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Muhammad Qahraman Kakar

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Université Paris-Est Marne-la-Vallée  
(Université Gustave Eiffel)

Thèse présentée pour obtenir le grade universitaire de Docteur

Discipline: Sciences Economiques et Gestion

Muhammad Qahraman Kakar

# Ethnic Disparities, Women Education and Empowerment in South Asia

Dirigée par Manon DOMINGUES DOS SANTOS

Soutenance le 07/04/2021 devant le jury composé de:

Alain Desdoigts	Université Paris 1 Panthéon-Sorbonne	Rapporteur
François Roubaud	Université Paris Dauphine-PSL	Rapporteur
Nordman Christophe Jalil	Université Paris Dauphine-PSL	Membre du jury
Mélika Ben Salem	Université Gustave Eiffel	Membre du jury
Marine De Talancé	Université Gustave Eiffel	Membre du jury

# Abstract

This thesis comprises four empirical chapters. Using various econometric techniques, each chapter examines different aspects of educational outcomes and women empowerment. These aspects vary from school enrolment to learning gaps, and the impact of social constraints on women empowerment. The objective of this thesis is to obtain better understanding about issues related to education and women empowerment in developing countries, in particular Pakistan and Afghanistan.

The first chapter examines ethnic disparities in school enrolment in Pakistan. Using the household survey of the year 2015 (ASER), we find that there exist large gaps in school enrolment between ethnic majority and ethnic minorities. In further analysis, we decompose the factors responsible for these gaps. The results show that school enrolment gaps are mainly attributed to parental education, household financial status, number of children in household and village infrastructure.

The second chapter seeks to answer the reasons for the gender gaps in school enrolment using data pertaining to Pakistan by employing Probit, multilevel regression model along with Fairlie decomposition technique. The results show that gender gaps in school enrolment are wider in ethnic Pashtuns, Sindhis, Balochs, and Sirayki children (minorities) as compared to ethnic Punjabi (majority) and Urdu-speaking (minority) children.

The third chapter explores whether disability in children is associated with school enrolment and learning outcome gaps. Our results show that disability is related to gaps in educational outcomes. Also, there is a gender dimension. Girls with disabilities are less likely to enrol compared to boys. Moreover, our results show that children identified by their parents as having a severe disability are more likely to enrol in religious schools compared to other regular schools.

The fourth chapter investigates the impact of social constraints on educational outcomes and women empowerment in Afghanistan. We employ demographic and health survey conducted in the year

2015 and find that social constraint negatively impact education and women empowerment. The results are consistent with the view that social constraints restrict women mobility.

**Keywords:** Human capital, Education, School enrolment, Learning gaps, Children with disabilities, Social constraints, Women empowerment, Afghanistan, Pakistan

# Resumé

Cette thèse comprend quatre chapitres de fond. Les questions de recherche de la thèse s'inscrivent dans le thème plus large de la formation du capital humain dans les pays en développement. Les trois premiers chapitres portent sur le Pakistan et le dernier est consacré à l'Afghanistan.

Le premier chapitre traite des disparités ethniques en matière de scolarisation au Pakistan. En s'appuyant sur l'enquête sur les ménages de l'année 2015, nous constatons qu'il existe de grands écarts dans la scolarisation entre les groupes ethniques majoritaires et les minorités ethniques. Dans une analyse plus approfondie, nous décomposons les facteurs responsables de ces écarts. Les résultats montrent que les écarts de scolarisation sont principalement attribués à l'éducation des parents, à la situation financière du ménage, au nombre d'enfants dans le ménage et à l'infrastructure du village.

Le second chapitre cherche à expliquer les écarts entre les sexes en matière de scolarisation au Pakistan, en employant le modèle de régression à plusieurs niveaux Probit ainsi que la technique de décomposition de Fairlie. Les résultats montrent que les écarts entre les sexes en matière de scolarisation sont plus importants chez les enfants des ethnies pachtounes, sindhis, baloutches et sirayki (minorités) que chez les enfants des ethnies pendjabi (majorité) et ourdou (minorité).

Le troisième chapitre examine la relation entre le handicap chez les enfants, l'accès à l'éducation et les résultats scolaires. L'analyse d'un large échantillon d'enquêtes auprès des ménages au Pakistan pour l'année 2018 fournit des preuves solides que le handicap est lié aux écarts de résultats scolaires, que les enfants identifiés par leurs parents comme ayant un handicap grave sont plus susceptibles de s'inscrire dans des écoles religieuses que dans les écoles ordinaires et que le taux de scolarisation des filles en situation de handicap est inférieur à celui des garçons.

Le quatrième chapitre étudie l'impact des contraintes sociales sur les résultats scolaires et l'autonomisation

des femmes en Afghanistan. Il ressort de notre analyse de l'enquête démographique et sanitaire menée en 2015 que les contraintes sociales ont un impact négatif sur l'éducation et l'autonomisation des femmes. Les résultats sont conformes à l'opinion selon laquelle les contraintes sociales limitent la mobilité des femmes.

***Mots-clés*** : Capital humain, Éducation, Scolarisation, Écarts d'apprentissage, Contraintes sociales, Handicap, Autonomisation des femmes, Afghanistan, Pakistan

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# Chapter 1

## Ethnic disparities in school enrolment in Pakistan

### 1.1 Introduction

Poverty and inequality is multi-dimensional. In countries with ethnic fragmentation, understanding inequality across groups becomes crucial not only from an analytical perspective but also from policy point of view. Pakistan<sup>1</sup> is a religiously homogeneous country with 96.4% of the total population being Muslim (United Nations Population Division, 2019). However, it is a multi-ethnic and geographically diverse country with substantial ethnic, linguistic, cultural, social, and economic differences (Coleman and Capstick, 2012; Hurst, 1996; Siddiqi, 2012).

Pakistan has been confronted with serious challenges by the self assertion of the main ethnic groups. The four major ethnic groups Bengali's, Pashtuns, Sindhis and Balochs have actively contested the legitimacy of the administrative structure of the state, with one the Bengali's forming their own state Bangladesh (Khan, 2005). The Bengali ethnicity is expressed through the Bengali language movement right after the independence of Pakistan (Rahman, 2003). Bengali's got independence in

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<sup>1</sup>Division of British India led to creation of Pakistan and India on religious lines amidst mass migration leaving a minority of Hindus and Christians in the country

1971 and Bangladesh became an independent country. Even before the division of British India, the Baloch and Pashtuns nationalist had opposed the accession of their regions to the newly state Pakistan. After the division of British India yet another ethnic group was added to the main ethnic groups called (Urdu speaking Muhajirs) who migrated from India. The only ethnic group which seemed to be satisfied with state structure is majority Punjabis. For the simple reason that its landed elite, predominate in the upper echelons of the military and civil services as well as in sectors like commerce, business and industry. Moreover, they form a majority of the central government with overwhelmingly majority ethnic group after the separation of Bangladesh (Siddiqa, 2017).

The four major ethnic groups in today's Pakistan (see Appendix A figure A.1) around corresponding major languages originated from various parts of South and Central Asia. According to the last available census the ethnic Punjabi are 45.4%, Sindhi's 14.6 % , Pashtuns 13.0 % , sirayki 10.53%, Muhajirs<sup>2</sup> 7.8%, Baloch's 3.5%, among others 4.8%, each having distinct cultural and linguistic praxis (see Appendix A figure A.2) (Hurst, 1996; Mushtaq, 2009). In Pakistan, ethnic conflicts over resources have a long history. Ethnic minorities have lower living standard compared to the ethnic majority group (Adeney, 2016; Mohmand and Gazdar, 2007; Wright, 1991).

The seminal study of Easterly and Levine (1997) argues that ethnic fragmentation in sub-Saharan Africa explains the lower economic growth, low schooling, and underdeveloped infrastructure, among others (Easterly and Levine, 1997; Gradstein and Justman, 2002). Inequalities between ethnic groups are also linked to impoverished public good provision and armed conflict (Alesina et al., 2016; Baldwin and Huber, 2010; Stewart, 2016; Stewart et al., 2010). One of the important factors that may play a major role in ethnic disparities in income and labor market is disparities in educational outcomes. A burgeoning amount of literature suggests that there is education gap between majority and minority ethnic groups both in developed and developing countries (Arouri et al., 2019; Barton and Coley, 2010; Bywaters et al., 2019; Levin and Bigsten, 2000). Some ethnic groups may have lower parental education and income, which reduces investment in children's health and education (Phalet et al., 2007). The absence of financial resources and constraints in the credit market influences parents' preference for immediate income to help the household, forcing children to work instead of going to school (Doepke et al., 2019; Webbink et al., 2012).

There is also evidence of inter-generational payoffs of education (Kaushal, 2014). Since educational outcomes provide an important information regarding the development of society and government investment in education (Benavot, 1996). Augmenting marginalised ethnic minorities' educational outcomes will help these groups achieve a better life, for example, better job opportunities and higher income and health outcomes. Reducing inequalities in educational outcomes will minimise the intersecting inequalities and other socioeconomic outcomes (Arauco et al., 2014; Eeckhaut,

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<sup>2</sup>The Urdu speaking people in Sindh identify themselves as Muhajir- literally migrant

2020).

The objective of this chapter is to investigate ethnic disparities in school enrolment in Pakistan. It explores the contributors to the enrolment gap between ethnic majority and ethnic minorities in Pakistan. It is hypothesised that determinants differ in primary and secondary school enrolment in ethnic groups, thus resulting in discrepancies in their contribution to the ethnic gaps in enrolment. The question is of great importance in Pakistan's context due to ethnic heterogeneity and education provision for several reasons. Most obvious is that the country is representative of many other developing nations that failed to achieve its Education for All goals of 2015.

This study will also help both the researchers and policymakers propose more realistic and feasible remedies for addressing the issue. Moreover, the research can help us understand the local context and the structural forces such as geographical and cultural differences at play in different social contexts. Lastly, we employ various econometric techniques, including the Fairlie decomposition technique that allows us to measure the observable factors responsible for the ethnic gaps in enrolment between majority and minority ethnic groups. Prior literature is scant in this regard. This is the first study on ethnic disparities in school enrolment in Pakistan to the best of our knowledge. The rest of the chapter is organised as follows: In section 2, we present the literature review. Next, in section 3, we elaborate on the background on ethnic diversity and Pakistan's education system. In section 4, we explain the database, followed by descriptive statistics. In section 5, we present the methodology. Finally, sections 6 and 7 analyse results and conclude with recommendations.

