 1-4 years of schooling (below primary), second group represents 5 years of schooling (primary completed), third group represents 6-7 years of schooling (below middle), group fourth represents 8 years of schooling completed (completed middle), group five represents 9 years of schooling (below secondary), group six represents 10 years of schooling or above (completed secondary or above). The highest class completed by father lies in group six and the highest class completed by mother lies in group four.

Head of the household have the value 1 if the head is male and 0 otherwise. The per capita expenditure is measured by the values in amount given by the respondents in the survey. The survey includes three provinces Punjab, KPK, and Sindh. For provinces we also used dummy variable for each of the province. For Punjab the dummy variable will be having value 1 if it's Punjab and 0 to otherwise. For Sindh the dummy variable will be having value 1 if it's Sindh and 0 to otherwise. For Kpk the dummy variable will be having value 1 if it's Kpk and 0 to otherwise.

Table 9: Results of Censored Ordered Probit Model

Variables	Coefficients	Standard Error	z-statistics	P-value
Shocks				
Household shocks	0.131***	0.04289	-3.06	0.002
Community shocks	-0.059	0.13734	-0.43	0.664
Child Characteristics				
Child gender (Male)	0.303***	0.04013	7.56	0.000
Child age	0.261***	0.00761	34.33	0.000
Child age square	-0.018***	.00258	-7.34	0.000
Household Characteristics				
Father education	0.209***	0.01723	12.17	0.000
Mother education	0.184***	0.02922	6.30	0.000
Head gender	-0.4260**	.182897	-2.33	0.020
Per capita expenditure	2.43e***	7.62e-0	3.18	0.001
Community Characteristics				
Sindh	-0.8018***	0.07561	-10.60	0.000
Punjab	-0.0688	0.06493	-1.06	0.289

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

*** indicates the significance of coefficients at the level of 1%, ** indicates the significance of coefficients at the level of 5%, * indicates the significance of coefficients at the level of 10%.

Table 10: Results of Censored Ordered Probit Model (by Gender)

Variables	Male				Female			
	coefficients	Standard error	z-statistics	p-value	Coefficients	Standard error	z-statistics	p-value
Households Shocks	-0.130**	.05827	-2.23	0.025	-0.120**	.0636	-2.04	0.041
Community Shocks	-0.274	.01970	-1.39	0.163	0.159	.1918	0.83	0.407
Child gender	-	-	-	-	-	-	-	-
Child age	0.291***	.0107	27.24	0.000	0.232***	.0109	21.23	0.000
Child age square	-0.016***	.0035	-4.52	0.000	-0.022***	.0038	-5.79	0.000
Father education	0.186***	.0237	7.82	0.000	0.237***	.0253	9.39	0.000
Mother education	0.175***	.0440	3.99	0.000	0.181***	.0392	4.63	0.000
Head gender	-0.43**	.183	-2.03	0.02	-0.41**	.182	-2.33	0.03
Per capita expenditure	2.73e***	1.02	2.68	0.007	2.30e**	1.16	1.98	0.040
Sindh	0.831***	.102	-8.14	0.000	-0.812***	.1137	-7.15	0.000
Punjab	-0.1313	.0893	-1.47	0.142	-0.020	.0953	-0.21	0.832

Source: Pakistan Rural Household Panel Survey PRHPS (2012).

Shocks and Child Grade Attainment

Impacts of shocks on child grade attainment have been estimated using censored ordered probit model as shown in table 9. To grade attainment of children we mean (i) the levels of schooling completed and (ii) the school status of children age 5-15 years.

The results of the censored ordered probit model show that shocks adversely affect child grade attainment in rural Pakistan. The sign of the coefficients shows that household level or idiosyncratic negative shocks affect child grade attainment negatively. According to our results the probability of child attendance and child grade attainment decreases by 13 percent when there occur shocks at household level. The

coefficient of household level shocks is highly significant at 1% level of significance. This means that household experiencing any idiosyncratic shock i.e. Illness, job loss etc. is associated with the decline in schooling of the children of that household. It also means that the children whose household faced any shocks at individual level are less likely to attain higher educational grades and the probability of school dropout while switching to next grade get increases. These results represents that those households who are exposed to some individual level shocks may end up their children schooling or the probability of their child progressing to the next grade decline. These results are similar to the previous studies of (Dhongde & Shymyakina; Azam et al. 2012).