## 1.2 Literature review

Ethnic disparities in education have been found in both developed and developing countries. [Dos Santos and Wolff \(2011\)](#) found that children from immigrant background in France were less likely to achieve higher qualification due to the type of school they attended. Similarly, [Ewert et al. \(2014\)](#) noticed gaps in educational attainment between black and white American children. The effects were stronger when accounted for prisoners' population. A study by [Meehan et al. \(2019\)](#) on ethnic disparities in university participation in New Zealand found that socio-economic and parental education partly explains the disparities in bachelor's degree participation. The study suggests a policy intervention in early education in minimising the ethnic disparities. [Kirdar \(2009\)](#) examined ethnic disparities in school enrolment in Turkey and found large gaps in educational attainment between ethnic minorities and ethnic majority Turks. The gaps in enrolment were large for girls. Region and family characteristics appeared as important contributors to the gaps in enrolment. However, the study does not use any decomposition technique that may have explained



the differences in school enrolment between ethnic groups in Turkey. Likewise, [Oyvat and Tekgüç \(2019\)](#) by using provincial-level data on Turkey, found that the armed conflict and discrimination against the Kurd minority is the possible reason for enrolment gaps in Turkey.

Similarly, in the context of developing countries [Nguyen \(2019\)](#) by using a household survey (Young Lives Surveys Vietnam) found gaps in education outcomes between the majority Kinh and non-Kinh minorities. School enrolment gaps were attributed to household expenditure, father's education, child's gender, number of older siblings, community and school characteristics. Father's education accounted as a major explanatory variable in enrolment gaps between ethnic majority Kinh and non-Kinh minority groups. [Arouri et al. \(2019\)](#) by using the young lives project survey observes that small ethnic minorities have lower educational outcomes in Ethiopia, India, Peru, and Vietnam; however, the disparities in educational outcomes were higher in Vietnam. Moreover, the Oaxaca-Blinder decomposition revealed that enrolment gaps between ethnicities are higher compared to the educational attainment and cognitive ability. The educational gaps were mainly attributed to differences in endowments, i.e., individual and household characteristics in India, Peru, and Vietnam. However, in the case of Ethiopia, the differences in the coefficient played more important role than the difference in the endowment. Living in urban dwellings, household expenditure, parental and child characteristics explained the gap between ethnic majority groups and ethnic minorities.

Similarly, India, an ethnic heterogeneous country, has substantial income, employment, and education inequalities. [Desai and Kulkarni \(2008\)](#) by using panel data from India's national survey of 20 years, it found that positive discrimination has decreased educational inequalities on a primary level between ethnic majorities and ethnic minorities over time. However, little impact has been found on the college level. Household income, parental education, the gender of household head, and the number of children are considered some of the important determinants of children's schooling ([Huisman and Smits, 2009](#)). Parental education is a key determinant that influences the child-schooling decision. Including the generational effect of education, educated parents emphasise the education of their children compared to those parents with low or no education at all. Moreover, educated parents may be able to help their children with their studies at home, thereby positively influencing the schooling outcomes of children ([Ravallion and Wodon, 2000](#)).

In the case of Pakistan, previous literature on horizontal-inequality is relatively low. It is rare to find any study on ethnic disparities in education in Pakistan. The reasons for such research gaps are mainly attributed to conceptual, methodological, and political issues with conducting a census and survey data on the subject of ethnicity due to its broader definition ([Canelas and Gisselquist, 2019](#)). Pakistan's 55% literacy rate conceals significant regional, rich-poor, and caste-based disparities in educational attainment ([Asad, 2019](#)). Different sets of deep-rooted structural inequalities, gender

disparities, inadequate budget allocation, and resource distribution along with economic and cultural realities accounts for this low enrolment (Durrani et al., 2017).

Asadullah et al. (2006) found significant enrolment gaps between (East Pakistan) now Bangladesh and West Pakistan due to discrimination by the (West wing) current Pakistan. A more recent study on ethnic disparities in access to public goods in Pakistan by Majid and Memon (2017) presented a more nuanced picture of horizontal inequality trends in Pakistan in terms of income and educational attainment. Using data from 1990, 1996, 2006, and 2003, they found an increasing inequality trend across the cleavages. Khan and Rehman (2012) found differences in overall human capital development among provinces, with rural Baluchistan and Sindh performing worst in Pakistan. Multidimensional inequality was higher in rural compared to urban areas (Khalid et al., 2019).

Studies also suggest that social stigmatisation of lower caste in rural areas of Punjab a province in Pakistan is one of the reasons for low enrolment. Jacoby and Mansuri (2011) found that ethnic heterogeneity manifested as an inability of marginalised cast from accessing public schools due to social sanctions from the higher cast. Children from lower cast are unlikely to attend school available in the higher cast hamlet. However, the research is scarce on the prevalence of casts among different ethnic groups in overall Pakistan.

There is also a growing amount of literature on the link between social capital and educational attainment capital. Children from ethnic minorities might lack social capital, which provides people with opportunities and networking, resulting in mutual benefits. A study by Yang (2017) finds that in South Korea, social capitals were associated with children high performances in mathematics.

Moreover, family structure plays a vital role in children's educational attainment (Becker and Lewis, 1973; Becker and Tomes, 1976). The number of children in a family determines the resources distribution on education for each child (Becker and Tomes, 1976). In general family, size tends to be negatively associated with schooling. This is probably because the available resources in the household are divided among more children (Buchmann et al., 2008). However, this may not always be the case depending on the family structure of the ethnic group (Becker and Tomes, 1976). Some ethnic groups might prefer to have more children and let their children work instead of going to schools (Fryer Jr and Levitt, 2013).

Child labour might be another problem in some ethnic groups. Some parents send their kids to work instead of school. They let their daughters stay at home for domestic work (Li and Sekhri, 2020). The marginal benefit and cost of production of child education also have a social cost, which could vary across ethnic groups. The reasons are mainly social, cultural, historical, and religious differences. Moreover, parents need to bear travel costs in case of transportation from home to school. Also, children may cover long distances, from home to school. This could be

more challenging in the harsh summers and winters, especially in the hinterland and in the northern parts of the country (Filmer, 2004; Filmer and Schady, 2009). The impact of distance will probably be serious in the conservative regions for young children because of guardians' anxiety for their security, which could turn out severe once girls achieve adolescence (Rai, 2020).

Moreover, the existing school might lack necessary facilities and well-trained teachers in certain areas, as teachers might not be interested in working in those regions (Adedeji and Olaniyan, 2011; Ahmad et al., 2013). This could significantly reduce the productivity of schooling for ethnic minority children in those regions. Both higher schooling costs and lower productivity of schooling would mean a lower marginal rate of return and lower demand for schooling.

This research contributes to the literature in the following ways. First, despite the growing amount of research on racial and ethnic disparities in children's educational outcomes, less attention has been paid to the ethnic disparities in school enrolment in Pakistan. This study will fill the gap in this regard by examining ethnic disparities in school enrolment and examine the factors proposed in the literature, i.e., individual, household, and regional characteristics that accounts for the enrolment gaps between ethnic majority and minority children in Pakistan.

## **1.3 Regional context, educational system in Pakistan**

### **1.3.1 Background**

The administrative units are divided into four provinces: Punjab, Sindh, Khyber-Pakhtunkhwa, Baluchistan, and Federally Administered Areas. The administrative units are ethnically non-homogeneous (see Appendix A Figure A.1). We develop the ethnicity based analysis on these major divisions that has been emerged as one of the major division in its population in the present day Pakistan. Punjab is Pakistan's most populous province with 55.6% of the country's population, of which Punjabis constitute 75.23% and Sirayki 17.36% (Yearbook, 2017). It is also the wealthiest province, characterised by fertile irrigated land and developed urban centres. Sindh is Pakistan's second most populated province, marked by both desert and fertile plains. Its capital Karachi is a cosmopolitan and financial hub of Pakistan. The majority ethnic group in Sindh is Sindhi 59.73% followed by Urdu speaking Muhajirs 21.05% residing in the urban centres with other ethnic minorities (Yearbook, 2017). Khyber-Pakhtunkhwa province is a mountainous region with very small areas available for cultivation. The ethnic majority are Pashtuns 73.90% followed by 20.43% other small ethnic groups (Yearbook, 2017).

Baluchistan, a mineral-rich province, is Pakistan's least developed region (for details, see example (Bengali, 2018)). It is the largest province in terms of area. The province is sparsely populated, with only 6% of Pakistan's total population. The ethnic majority are Baloch's, 54.76% followed by 29.64% Pashtuns along with other minority groups (Yearbook, 2017). More than 70 % of the population are living below poverty line (Yearbook, 2017).

Pakistan has confronted a variety of security challenges in the last decade. Overall, Pashtun majority regions are badly hit by militancy and have been a front-line region against the war on terror (Adeney, 2012; Banks et al., 2007). There are frequent attacks on educational institutions by terrorists. For example, an attack on a school in Peshawar resulted in killing almost 150 students, including staff and more than 121 injured (Milton, 2018). Similarly, 640 schools have been destroyed by militants in the hometown of Nobel Laureate Malala Yousafzai <sup>3</sup> in Swat Khyber-Pakhtunkhwa. Reports suggest that schools are used for security purposes previously occupied by Taliban forces (Gouleta, 2015). In fact, studies have shown that ethnic conflicts over resources have a long history in Pakistan (Adeney, 2016; Mohmand and Gazdar, 2007; Wright, 1991). There have been five major insurgencies in Baluchistan; the Baloch's demanding self-autonomy and control over their resources (Akhtar, 2007). Human Rights Watch, in its 2010 report, documented the killing of at least 22 teachers and education professionals by militants in Baluchistan province between 2008 and 2010. Multidimensional inequality is higher in Baluchistan compared to Punjab. Access to education and health services are lower in Balochistan and Sindh province (Khalid et al., 2019; Nizamani and Waheed, 2020). Overall, there are regional disparities in infrastructure, economy and access to Public goods services in Pakistan (Burki et al., 2015; Looney and Winterford, 1993).

### 1.3.2 Education system in Pakistan

The education system in Pakistan is divided into four levels, pre-primary, primary, lower secondary, and secondary schooling. The primary stage starts from grade one until grade five. The age limit for children is 5 to 9. Similarly, the lower secondary stage lasts for three years. The age limit for children is 10 to 12. Finally, the secondary stage lasts for two years. The age limit for children is 13 to 14. The students who receive a secondary school certificate upon passing get Secondary School Certificate. Pakistan promulgated Article 25-A of the 18th Amendment to the Constitution of providing free and compulsory education for all children up to 16 years of age. The education system in Pakistan can be categorised into four main streams public schools, private schools, religious seminaries (Madrassas), and Army schools (Andrabi et al., 2002; Lall, 2009; Rahman, 2003). The private school network runs parallel with government schools. The quality of

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<sup>3</sup>Terrorists attacked Malala Yousafzai (an ethnic Pashtun) on 9 October 2012 in Swat Khyber-Pakhtunkhwa province

each system is noticeably different in terms of school management and infrastructure in each region (Andrabi et al., 2002). Private schools are extremely diverse in terms of quality, fee structure, and textbooks, whereas government schools are free of cost (Andrabi et al., 2011; de Talancé, 2020; Joshi, 2019; Lall, 2009).

Research to date concurs in maintaining that private schooling has a positive effect on learning in contrast to the government school, even after accounting for traits of children and household (Andrabi et al., 2011; Das et al., 2006; Patrinos and Psacharopoulos, 2020). Private schools are most prevalent in the province of Punjab, comprising 23 % children, compared to Baluchistan, which accounts for only 4 % (Ahmed and Sheikh, 2014). Pakistan has several private elite schools and colleges from the colonial era. After independence, these educational institutes maintained the same standard; however, only elites have access to them (Kardar, 1998; Siddiqui, 2017). This subsequently led to a class-based education system that continues to the present-day Pakistan (Hoodbhoy, 1998). The religious schools (Madrassa) connected to the Mosques are run by various Islamic political parties and sectarian groups. Studies have claimed that Madrassas' students are used to wage Jihad (holy wars) in neighbouring countries. These Madrasas are mainly concentrated in Baluchistan and Khyber Pakhtunkhwa provinces (Christine Fair, 2007; Dorronsoro, 2012).

## 1.4 Database and descriptive statistics

### 1.4.1 Database

The data used in our analysis comes from the Annual Status of Education Report (ASER) Pakistan for the year 2015. Although, we already reported it in the general introduction. We would like to add more details. ASER Pakistan adopted its methodology and learning assessment tool from those of India ASER survey for more details (see (Alcott and Rose, 2015)). It covers children aged 3 to 16 years in 146 rural districts and 21 urban centers. ASER asked respondents different sets of questions about children's educational outcomes, parental characteristics, and various household and village level attribute that likely influence children's school attainment (Pakistan, 2015). The detailed description and definition of the variables used in our analysis is shown in Table 1.1. Our dependent variable is child school enrolment. It is a binary variable that takes value 1 if a child is currently enrolled 0 otherwise. We use ethnicity based on the survey question of mother tongue (Refer Appendix A Figure A.2 and Table A.1 for a description of Pakistan's language groups), which is specific for each of the ethnic group also, used in previous study see (Jafar et al., 2004; Majid and Memon, 2017). Mother tongue or spoken language is one potential variable that can be used as a proxy in the Pakistani context. Furthermore, the non-availability of any other information on ethnicity in the data set mother tongue appears to be a reasonable alternative for taking mother tongue as a proxy for associating ethnicity with educational outcomes (see for details discussion on

the topic (Baskerville et al., 2014)). Wealth index has been constructed by integrating the significant household indicators of wealth such as home-ownership, type of house (mud, mud and brick or cemented), whether the household has electricity, television, etc. These are proxy for economic potential and wealth of a household. The wealth index has been developed by using Principal component analysis in the ASER 2015 survey. The wealth index is divided into four categories (i.e., poorest, poorer, richer and richest) representing the household socio-economic context (Saeed and Zia, 2013). Wealth index in such surveys provide important information and act as an alternative to income and consumption (Shaukat et al., 2020). We restrict our sample to 5 -16 years; we drop the children who are younger than 5 years as the official age of starting school in Pakistan is 5-16 years for schooling.

Table 1.1: Description of variables

Variable	Definition
Ethnic groups	
Punjabi	Binary : 1 if Punjabi; 0 otherwise
Pushto	Binary : 1 if Pushto; 0 otherwise
Balochi	Binary : 1 if Balochi; 0 otherwise
Sindhi	Binary : 1 if Sindhi; 0 otherwise
Sirayki	Binary : 1 if Sirayki; 0 otherwise
Urdu	Binary : 1 if Urdu; 0 otherwise
Other	Binary : 1 if Other; 0 otherwise
Dependent variable	
Enrollment	Binary : 1 if child is currently enrolled in school; 0 if either never enrolled or dropout of school
Regions	
Punjab	Binary : 1 if region/province is Punjab; 0 otherwise
Sindh	Binary : 1 if region/province is Sindh; 0 otherwise
Balochistan	Binary : 1 if region/province is Balochistan; 0 otherwise
Khyber Pukhtunkhwa	Binary : 1 if region/province is Khyber Pukhtunkhwa; 0 otherwise
Islamabad	Binary : 1 if region/province is Islamabad; 0 otherwise
Gilgit-Baltistan	Binary : 1 if region/province is Gilgit-Baltistan; 0 otherwise
Kashmir	Binary : 1 if region/province is Kashmir; 0 otherwise
FATA	Binary : 1 if region/province is FATA; 0 otherwise
Family characteristics	
Total-Childern	Total Number of children in household
Mother-Age	Mother's age
Mother Gone School	Binary : 1 if mother gone to school; 0 otherwise
Father-Age	Father's age
Father Gone School	Binary : 1 if father gone to school; 0 otherwise
Wealth Index	Wealth index created from different household components; Is house own? Type of house; katcha, semipucca, and pucca. Is electricity available? Is tv available? Is mobile available?

Table 1.1: Description of variables

Variable	Definition
Wealth Quartiles	Wealth Quartiles created from wealth index;
Poorest	Binary : 1 if it falls in the lowest wealth Quartile; 0 otherwise
Poor	Binary : 1 if it falls in the second lowest wealth Quartile; 0 otherwise
Richer	Binary : 1 if it falls in the second highest wealth Quartile; 0 otherwise
Richest	Binary : 1 if it falls in the highest wealth Quartile; 0 otherwise
Village characteristics	
Health Facility Availability	Binary : 1 if there is health facility in the village; 0 otherwise
Carpeted Roads Availability	Binary : 1 if there are carpeted roads in the village; 0 otherwise
Bank Availability	Binary : 1 if there is bank in the village; 0 otherwise
Post Office Availability	Binary : 1 if there is post office in the village; 0 otherwise
Computer centre Availability	Binary : 1 if there is computer centre in the village; 0 otherwise
Individual characteristics	
Gender	Binary : 1 if female; 0 otherwise
Child age	Child age
School characteristics	
Public School	Binary : 1 if there is/are public school(s) in the village; 0 otherwise
Private School	Binary : 1 if there is/are private school(s) in the village; 0 otherwise

Data source : ASER 2015.

## 1.4.2 Descriptive statistics

In Table 1.2 we present education status of children of age between 5 and 16 by ethnicity and gender. There exist considerable differences in school enrolment, for children across ethnic groups. The enrolment rate is highest for Ethnic Muhajir boys 89.97% and 89.93% for girls. This is followed by ethnic Punjabi 89.11% of boys and 87.55% of girls that are enrolled in school. Similarly, the enrolment rate is roughly 85% for ethnic Pashtun boys and 77.56% for girls. Also, evident is the considerable gender gap, one that varies across ethnic groups, 76.34% of ethnic Baloch boys and 68.25% for girls are enrolled in schools. The enrolment rate for ethnic Sindhi boys is 79% and 71.65% for girls also represent a bleak picture. The enrolment status for Ethnic Sirayki is 82.14 % for boys and 77.12% for girls. The descriptive statistics illustrate that disparities in enrolment across ethnic group are severe for girls compared to boys. Girls from Ethnic Baloch, Sindhi, Pashtun, and

Sirayki are at much greater risk of being out of school. There is no difference between boys and girls for ethnic Mohajirs.

Table 1.2: Education status by ethnic groups

	Male		Female		Total		t-test	
	Not Enrolled	Enrolled	Not Enrolled	Enrolled	Not Enrolled	Enrolled	t-stat	p-value
Punjabi	10.89	89.11	14.44	85.56	12.45	87.55	9.35	0.000
Pushto	15.18	84.82	36.84	63.16	22.79	77.21	59.57	0.000
Balochi	23.66	76.34	43.97	56.03	31.75	68.25	36.54	0.000
Sindhi	21	79	39.1	60.9	28.35	71.65	33.42	0.000
Sirayki	17.86	82.14	30.07	69.93	22.88	77.12	16.68	0.000
Urdu	10.03	89.97	11.56	88.44	10.7	89.3	1.84	0.066
Other	10.84	89.16	18.03	81.97	13.85	86.15	26.82	0.000
Total	14.88	85.12	27.07	72.93	19.78	80.22		

Note: Author using ASER, 2015 data

More descriptive statistic on children who drop out informs us that there are wide range of discrepancies between ethnicity, the percentage of children dropped out 1.1 for ethnic Sirayki are the high, followed by Bloch's. The number of children dropped out from ethnic Punjabi are higher than ethnic Sindhi's and Pashtuns. Interestingly, the dropout percentage of children from ethnic Muhajirs and Pushtuns is lower than other major ethnic groups.