The effects of idiosyncratic or individual level shocks are negatively significant in our study but the effects of covariate or aggregate shocks are negative but insignificant, for the whole which are similar to the results of Escobal et al. (2007), which also conclude that children schooling does not get affected by aggregate shocks but idiosyncratic shocks affect children grade attainment. This results is justified by Ferreira and Schady (2009) illustration that covariate or aggregate level shocks affect the labor market simultaneously while disturbing the household's income because these shocks affect the whole country or community. The opportunity cost of school attending child get reduce as the occurrence of these aggregate shocks also reduces child potential for labor market so it become less attractive option for households to substitute child schooling with work. Debebe (2010) has also come up with the same results like our analysis that the aggregate shocks do not affect schooling. The study found similar results of community and household level shocks on child grade attainment at disaggregated level as well.

At disaggregated levels similar results are found represented in table 10. The results shows that the probability of child attending school and proceeding to next grade

level decreases by 13 percent for boys when households hit by shocks and the coefficient is significant at 5% level of significance. The probability of school attainment of girls decreased by 12 percent when the households are exposed to shocks and the coefficient is significant at 5% level of significance. The results show that male child educational attainment is more affected as compared to female child. Although the difference is minor in magnitude. The coefficient for community level shock is not significant for both male and female child.

Child Characteristics

For child characteristics we take child age and child gender which are important determinant of child schooling attainment. The age of the child is also on the independent side of the model to control for its effects in the analysis. It has also significant and positive impact on child grade attainment as shown in table 9. The coefficient is significant at 1% level of significance. The older age children can be easily involved in economic activities. But the results of age square is negative and significant for child grade attainment. The elder child may enter into the labor market to contribute in household resources. The presence of younger sibling in the family increases the probability of dropping out of older children when households get exposed to negative shocks (Glick et al. 2016). Therefore younger children are more likely to attain higher grades. The studies done before this also seems to be providing the evidence of the child age variable in having important role in the schooling and education of children.

The gender of child is also very important determinant of child grade attainment which is included as a control variable in the study. The data provide us the information of both male and female children. The overall result for child gender is positive and

significant shown in the table. To investigate that whether there exist any gender difference in the child grade attainment we also did separate analysis by gender of child as shown in the table 10. The impact of shocks is statistically significant for both male and female children. The results are similar to the study of (Thai and Falaris, 2014).

Household Characteristics

Household characteristics include parent's education, gender of head of the household, education of the head of household, household per capita expenditure. All of these household characteristics are very important factors for child schooling decisions.

The education of both father and mother is an important determinant of child grade attainment. For our analysis we are taking both father and mother education by their completed years of education. Parental education variable has a positive and significant effects on child education. The results shows that the probability of children attending school and attaining higher levels of education get increased when parents are educated. As shown in table 9 child's probability of school attendance and grade attainment increase by 20% if father is highly educated and the probability get increased by 18 % if mother is highly educated. The coefficient of father and mother education is highly significant at 1% level of significance. This results also suggests that educated parents may have more opportunities to increase income and they do not need additional labor from their children (Dillon, 2012). Guarcello et al. (2010) also analyze that parent's level of schooling has a positive and significant impact on child schooling. Thai and Falaris (2014) did research on the role of parental education in terms of child grade attainment and the results are same as estimated by the present study.

The separate analysis with respect to child gender has the same results for parental education. Educated parents invest more in their children education because they themselves have been to school and they are aware of the importance of schooling (Alderman, 2001). Parental education is significant and positive to both male and female child. For male child the probability of child getting into higher grade increases by 18 percent if the father is educated and the coefficient is significant at 1% level of significance. Educated mother increases the probability of male child grade attainment by 17 percent and the coefficient is significant at 1% level of significance. Female child is more likely to continue schooling and proceed to next grade level by 23 percent and 18 percent if both father and mother are educated respectively.

The gender of head is also being taken as a control variable. According to Pakistan Rural Household Panel Survey (PRHPS-2012)'s data most of the households are headed by male members. The results of table 9 represents that there exist a negative relationship between male headed household child grade attainments. The probability of child attendance and child grade attainment get decreased by 42% of those households which are headed by male member and it is significant at 5% level of significance. According to Ali and Khan (2003) children in male headed households are less likely to go to schools in rural areas of Pakistan. This result is justified as the male headed household make decisions regarding the schooling of their children and when they get hit by shocks they may take out their child from school to save the cost of schooling. In the case of illness, job loss shocks head of the household may send their children to meet the household expenses.