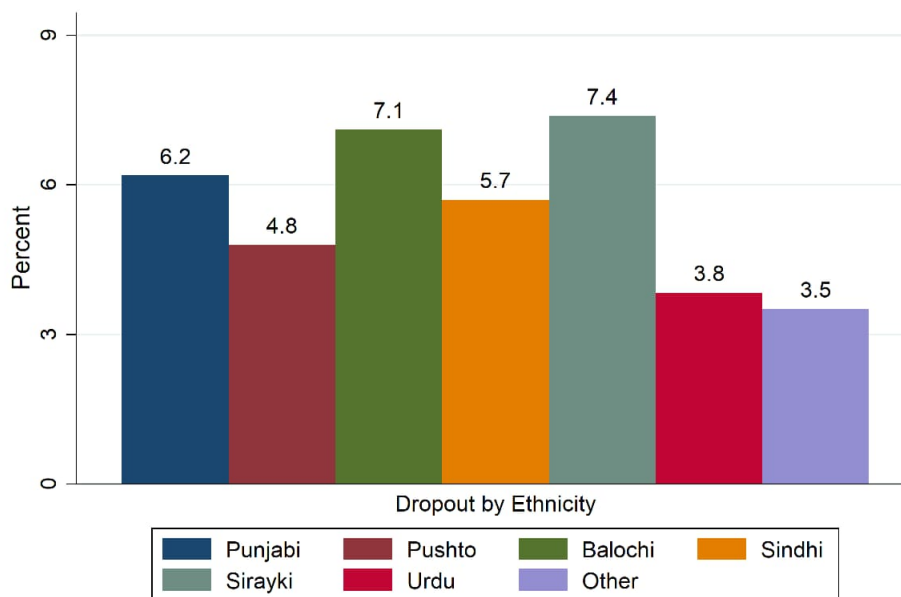


Figure 1.1: Drop out from school by ethnicity

Source : ASER 2015



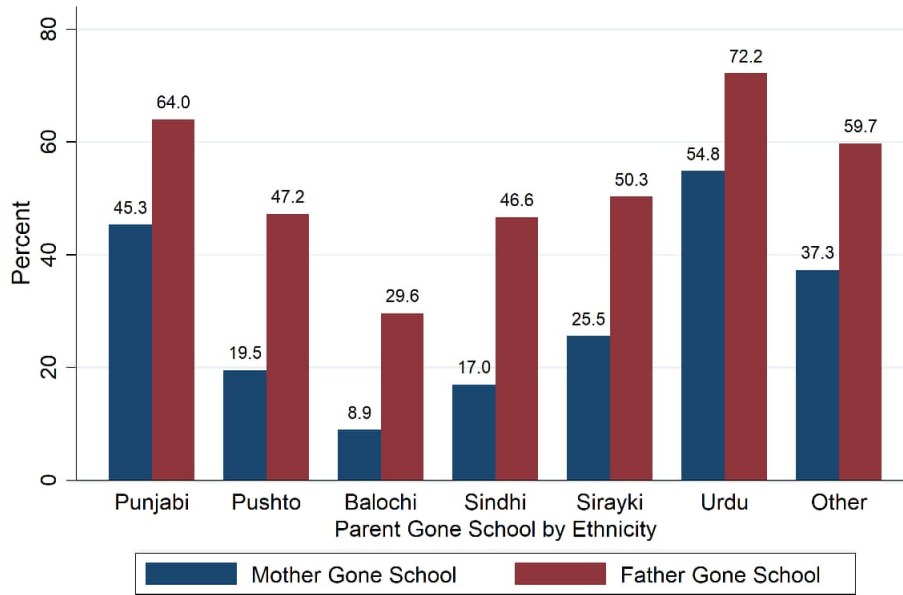


Figure 1.2: Parental education by ethnicity  
Source: ASER 2015

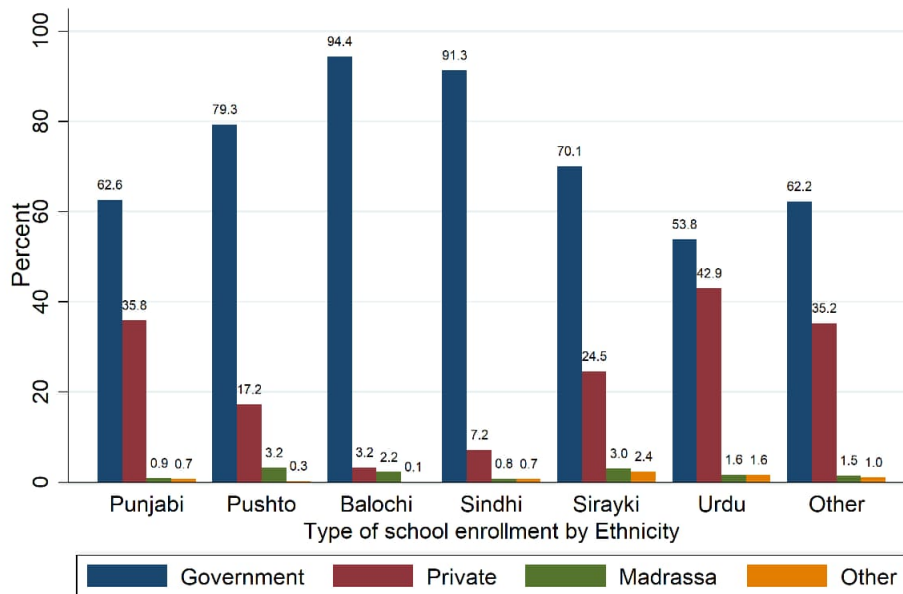


Figure 1.3: School enrolment by type of school of ethnic groups  
Source:ASER 2015

### 1.4.2.1 Provincial and household characteristic

Table 1.3 unveils more descriptive statistic for the control variables used in our assessment. We have included Provincial control and household characteristics. We include both urban and rural locations of provinces. Pakistan is divided into four provinces along with the capital city Islamabad,

Table 1.3: Descriptive statistics regional controls, household characteristics by ethnicity

	Punjabi	Pashtun	Balochi	Sindhi	Sirayki	Urdu	Other	All
<b>Regional Controls (%)</b>								
Punjab	97.5	0.4	0.7	0.2	72.2	57.9	15.9	23.2
Sindh	0.4	0	1.1	77.6	6.3	12.3	26	18.6
Baluchistan	0	30.2	97.7	21.3	3.9	4	6.6	22.9
Khyber Pakhtunkhwa	0	39.1	0.3	0.2	17.1	1.1	19.1	16.4
Islamabad	1.4	0	0	0	0	4.5	0.5	0.5
Gilgit-Baltistan	0	0.2	0	0.7	0.5	0	12.6	4.5
Kashmir	0.6	0	0.2	0	0	20.1	16.3	6.2
FATA	0	30.1	0	0	0	0	2.9	7.8
Rural	93.6	96	98.6	98.8	96.9	70.5	86.3	92.4
<b>Family Characteristics</b>								
Total-Children	3.7	4.2	4.1	4.2	4	3.5	3.6	3.9
Mother-Age	36.4	37	36.1	36.4	36	36.3	36.2	36.3
Mother Gone School (%)	50.4	21	9.5	18.5	27.4	60	40.6	31
Mother-Education	7.7	8	5.9	6.7	7	9.4	8.7	8.1
Father-Age	41.8	41.6	41.2	42.4	41.5	41.7	41	41.4
Father Gone School (%)	41.8	41.6	41.2	41.5	41.3	41.7	41.3	53.8
Father-Education	8.6	9.8	8	9	8.4	10.2	10	9.5
<b>Wealth Index (%)</b>								
Poorest	6.5	28.9	35.1	32.3	17.7	8	16.9	21.9
Poor	15.4	25.7	24.7	23.3	19.9	11	17.1	20.4
Richer	38	25.9	21.8	25.4	33.4	32.5	33.6	30.1
Richest	40.1	19.5	18.4	19	29	48.4	32.4	27.5

Note: Author using ASER, 2015 data

Federally Administered Northern, and Tribal areas. The data shows that the majority of the residents of all ethnic groups live in rural areas and the majority of the residents of ethnic groups reside in their respective provinces. Similarly, the majority of ethnic Muhajir live in urban centers across the country, ethnic Pashtuns reside in Baluchistan, Federally administered areas, and Khyber-Pakhtunkhwa, a fraction of them i.e., 0.4% lives in Punjab. Majority of the ethnic Baloch lives in Baluchistan rural and around 4% lives in rural parts of other provinces. Ethnic Balochs are more likely to live in the least developed parts of the country. 68.7% of sirayki lives in Punjab rural and the 3.1% in Punjab urban, the rest reside in the rural part of the country. Living in urban centers and central Punjab would imply easy access to quality education and, better job opportunities.

There also exist noticeable differences in household characteristics by ethnicity. The average total children of ethnic Pashtun and Sindhi are 4.2% and 3.7% for Punjabis. Also, there exist striking differences in parental education, 1.2 90.5% of ethnic Baloch children's mothers have never been

to school, and around 81.5% of ethnic Sindhi mothers have never attended schools. Likewise, 79% of ethnic Pashtun mothers have never attended school. Ethnic Punjabis and Muhajir children whose mothers have never attended schools are 50%, 60% respectively. There are similar trends and differences in father’s school attendance across all ethnic groups. Baloch children whose fathers have never attended schools account for 70%, compared to others ethnic groups, for example, the percentage for ethnic Punjabis father and Muhajir that have never attended school are 27% and 33%. More than half (52.99%) of ethnic Pashtun fathers have never attended school.

As explained above, the different types of education available for children in Pakistan. In figure 1.3 we can see the breakdown by ethnicity of children going to Public, private, and Madrassas (religious) schools. The majority of the children attend public schools, followed by private schools. Similarly, ethnic majority Punjabi and Siryaki children go to private schools, followed by ethnic Urdu speaking children. Further, the number of ethnic Baloch children who attend private schools are the lowest. The number of children who attend Madrassas is higher in ethnic Pashtuns followed by ethnic Sirayki children.

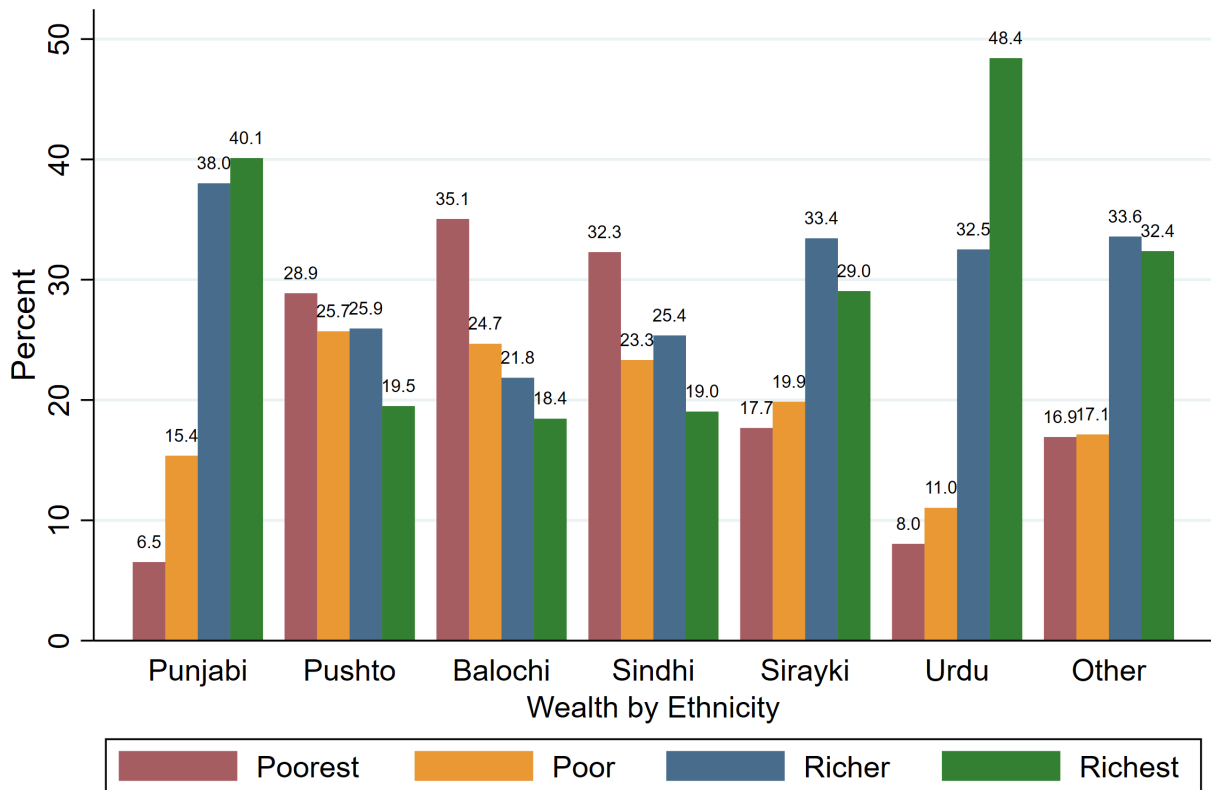


Figure 1.4: School enrolment by wealth index and ethnicity  
Source:ASER 2015

Furthermore, we observed apparent differences in wealth index 1.4 across ethnic groups, 35.1% of

ethnic Baloch are in the poorest quartile, followed by ethnic Sindhi's, 32.3%. Ethnic Pashtuns in the poorest quartile accounts for 28.9%. Moreover, 28.9% of ethnic Sindhi's lies in the poorest quartile, whereas ethnic Punjabis in the poorest quartile are 6.5%. The majority of the ethnic Muhajir (48.4%) are in the richest category, followed by ethnic Punjabis (40.1%) and 29% of ethnic sirayki.

## 1.5 Methodology

We use maximum-likelihood probit analysis to examine the effects of the various covariates that are the most important already mentioned in previous studies on our dependent variable Y, e.g., school enrolment, see for example (Nguyen, 2019; Tharrrmapornphilas, 2013). However, linear probability model (LMP) is also used for dichotomous outcome variables. The ordinary least squares is used to estimate the parameters of LPM which uses a linear function of the independent variables. This refers to the fact that linear probability model is linear and raises questions on its ability to bond the estimated probabilities between [0, 1] for meaningful estimates. The criticism on using the linear probability model is discussed in detail by Maddala (1986) which states that the disturbances in the linear probability model are heteroskedastic, therefore least square is not efficient, the error term is not distributed normally, so there exist non-linear procedures more efficient than least squares. Also, the predicted probabilities from the linear probability model could lie outside the [0, 1] interval (Angrist and Pischke, 2008). In this study we prefer to use the probit model as the main tool for analysis in this study;

The general probit model is described as follows:

$$Y_i^* = X_i\beta + u_i \quad (1.1)$$

$Y_i^*$  is the latent variable related to our outcome variables. We observe  $Y_i$  equal to 1 if  $Y_i^* > 0$  and equal to 0 if  $Y_i^* \leq 0$ .  $X_i$  is a vector of individual, family, regional and village characteristics that explain our outcome variable school enrolment. Assuming that the error term,  $u_i$  is normally distributed, the probit model can be described as:

$$Prob(P_i = 1) = F(X_i\beta) \quad (1.2)$$

$F(.)$  is the cumulative normal distribution function. Separate Probit regression is estimated for each ethnic group to allow for parameter heterogeneity. We use Fairlie (2006, 1999) decomposition technique for our probit model. It is an extension of the Blinder (1973) Oaxaca (1973) technique for nonlinear models. It is used previously in several studies (see (Bhalotra et al., 2010; Schwiebert,

2015)). This method will help us to assess the extent to which our observable characteristics explain the gaps between several ethnic groups on the outcome variable enrolment. [Chowdry et al. \(2013\)](#) assess the relative importance of observable factors by sequentially adding variables. However, we prefer the Fairlie method as the sequential method may be sensitive to the order in which variables are added. Using the results from the probit model, the mean difference in school enrolment probabilities for Punjabis and Balochi (for example) is decomposed as follows:

$$\bar{P}_i^P - \bar{P}_i^B = \left[ \sum_{i=1}^{N^P} \frac{F(X_i^P \hat{\beta}^P)}{N^P} - \sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^P)}{N^B} \right] + \left[ \sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^P)}{N^B} - \sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^B)}{N^B} \right] \quad (1.3)$$

Where, superscripts P and B in the above equation relate to the coefficients and values from the Punjabi and Baloch sub-populations.  $P_i^B$  is the average probability of enrolment, N is the size of the sub-population and  $\beta$  is the coefficient from the probit regressions in equation (2). The first term on the right-hand side in the bracket represents the ‘explained’ part of the ethnic gap in the outcome variable, based on the differences in the distribution of measured variables(X) for Punjabi and Baloch individuals. The second term measures the ‘unexplained’ portion of the gap due to group differences due to cultural norms or any other omitted variables. We have used pooled estimated method popular for such decomposition studies. The method is popular as it incorporates the full market response and does not exclude any group in the population see ([Fairlie, 2017](#)). Finally, while the example above relates to decomposing the gap between Punjabi and Baloch, we also repeat this analysis for each of the ethnic minority groups against ethnic majority Punjabis.

## 1.6 Results

### 1.6.1 Marginal effects

Table 1.4 extends the marginal effects from respective probit estimation of the school enrolment for all and then for each of the six ethnic subgroups; Punjabi, Pashtuns, Balochi, Sindhi, sirayki and Muhajir, separately. In our first estimation, model the results shows that girls are less likely to enrol in school compared with boys. Regional control and household characteristics are our main covariates of interests in the first specification. Holding all other covariates at their means, as expected, children living in Sindh, Baluchistan are less likely to enrol in schools compared to Punjab whereas children in Pakistani administered Kashmir, Gilgit, Islamabad and Khyber Pakhtunkhwa are more likely to attend school compared to children living in Punjab. In our estimation of each

ethnic group, the gender gap is wider in ethnic Pashtun, Baloch and Sirayki, ethnic Pashtun girls are 0.207 point less likely to enrol than Pashtun boys, Ethnic Baloch girls are 0.183 points less likely to enrol than ethnic Baloch boys whereas ethnic sirayki girls are 0.110 points less likely to enrol than boys. There is less gender gap in ethnic Punjabis; ethnic Punjabi girls are 0.029 points less likely to enrol than Punjabi boys. In our estimation for each ethnicity, Ethnic Punjabis children living in Islamabad and Kashmir are more likely to enrol in schools compared to those Punjabi living in Punjab. The region loses its significance for ethnic Pashtuns, Baloch's, and ethnic Sindhi's. Ethnic sirayki living in Sindh and Baluchistan are less likely to enrol compared to those living in Punjab similarly ethnic Urdu speaking living in Kashmir are more likely to enrol compared to Punjab and less likely to enrol those living in Sindh and Baluchistan. The number of additional siblings significantly reduces the chances children to enrol in school for all ethnic groups. However, the marginal effects are of a smaller magnitude. Wealth index has a positive effect on child school enrolment in school for all ethnicity's. Children from household in the richest quartile are more likely to attend school compared to children from poorer household. The effect of parent's education is statistically significant for all ethnic groups. Children of educated parents are more likely to enrol in school compared to children whose parents have never attended school. The effect of father education of children school enrolment for ethnic Pashtuns, ethnic Pashtuns children whose father are educated are 0.101 points more likely to attend school than children whose fathers have never been to school. Village characteristics have positive effects on children school enrolment, but the marginal effects are of smaller magnitude.

## **1.6.2 Fairlie decomposition**

We will look into our result of ethnic gap differences due to observed characteristics across - characteristic specified in our model. Table 1.5 shows our results of Fairlie decomposition for school enrolment gaps. We compare Pashtun, Baloch, Sindhi, Sirayki, and Mohajir ethnic minority groups with majority ethnic Punjabis using the related coefficients from the regression pertinent to Punjabis. We take an example of the enrolment rates gaps between Baloch and Punjabis that allows us to explore that if we gave Baloch the same observed characteristics as Punjabis; how much the ethnic gap in enrolment rates will be explained by the factors included in our model; also it will allow us to predict the gap due to cultural and other unobserved factors. The decomposition will also help us to guess the strength of each of the factor in our model that contributes to the explained gap. For example, how much of a contribution do differences play in school enrolment between Baloch and Punjabi make relative to the contribution of differences in individual, family characteristics, parents' education, village and regional characteristics. We repeat this for every ethnic group specified in our

Table 1.4: Marginal effects from Probit estimation of school enrolment of all ethnic groups