The separate analysis for child gender shows the male headed household variable is negative and significant to both male and female child grade attainment.

The expenditure of the household is also considered as a control variable in the study. The results in table 9 clearly shows that household expenditure positively affects the attendance and grading of children. The probability of drop outs while achieving higher education gets decreased. The increased expenditure of a household increases the child grade attainment (Guarcello et al., 2010). The household expenditure is highly significant at 1% level of significance.

The relationship between the child grade attainment and per capita household expenditure is found to be positive and significant in the separate results for male and female children provided by our study as mentioned in the preceding under table 10.

We also include the analysis of the provinces. The data informed us of three provinces namely Punjab Sindh and Kpk. As we are taking the province dummies so our analysis is limited to two provinces Punjab and Sindh. Child grade attainment is found to be negative but in significant in Punjab. Child grade attainment is significant and negative by 80 percent in Sindh. This analysis indicate that the rural side of Sindh get more negatively affected by household level shocks. The child grade attainment suffers more in Sindh rural areas due to occurrence of any negative event.

As previously explained in the study that this study is considering both individual and community level shocks. The results of the effects of household level shocks are negative and significant to child education in the rural areas of Pakistan as provided by the data used in the study. But the effect of the community level shock according to the analysis are not significant. The effects of community level shocks on child enrollment and schooling are found to be similar with previous literature.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

The core objective of the study is to examine the relation between children educational attainment and negative economic shocks in rural areas of Pakistan. The study is conducted for the school going children of age 5-15 years. The data of Pakistan Rural Household Survey (PRHPS-2012) which was administrated by international food policy research institute (IFPRI) has been used. The data of PRHPS-2012 provide the relevant information required for the study which includes the household level information and community level information. It covers the rural areas of three provinces of Pakistan which are Punjab, Sindh and KPK. For empirical analysis we have employed censored ordered probit model on 3896 observations for Punjab and Sindh provinces. We have also analyzed the impact of some control variables such as child, household and community characteristics on children grade attainment.

For educational attainment the study is taking children with their current school status and the years of schooling completed as dependent variable. The results are indicating towards the fact that the negative shocks at individual level are directly affecting the child attendance and child school progress. The estimations are showing that household level shocks have a significant negative impact on child grade attainment. On the other side the impact of covariate shock is found to be insignificant in the study. In the present study the segregated analysis show that boys are more affected by these shocks as compared to girls unlike some of the previous studies conducted in developing countries showing gender biased toward girls. In a developing country like Pakistan when households are exposed to shocks they prefer to send their male child to work for assistance in meeting the expenses of households. The analysis

42

for child characteristics consist of child age and child gender. For child age the results show that younger age children are more secure than elder ones when household get hit by shocks. As the increase in age is associated with an increase in the probability of older child taken out from school or sent to work or stay at home for child care. Child gender has a significant positive effect for the whole sample on child grade attainment. Household characteristics analysis based on parental education, gender of the household head and household expenditure. Parental education is also significant and positively related to the child grade attainment which means that the higher education of parents will increase the probability of children to pass to the next grade and also remain in schools in the times of shocks. Head gender seems to be negatively related to the child educational attainment. This negative relation of head gender with child educational attainment is revealing some facts that the chances of child school progress and school attendance become low if the household is headed by male members when there occur household shock. We also did analysis for household expenditure which is positive and significant for child grade attainment in our study. For provinces mixed results have been found. For Sindh the child grade attainment is found to be negative and significant. For Punjab the results show negative but insignificant impact on child grade attainment.

5.2   Policy Recommendations

This study is contributing towards understanding an important dimension that how crucial could be negative shocks impacted child grade attainment in rural areas with some poor community. As the study finds the results of both types of shocks to be negatively impacting the child grade attainment with household level shocks have significant effect on child grade attainment and community level shocks are insignificantly impacting the child grade attainment. These results also raises questions

whether there exist some effective safety net policies for households to cope with these negative shocks by the government. Parents should be provided with incentives for sending their children to school instead of making them spend their time in paid and unpaid work. This could be done by the cash transfer programs conditional on children attendance and grade attainment. 'Progresa' is a good example as cash transfer program.