	(1) All	(2) Punjabi	(3) Pushto	(4) Balochi	(5) Sindhi	(6) Sirayki	(7) Urdu	(8) Other
<b>Individual Characteristics</b>								
Child age	0.122*** (0.00330)	0.0630*** (0.00551)	0.122*** (0.00751)	0.224*** (0.0110)	0.150*** (0.0102)	0.0935*** (0.0102)	0.0590*** (0.0109)	0.0919*** (0.00484)
Child age <sup>2</sup>	-0.00603*** (0.000149)	-0.00364*** (0.000255)	-0.00587*** (0.000340)	-0.0104*** (0.000489)	-0.00745*** (0.000448)	-0.00521*** (0.000488)	-0.00308*** (0.000488)	-0.00440*** (0.000222)
Female	-0.124*** (0.00420)	-0.0299*** (0.00535)	-0.207*** (0.0102)	-0.183*** (0.0126)	-0.181*** (0.0149)	-0.110*** (0.0128)	-0.0165 (0.0118)	-0.0619*** (0.00685)
<b>Region (Ref. cat Punjab)</b>								
Sindh	-0.0325*** (0.0100)	-0.0271 (0.0311)		0.0697 (0.131)	0.0755 (0.0485)	-0.0914* (0.0527)	-0.0843*** (0.0306)	-0.0252 (0.0244)
Balochistan	-0.0526*** (0.00908)		-0.105 (0.0787)	-0.0268 (0.0993)	0.0162 (0.0575)	-0.0664* (0.0382)	-0.0859*** (0.0311)	-0.0144 (0.0195)
Islamabad	0.130*** (0.0304)	0.0966** (0.0458)						0.0386 (0.0267)
Khyber Pukhtunkhwa	0.0185** (0.00889)		-0.0236 (0.0776)		0.0913* (0.0517)	-0.00438 (0.0233)	-0.0144 (0.0449)	0.0617*** (0.0191)
Gilgit Baltistan	0.0324** (0.0161)		-0.0763 (0.118)		-0.0120 (0.119)			0.0222 (0.0167)
Azad Kashmir	0.144*** (0.0103)	0.130*** (0.0307)		0.250** (0.0990)			0.128*** (0.0350)	0.0721*** (0.0154)
FATA	0.00575 (0.0121)		-0.0365 (0.0779)					-0.0358 (0.0436)
<b>Family Characteristics</b>								
No. of Siblings	-0.0188*** (0.00129)	-0.0146*** (0.00197)	-0.0180*** (0.00259)	-0.0253*** (0.00535)	-0.0196*** (0.00375)	-0.0133*** (0.00419)	-0.0121** (0.00478)	-0.0128*** (0.00220)
Mother age	-0.00268*** (0.000658)	-0.000380 (0.000850)	-0.00287* (0.00158)	-0.00486** (0.00232)	-0.000560 (0.00180)	-0.00131 (0.00175)	-0.00103 (0.00175)	-0.000930 (0.000979)
Father age	0.000998* (0.000573)	-9.66e-05 (0.000753)	0.00203 (0.00144)	-0.00168 (0.00197)	-0.00106 (0.00161)	0.000188 (0.00163)	-0.000900 (0.00143)	0.000543 (0.000841)
Wealth index	0.0223*** (0.00173)	0.0261*** (0.00329)	0.0175*** (0.00457)	0.0188*** (0.00515)	0.0305*** (0.00375)	0.0249*** (0.00611)	0.0269*** (0.00836)	0.0180*** (0.00272)
<b>Parents Education</b>								
Mother gone school	0.0712*** (0.00485)	0.0703*** (0.00703)	0.0479*** (0.0111)	0.0371* (0.0211)	0.0773*** (0.0155)	0.0724*** (0.0172)	0.0495*** (0.0144)	0.0578*** (0.00739)
Father gone school	0.0586*** (0.00428)	0.0409*** (0.00671)	0.101*** (0.00962)	0.0308** (0.0133)	0.0571*** (0.0126)	0.0829*** (0.0142)	0.0462*** (0.0141)	0.0245*** (0.00623)
<b>Village Characteristics</b>								
Health Facility availability	0.00873 (0.00697)	-0.0171* (0.0102)	-0.0138 (0.0154)	0.0826*** (0.0260)	0.0581*** (0.0225)	-0.0187 (0.0208)	0.0135 (0.0223)	-0.00924 (0.0101)
Road network	0.0191*** (0.00694)	0.0270** (0.0134)	0.00581 (0.0153)	0.0273 (0.0234)	-0.0203 (0.0206)	0.0369 (0.0225)	0.0581** (0.0271)	0.0173* (0.0101)
Bank availability	0.0188* (0.0110)	-0.00861 (0.0124)	0.0103 (0.0236)	0.173*** (0.0359)	-0.0775 (0.0544)	-0.0573* (0.0316)	0.0369 (0.0333)	0.0456** (0.0210)
Post office availability	0.00866 (0.00823)	0.0206* (0.0113)	0.0127 (0.0172)	-0.00742 (0.0338)	-0.000454 (0.0340)	0.110*** (0.0270)	-0.000704 (0.0371)	-0.0195* (0.0105)
Computer centre available	0.00908 (0.0105)	0.0109 (0.0102)	0.0147 (0.0226)	-0.00224 (0.0332)	0.0473 (0.0475)	0.0201 (0.0343)	-0.00885 (0.0231)	-0.0175 (0.0246)
Public School availability	0.0557*** (0.0200)	-0.00870 (0.0296)	0.0492* (0.0294)	0.0788 (0.0735)	0.304*** (0.0644)	0.0451 (0.114)	-0.0813 (0.0605)	0.0207 (0.0286)
Private School availability	0.0343*** (0.00728)	0.0233** (0.0103)	0.0544*** (0.0152)	0.0222 (0.0402)	-0.00649 (0.0284)	-0.00693 (0.0204)	-0.0164 (0.0239)	0.0663*** (0.0114)
Observations	128,612	21,793	31,948	18,442	15,847	10,027	4,078	26,477

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

model. The probability of school enrolment is 0.882 for Punjabi children. This probability is 0.791 for Baloch's, 0.725 for Pashtun, 0.685 for Sindhi's, 0.780 for sirayki and 0.898 for Muhajir. The observed characteristics fully explain the Pashtuns-Punjabi gap, suggesting that Pashtuns children would have higher rate of enrolment than Punjabi children if they have had the same characteristics as Punjabi children. Region, Socio-economic status, parental education explains most of the gap with mother's education contributing greater than that of fathers. Further, if we gave the same characteristics regarding the number of siblings to ethnic Pashtuns it will increase their enrolment by 8% and decreases the enrolment rate of Mohajirs children by 48%.

Our decomposition results of the explained ethnic gap between Punjabis and Baloch is overall 56.6 %, socio-economic status, mother's education are the major contributors for the difference in observed characteristics. Socio-economic status and mother's education 12.9% among others explains a major part of the gap. For ethnic Sindhi's the observable gap explained is 16.6%, the major contributor is socio economic status 19.4% and mother's education 12.%. Similarly, for ethnic sirayki the gap explained accounts for 46.6%. Socio-economic status and mother's education explains the major portion of the gap. For ethnic Mohajir who have higher enrolment rate 0.898 than Punjabis 0.882, if given the same observable characteristics of Punjabis their enrolment rate would decline roughly by 3%. Despite the ethnicity of children mother's education and socioeconomic status is the major contributor of the gaps in enrolment. Summarily for Baloch Sindhi and sirayki children there are certainly drivers of the enrolment gap that are not detected in our data which might be culturally specific and other unobservable characteristics. Likewise, our model over explain the Pashtun-Punjabi gap in enrolment-that is, if Pashtuns had similar characteristics as those of Punjabi's, that would raise their enrolment above Punjabis. The increase in enrolment is one element of the education outcomes, beyond enrolment there are other important factors such as completion and retention of primary and secondary schooling (Valente, 2019). Our findings also suggest further investigation of the ethnic differences in education, given that there exist large ethnic gaps in enrolment in early education, further research is required to have a clear picture of the reasons behind these enrolment gaps.

### **1.6.3 Sensitivity analysis**

We attempt different set of strategies to check the robustness of our estimation results by taking number of variants of the main model. Firstly, we applied district fixed effects model. Moreover, we add variables of fathers education and mothers education separately in the model to check the effect of each on the outcome variable enrolment. Finally, we also present some more results in the Appendix A where we applied logistics model to find out the enrolment gaps between ethnicities.



Table 1.5: Decomposition of ethnic differences in school enrolment

	Pu vs Pu	% Explained	Ba vs Pu	% Explained	Si vs Pu	% Explained	Str vs Punjabi	% Explained	Urdu vs Pu	% Explained	Other vs Pu	% Explained
Ethnic diff (Punjabi-Ethnic minority)	0.882 - 0.791		0.882 - 0.685		0.882 - 0.725		0.882 - 0.780		0.882 - 0.898		0.882 - 0.891	
Total difference	0.091		0.198		0.157		0.103		-0.016		-0.009	
Individual Characteristics												
Female	-0.0112***	-12.3 %	-0.00329***	-1.7 %	-0.00177***	-1.1 %	-0.00136***	-1.3 %	-0.000444***	2.8 %	-0.00144***	16 %
Family Characteristics												
No. of Siblings	0.00735***	8.1 %	0.00698***	3.5 %	0.00656***	4.2 %	0.00318***	3.1 %	-0.00160***	10 %	-0.00112***	12.4 %
Mother age	0.00149***	1.6 %	0.0002	0.1 %	-0.00025	-0.2 %	-0.000802**	-0.8 %	-0.00181***	11.3 %	-0.0000934	1 %
Father age	0.000094	0.1 %	-0.000212	0 %	-0.0002	-0.1 %	-0.00021	-0.2 %	-0.00036	2.3 %	-0.0000178	0.2 %
Wealth index	0.0204***	22.4 %	0.0294***	14.8 %	0.0308***	19.6 %	0.0138***	13.4 %	0.00112***	-7 %	0.0115***	-127.8 %
Parent Education												
Mother gone school	0.0177***	19.5 %	0.0259***	13.1 %	0.0190***	12.1 %	0.0158***	15.3 %	-0.00757***	47.3 %	0.00502***	-55.8 %
Father gone school	0.0117***	12.9 %	0.0127***	6.4 %	0.00856***	5.3 %	0.00848***	8.2 %	-0.00409***	25.6 %	0.00135***	-14.8 %
Village Characteristics												
Health Facility availability	-0.00134***	-1.5 %	-0.00161***	-0.8 %	0.000318	0.2 %	-0.00122***	-1.2 %	0.00153***	-9.6 %	0.000659***	-7.3 %
Road network	0.00419***	4.6 %	0.0127***	6.4 %	0.000947	0.5 %	0.00341***	3.3 %	0.00218***	-13.6 %	0.000520***	-57.8 %
Bank availability	-0.000726	-0.8 %	0.00254**	1.3 %	-0.00325***	-2.1 %	-0.00186***	-1.8 %	0.000327	-2 %	0.000368***	-4.1 %
Post office availability	0.00165***	1.8 %	0.000941	0.5 %	0.00272***	1.7 %	0.00109***	1.1 %	-0.00188***	11.8 %	0.0000423	-0.5 %
Computer center available	0.00202***	2.2 %	0.00185	0.9 %	0.00214**	1.4 %	0.00142**	1.4 %	-0.00106	6.6 %	-0.0000701	0.8 %
Public School availability	0.000136**	0.1 %	0.000803***	0.4 %	-0.000832	-0.1 %	0.0000092	0 %	-0.00027	1.7 %	0.00016	-1.8 %
Private School availability	0.0140***	15.4 %	0.00964***	4.9 %	0.00457*	2.9 %	0.00216**	2.1 %	-0.000631***	3.9 %	0.00186***	-20.7 %
Region												
Total difference explained	0.128964	141.7 %	0.1121752	56.7 %	0.0256668	16.3 %	0.0476702	46.3 %	-0.013176	82.4 %	-0.007002	77.8 %
Observations	53741		40235		37640		31820		25871		48270	

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
 Pu= Punjabi, P= Pushho, Ba= Baloch, Si=Sindh, Str= Sryaki

#### 1.6.4 Fixed effects model

Table A.2 in Appendix A of our baseline model only contains children characteristics regional controls, ethnicity and their interaction terms. We then add parental controls and in the final model we add village characteristics. By doing so, we could observe the changes in the magnitude and the significance of the coefficients for ethnicity. In the probit estimation of our baseline model, the ethnicity of child is statistically significant and negative for ethnic minority Pashtuns, Baloch, Sindh and Sirayki. Stating that, children from these ethnic minority groups are less likely to attend school compared to ethnic majority Punjabis. The results slightly change when we control for parental education and village characteristics in the second and third model. Moreover, the results state that older children are more likely to go to school. Similarly, girls are less likely to enrol in schools compared to boys, the strength of the magnitude increases when we control for parent education and village characteristics.