REFERENCES:

Afridi (2016). Human capital and economic growth of Pakistan. *Business & Economic Review*, 8(1), 77-86.

Akresh (2009). Flexibility of household structure child fostering decisions in Burkina Faso. *Journal of Human Resources*, 44(4), 976-997.

Alderman et al. (2001). School quality, school cost, and the public/private school choices of low-income households in Pakistan. *Journal of Human resources*, 304-326.

Ali and Khan (2003). Child Labor in Rural Areas of Pakistan-Some Socioeconomic Determinants. *Pakistan Economic and Social Review.*

Behrman and Schneider (1993). An International Perspective on Pakistani Human Capital Investments in the Last Quarter Century. *Pakistan Development Review* 32 (1), spring: 1-68.

Burney and Irfan (1991). Parental characteristics, supply of schools, and child school-enrolment in Pakistan. *The Pakistan Development Review*, 21-62.

Chaudhry, H. (2016). "Why do so many children drop out of Pakistani schools?

Retreived from https://www.dawn.com/news/1241630." DAWN **25th Feb**.

Chaudhury, Christiaensen and Asadullah (2006). Schools, Household, Risk, and Gender: Determinants of Child Schooling in Ethiopia. *ESRC Centre on SKOPE, Oxford University.*

Colmer (2013). Climate Variability, Child Labor and Schooling: Evidence on the intensive and extensive margin (No. 81.2013). *Nota di Lavoro, Fondazione Eni Enrico Mattei.*

Conceição, P., Kim, N., & Zhang, Y. (2010). Overview: Economic Crises and Human Development. *Estudios Economics*, 37-62.

De Janvry, A., Finan, F., Sadoulet, E., & Vakis, R. (2006). Can conditional cash transfer programs serve as safety nets in keeping children at school and from working when exposed to shocks? *Journal of Development Economics*, 79(2), 349-373.

Debebe (2010). Child labor, agricultural shocks and labor sharing in rural Ethiopia. *ISS Working Paper Series/General Series*, 491, 1-60.

Dercon (2002). Income Risk, Coping Strategies and Safety Nets. *World Bank. Research Observer* 2:17, 141–166.

Dhongde and Shemyakina. Impact of Parental Health Shocks on Children's Educational Outcomes.

Dillon (2012). Child labour and schooling responses to production and health shocks in northern Mali. *Journal of African Economies*, ejs025.

Duryea (2007). Effects of economic shocks on children's employment and schooling in Brazil. *Journal of Development Economics*, 84(1), 188-214.

Edmonds, Topalova and Pavcnik (2009). Child labor and schooling in a globalizing world: Some evidence from urban India. *Journal of the European Economic Association*, 7(2- 3), 498-507.

Escobal, Saavedra and Suárez (2007). Economic Shocks and Changes in School Attendance Levels and Education Expenditure in Peru. *Working paper 13. An international study of childhood poverty.*

Espino and Sanchís (2010). Latin America: Social and Gender Impacts of the Economic Crisis. *Journal of Latin American Studies*.

Fernández and López (2010). Transitory shocks, permanent effects: impact of the economic crisis on the well-being of households in Latin America and the Caribbean. *Estudios Economics*, 3-35.

Ferreira and Schady (2009). Aggregate economic shocks, child schooling, and child health. *The World Bank Research Observer*, 24(2), 147-181.

Fitzsimons (2007). Shocks to income and to siblings: Effects on child schooling and work. *Public Policy Journal, Institute for Fiscal Studies.*

Frankenberg, Thomas and Beegle (1999). The real costs of Indonesia's economic crisis: Preliminary findings from the Indonesia family life surveys (pp. 99-04). Santa Monica: RAND.

Ge (2016). Economic Restructuring and Children's Education: Lessons from China's State-Owned Enterprises Reform.

Glewwe and Jacoby (1994). Student achievement and schooling choice in low-income countries. *Journal of Human Resources,* Vol.28, pp. 843-864.

Glick and Sahn (2000). Schooling of girls and boys in a West African country: the effects of parental education, income, and household structure. *Economics of Education Review*, Vol. 19, pp. 63-87.