In our estimation model of separate ethnicity we include district fixed effects to check for robustness. Our results shown in the appendix A Table A.3 remain the same with slight changes in the strength of the coefficients.

#### 1.6.5 Father versus mother's education

Parental education is key determinant that influence children's schooling decision (De Haan, 2011; Pufall et al., 2016). Educated parents put more emphasis on the education of their children as compared to those parents with low or no education at all (Hill and Duncan, 1987). Educated parents prefer to send their children to full-time school or join schools while working part-time as opposed to those uneducated parents who will let their children to work full-time. (Ravallion and Wodon, 2000). Literature suggests that, that paternal education is more influential than maternal education (Ermisch and Pronzato, 2010; Marks, 2008). We separately include the variable of fathers education and mother education to test for the hypothesis if maternal education has greater effect than paternal on our outcome variable. The result in the Appendix A Table A.4 and A.5 show that the marginal effects on propensity to school enrolment both fathers and mothers education seems to be of similar magnitude. The Fairlie decomposition result in the Appendix A Table A.6 show that mother education contribute higher for ethnic Pashtuns. For the rest of the groups the difference almost remain the same.

## 1.7 Discussion and conclusion

In this chapter, we investigate the differences in school enrolment across ethnic groups in Pakistan and what primary factors account for these differences. The result suggests that there are substantial ethnic disparities in school enrolment in Pakistan. The first part of our result shows that ethnic Pashtuns, Balochs, Sindhis, and Siraykis have much lower enrolment rate, while Mohajirs and Punjabis have comparatively higher enrolment rates.

In the second part, we explored the reasons for these ethnic disparities in enrolment between ethnic majority Punjabis and other ethnic minority groups. The results show that the impact of explanatory variables on child school enrolment varies depending on the ethnic groups. The set of variables included that has the largest coefficients of marginal effects were gender, parental education, and socioeconomic status. However, region and parental education played a considerable role compared to other factors. The results suggest that ethnicity influences school enrolment for children implying that there are historical, cultural and other factors that block these children from their right to have education.

The analysis generates more refined policy implications. For example, enhancing household income or reducing poverty would help increasing school attendance, but it will not work for all ethnic groups living in Pakistan. Our analysis of this study identified that place of residence, and household characteristics, along with unobservable characteristics, are responsible for the disparities in school enrolment. In order to have further progress towards universal enrolment, our analysis proposes a number of possibilities. Conditional cash transfer ([Ladhani and Sitter, 2020](#)) and offering transportation to pupils could be one solution since education is free and it is the state's responsibility to provide the students with vouchers (see for example ([Moe, 2004](#))). The government should provide bus service or any other means of transportation to increase enrolment and reduce dropout rates. The numbers of private schools are mostly established in cities and large population hubs; it could be extended to the marginalised ethnic groups with the help of public-private partnership. Ethnic-based policies aimed at encouraging entrance to school could ensure progress towards achieving universal enrolment. Future research should be directed towards gender gaps in educational outcomes in ethnic groups.

## Chapter 2

# Gender gaps in school enrolment in rural Pakistan

### 2.1 Introduction

Gender equality has been considered a human right in global policy discussions. Regardless of gender, colour, and race, all humans are born free and equal in dignity and rights. However, the world is still far away from achieving gender equality (Assembly, 1948; Bajaj and Kidwai, 2016). Consequently, the question of gender inequality remains a fundamental challenge for the policymakers due to its considerable effect on human capital formation and economic growth (Duflo, 2012).

The role of educating women on the humanistic, societal, and economic front cannot be overemphasized. Women play an essential role in building child human capital and boosting economic growth (Beneria and Sen, 1982; Boserup, 2007; Corner, 2008). For details on the wide range of benefits of educating women (see for example, (Janzen, 2008; Pervaiz et al., 2011; Rezai-Rashti and Moghadam, 2011; Shapiro, 2012). However, despite some progress in the last few decades, (Hausmann, 2009; Olivetti and Petrongolo, 2016), gender gaps persist with women lagging behind in majority of life domains including labour market outcomes, access to credit and education (Haus-

mann, 2009; Nordman et al., 2011). Girls have limited educational opportunities to complete 12 years of education due to multiple barriers (Durrani and Halai, 2020). South Asia and Sub-Saharan Africa remain with large gender gaps in the world.

Further, unemployment in Pakistan is much higher than the average unemployment rate in the world (Chaudhary et al., 2014). The percentage of female youth who are outside education and not involved in any economic activity is roughly about 72% in current years (Mani et al., 2020). Pakistan has a huge gender disparity problem. According to the world economic forum, Pakistan ranks 143 out of 144 countries in the gender inequality index (Black, 2016). The percentage of working-age female population who do not seek employment in the labour market due to societal pressure is very high.

As stated in the general introduction, many out of school children of the world reside in Pakistan. An estimated 22.64 million school children between the ages of 5 and 16 are out of school, the majority reported are girls (Stuart and Woodroffe, 2016). In this connection Pakistan education task forum reported that one in ten of the world's primary school age children out of school reside in Pakistan will never enrol in school. According to (UNICEF) the various barriers for children access to education, sprouting because of, different sets of deep rooted structural inequalities, inadequate budget allocation, and resource distribution along with economic and cultural realities (UNICEF et al., 2017). This compels us to spot those lope holes and propose more realistic and feasible remedies for addressing this issue.

While there has been extensive research on gender gaps in developing countries, to our knowledge, little is known in the context of gender gaps in ethnic groups in Pakistan. The first purpose of this chapter is to assess the gender gaps in different ethnic groups in Pakistan. Reducing gender gaps in education outcomes will reduce poverty, inequality, better employment opportunities, and higher income. Empirically we employ Probit and multilevel regression model. Our result suggests that there exist large gender gaps in school enrolment among and between ethnic groups. We find that gender gaps in school enrolment are wider in ethnic Pashtun, Sindhis, Baloch, and Sirayki children.

The second objective of this chapter is to investigate the gender gaps between ethnic majority group compared to ethnic minority groups. To identify the gender gaps due to observed characteristics empirically, we use the Fairlie decomposition technique. Our results suggest that socioeconomic status, parental education, and the regions explain most of these gaps. The remaining part of this chapter is organised as follows. Section 2 reviews the relevant literature on intersectionality and the gender gap in education. Section 3 briefly describes the database and detailed descriptive statistics. In section 4, we explain the econometric framework adopted for this study. Next, in section 5, we present our results, and finally, section 6 concludes our study with recommendations.

## 2.2 Literature review

Ethnic diversity is linked with low quality institutions and poorer economic performance (Alesina and Zhuravskaya, 2011; Easterly and Levine, 1997). Higher income gap is observed in such fragmented societies (Perera and Lee, 2013). The literature suggests that ethnic fragmentation is associated with lower school funding and facilities that might effect universal primary education (Churchill et al., 2020; Miguel and Gugerty, 2005). Further, ethnic fragmentation is associated with wider gender gaps through its role in strengthening social and cultural norms that maintain the prevailing gender gaps (Awaworyi Churchill et al., 2019). Gender gaps have been asserted to be deeply rooted in social and cultural norms, reflecting the institutionalise disposition toward gender equality (Hiller, 2014). For instance, certain social norms and religious preferences hinder gender equality. For example, the prevalence of domestic violence, the notion of women staying at home and men as a breadwinner in certain societies reduces her participation in social and economic activities (Ahmed Salim, 2016; Easterly and Levine, 1997; Heintz et al., 2006).

Although, social and cultural norms generally tend to widen gender gaps. However, there is some evidence where social norms promote gender equality. For example, Beaman et al. (2012) show that exposure to female leadership in daily life positively influence girls educational attainment and career aspirations. Also, it reduces male prejudice resulting in more gender equality. Similarly, Kabeer (2016) in her study suggest that partner of working wives raised by working women tends to be more supportive resulting in gender equality.

‘Intersectionality’ derived from feminist theory has been used as a useful lens to view the relationship between social categorisation such as race, ethnicity, gender, and class (Bose, 2012; Collins, 2002). Intersectionality refers to the idea that how intersecting power relations effect social categories across diverse groups, including the individual experiences in daily life. As an analytic tool, intersectionality considers social categories, principally those that involve power or inequality, such as race, ethnicity, class, gender, sexuality, nation and ability, and age-among others- as interrelated and mutually shaping one another. Intersectionality is a method of having knowledge and illustrating the complexities of the world in people and human experiences.