Glick, Sahn and Walker (2016). Household shocks and education investments in Madagascar. *Oxford Bulletin of Economics and Statistics*, *78*(6), 792-813.

Goldin (1999). Egalitarianism and the Returns to Education during the Great Transformation of American Education. *Journal of Political Economy*, 107(6):S65-94.

Gregg and Machin (2002). Shocks to Family Income and Gender Differences in Child Schooling Responses in Rural India. Department of Economics, University College London and Centre for Economic Performance, London School of Economics. Economic crisis on the well-being of households in Latin America and the Caribbean. *Estudios Economics*, 3-35

Guarcello, Mealli and Rosati. (2010). Household vulnerability and child labor: the effect of shocks, credit rationing, and insurance. *Journal of population economics*, *23*(1), 169-198.

Haq (2012). Shocks as a Source of Vulnerability: An Empirical Investigation from Pakistan. *Poverty and Social Dynamics Paper Series PSDPS*: 6. Pakistan Institute of Development Economics.

Holmes (1999). School completion in Pakistan: analysis of censoring and selection bias. Working Paper # 794, Economic Growth Center, Yale University.

Hunter & May (2011). Poverty, shocks and school disruption episodes among adolescents in KwaZulu-Natal, South Africa. *Development Southern Africa*, *28*(1), 1-17.

Jensen (2000). Agricultural volatility and investments in children. *The American Economic Review*, *90*(2), 399-404.

Kim and Garcia. (2010). Economic crises, health and education in Jamaica. *Estudios Economics*, 105-134.

Kim and Prskawetz (2010). External shocks, household consumption and fertility in Indonesia. *Population research and policy review*, *29*(4), 503-526.

King and Lillard (1987). Education policy and schooling attainment in Malaysia and the Philippines. *Economics of Education Review*, Vol. 6, pp. 167-181.

Kohler, Hyder and Behrman (2012). Negative Economic Shocks and Child Schooling: Evidence from Rural Malawi. *Peens Institute of Economics Research (PIER) Working Paper* 12-039.

Maitra (2003). Schooling and Educational Attainment: Evidence from Bangladesh. *Education Economics*, Vol. 11, pp. 129-153.

McKenzie, D., & Rapoport, H. (2006). Can migration reduce educational attainment? Evidence from Mexico. *Evidence from Mexico (June 1, 2006). World Bank Policy Research Working Paper* (3952).

Mu (2006). Income shocks, consumption, wealth, and human capital: evidence from Russia. *Economic Development and Cultural Change*, *54*(4), 857-892.

Nandi and Di Maio (2010). Conflict, economic shock, and child labor in Palestine. *Brück, T., et al., 2010a. Identifying Conflict and Violence in Micro-Level Surveys. HiCN Working Paper*,74.

Ray (2002). Simultaneous Analysis of Child Labour and Child Schooling: Comparative Evidence from Nepal and Pakistan. *Economic and Political Weekly*, 5215-5224.

Rucci (2003). Macro Shocks and Schooling Decisions: The Case of Argentina. *Journal of Economic Behavior and Organization University of California at Los Angeles*, CA, USA.

Skoufias & Parker (2002). Labor market shocks and their impacts on work and schooling: Evidence from urban Mexico. *IFPRI-FCND Discussion Paper*, 129.

Skoufias & Parker (2006). Job loss and family adjustments in work and schooling during the Mexican peso crisis. *Journal of Population Economics*, 19(1), 163-181.

Thai and Falaris (2014). Child schooling, child health, and rainfall shocks: Evidence from rural Vietnam. *Journal of Development Studies*, 50(7), 1025-1037.

Vásquez and Bohara (2010). Household shocks, child labor, and child schooling: evidence from Guatemala. *Latin American research review*, 45(3), 165-186.

Woldehanna and Hagos (2015). Economic shocks and children's dropout from primary school: implications for education policy in Ethiopia. *Africa Education Review*, *12*(1), 28-47.

Zamand and Hyder (2016). Impact of climatic shocks on child human capital: evidence from young lives data. *Environmental hazards*, *15*(3), 246-268.

Zhao and Glewwe (2010). What determines basic school attainment in developing countries? Evidence from rural China. *Economics of education review,* 29(3), 451-460.