The core insight of intersectionality states that in a given society at a given time, power relations of race, ethnicity, class, and gender are not discrete and mutually exclusive entities. Nevertheless, build on each other and work together, and that, while often invisible, these intersecting power relations affect all aspects of the social world. The term is attributed to Kimberle Crenshaw, an American legal scholar. She explained the plight of African American women and their unique disadvantageous situation in her work (Crenshaw, 1989, 1990). Later, her work drew the attention

of researchers and activists to frame multiple forms and layers of discrimination and accentuate it to 'interlocking systems' of discrimination (Collins, 2002). The theoretical advancement of the debate on intersectionality led to the critique on the second wave of the feminist movement by accrediting it as a relatively middle class, white-centric movement. It has been argued that it oversimplified the experiences of the disadvantaged women in connection to their social class. Previously intersectionality was intimately linked with gender studies (Fredman, 2005; Lutz et al., 2016; Yuval-Davis, 2006). However, recent years have witnessed the use of intersectionality as conceptual tool in other social science domain such as education (Codioli McMaster and Cook, 2019), health, (Hankivsky, 2011) psychology (Else-Quest and Hyde, 2016), family studies (Few-Demo, 2014) and sociology (Choo and Ferree, 2010).

One of the major aspects that influence children school enrolment in developing countries is gender (Unterhalter, 2014). The south Asian countries, along with Middle Eastern countries, are part of the patriarchy belt where women are less empowered (Caldwell, 1982; Moghadam, 1993). In Pakistan, primarily a male-dominated society, female education has been less of a concern for most families. Male children are given preference over females due to social and cultural norms. The financial mindset about investing in a daughter's education is often-quoted in a south Asian proverb that, "raising a daughter is watering your neighbour's garden". However, in recent times the situation has slightly improved due to the global strain to extend the accessibility of essential education to young girls.

Holmes (2003) investigated the factors helping students in completing their primary level school. She found that female receive less education than males. She argued that girls are unable to complete their primary education because of their economic and socio-cultural constraints. In patrilineal societies in which sons inherit from their fathers, boys are expected to become the future family leaders. Lower values are assigned to girls, who are seen as temporary persons soon to be "given out" in marriage to other families (Colclough et al., 2000). Likewise, Sawada and Lokshin (1999) is of the view that greater opportunity cost of daughter's education may lead to possible intra-household discrimination against women in terms of education. Pakistan is characterised by among the highest level of gender disparity in education (UNESCO, 2017).

Gender has a strong influence in the rural areas of Pakistan. Being a rural woman minimises the chance of going to school (Aslam, 2007; Lall, 2009; Qureshi and Rarieya, 2007). Similarly, Sawada and Lokshin (2009) estimated that in rural areas of Pakistan, 2.9 Percent of female children's drop out from the school. The fact that in tribal society, that head of the household has complete dominance over the decisions of the family and his education has a positive impact on the decision of sending girls to the school. Consequently, Qureshi and Rarieya (2007) finds parents unwillingness as a primary reason for not sending their daughters to school due to the large distance from home

to school and security threats. [Sawada and Lokshin \(1999\)](#) believes that greater opportunity cost of daughter's education may lead to possible intra-household discrimination against girls in terms of education. In a study in the Pashtun areas of Pakistan [Jamal \(2016\)](#) found that besides poverty, political apathy, religion and tribal code of conduct restricts women from education. Social norms define women's role in the family and community—these norms shape parents' preferences for girls' education. Parents may have a low expectation of the potential returns from educating their daughters, mainly due to profound entrenched ideas about women's role in society and labor market opportunities for women. In Pakistan, parents have been found to be less interested in educating daughters because they may leave the family after marriage ([Naveed and Arnot, 2019](#)).

### **2.2.1 Parental education**

Parents' education is the key determinant that influences children's schooling decision. Well-educated parents emphasis on their children's schooling compared to parents with little or no education at all. Moreover, educated parents may be able to help their children with their studies at home, thereby positively influencing children's schooling outcomes. There is ample evidence that children from educated parents will more often attend school and stay longer ([Buchmann and Brakewood, 2000](#); [Colclough et al., 2000](#); [Smits and Hoşgör, 2006](#)). Furthermore, the education level of mothers is important for girls schooling ([Emerson and Souza, 2007](#)). In a study on primary school children [Holmes \(2003\)](#) found that mothers education is more imperative for girls than fathers' education, while fathers' education seemed more imperative for boys than mother's education. Also, educated parents prefer schooling over child work. [Ravallion and Wodon \(2000\)](#) found that in Bangladesh, educated parents were more interested in sending their children to full-time school or join schools while working part-time as opposed to parents with no education, who will let their children only to work. [Connelly and Zheng \(2003\)](#) found a positive relationship between family incomes, parental education in moulding the family's choice with respect to the interest in investing in their children's education. The most exasperating, however not sudden, observation of the study is the prevalence of the impact beginning from parental instruction. It is this generational exchange of human capital that needs more consideration, as it additionally suggests that the lack of education and henceforth the neediness of parents get transmitted to the future generations. [Patrinos et al. \(2005\)](#) study proposes that the impact of parental education exists above and beyond the support of the informed parent's human capital to family earnings. The education of parents seems to add an additional class enlistment because their level of education permits them to utilise information with respect to the significance of education for their kids. That is, qualified parents know about the advantages of instruction for their children. Also, few studies have suggested that parents age



influences the decision of sending their children to school. Older father is less likely to invest in child schooling due to the belief of getting any return from his investment (Chugh, 2004; Thakur and Mukherjee, 2016).

### **2.2.2 Household income**

Several studies have highlighted the importance of socio-economic characteristics in determining children school enrolment (Zhao and Glewwe, 2010). A study by Handa (2002) in Mozambique found that there is a positive relationship between household income and primary school enrolment. Also, the financial background of children was observed to be imperative determinant of schooling in Nigeria. Family salary was found to be a huge positive correspond of the likelihood of tutoring (Olaniyan, 2011). School enrolment of the children is additionally affected by the parents' qualities and financial status of the family. Pakistan, where the poverty line defined as fifty percent of the median non-child household income per adult equivalent Ray (2000) finds that when a family falls into destitution, child school enlistment drops altogether. Past research in determinants of schooling demonstrates a positive connection between family unit wage and schooling (Korinek and Punpuing, 2012; Momo et al., 2019). A study by Abafita and Kim (2015) in Ethiopia recognised the importance of family unit salary in school enrolment than for school progression. Children's from families with more financial assets remain in school in developing but also in developed countries. The immediate expenses for wealthier families, related to education, i.e., tuition fee, books and uniforms are less inclined to be a hindrance (Weybright et al., 2017).

### **2.2.3 Demographic factors**

The number of children in a family determines the resource distribution for each child. In general, family size tends to be negatively associated with schooling. This is probably because the available resources at the household level must be divided among more children (Buchmann and Brakewood, 2000). However, this may not always be the case. For instance, Chernichovsky (1985) found that the number of children in the household is positively related to school enrolment in rural Botswana. The reason for this could be that with more children, there are also more helping hands at home, which increase the chance that at least some children attend school (Huisman and Smits, 2009). However, few studies suggest that the cost of having more children may be borne by older siblings, rather than by their parents (Emerson and Souza, 2007). We expect that children with the higher number of siblings lower the chances to participate in education.

## 2.2.4 Distance to school

The distance to school plays an important role in determining education status when the kids are ready to go to school, and there is no school in that area let them out of school (Mingat, 2007). In the context of Turkey Tansel (2002) found that in Turkey, more extended distance to schools is related to less school fulfilment at the auxiliary level. Glick and Sahn (2006) for Madagascar, Colclough et al. (2000) for Ethiopia and Guinea found that distance has a solid negative effect on the need for tutoring. Ombati and Ombati (2012) found that in Sub-Saharan Africa, the accessibility and the travel distance from home to school are both essential in school participation. The longer the travel time to class, the more troublesome is for kids to accommodate work and school attendance. Further, having a middle school close-by improves the probability that guardians put resources into their children’s full-time schooling. Moreover, the accessibility of both elementary and middle schools positively affects tutoring choices. We hypothesise that the availability of a carpeted road increases the chances of girls getting enrolled in school compared to boys.

## 2.3 Database and descriptive statistics

Table 2.1: Description of variables

Variable	Definition
Ethnic groups	
Punjabi	Dummy variable: 1 if Punjabi; 0 otherwise
Pushto	Dummy variable: 1 if Pushto; 0 otherwise
Balochi	Dummy variable: 1 if Balochi; 0 otherwise
Sindhi	Dummy variable: 1 if Sindhi; 0 otherwise
Sirayki	Dummy variable: 1 if Sirayki; 0 otherwise
Urdu	Dummy variable: 1 if Urdu; 0 otherwise
Other	Dummy variable: 1 if Other [if Kashmiri, Gilgit and Hindko]; 0 otherwise
Dependent variable	
Enrollment	Dummy variable: 1 if child is currently enrolled in school; 0 if either never enrolled or dropped out of school
Regions	
Punjab	Dummy variable: 1 if region/province is Punjab; 0 otherwise
Sindh	Dummy variable: 1 if region/province is Sindh; 0 otherwise
Balochistan	Dummy variable: 1 if region/province is Balochistan; 0 otherwise
Khyber Pukhtunkhwa	Dummy variable: 1 if region/province is Khyber Pukhtunkhwa; 0 otherwise
Islamabad	Dummy variable: 1 if region/province is Islamabad; 0 otherwise
Gilgit-Baltistan	Dummy variable: 1 if region/province is Gilgit-Baltistan; 0 otherwise
Kashmir	Dummy variable: 1 if region/province is Kashmir; 0 otherwise
FATA	Dummy variable: 1 if region/province is FATA; 0 otherwise
Family characteristics	

Table 2.1: Description of variables

Variable	Definition
Total-Childern	Total Number of childern under 17 in the household
Mother-Age	Mother's age
Mother Gone School	Dummy variable: 1 if mother gone to school; 0 otherwise
Mother-Education	Mother years of schooling completed
No qualification	Dummy variable: 1 if mother have no qualifications
School	Dummy variable: 1 if highest educational attainment of mother is school qualification; 0 otherwise
Post-school	Dummy variable: 1 if highest educational attainment of mother is a post-school qualification; 0 otherwise
Bachelor's	Dummy variable: 1 if highest educational attainment of mother is a bachelor's qualification; 0 otherwise
Postgraduate	Dummy variable: 1 if highest educational attainment of mother is a postgraduate qualification; 0 otherwise
Father-Age	Father's age
Father Gone School	Dummy variable: 1 if father gone to school; 0 otherwise
Father-Education	Father years of schooling completed
No qualification	Dummy variable: 1 if father have no qualifications
School	Dummy variable: 1 if highest educational attainment of father is school qualification; 0 otherwise
Post-school	Dummy variable: 1 if highest educational attainment of father is a post-school qualification; 0 otherwise
Bachelor's	Dummy variable: 1 if highest educational attainment of father is a bachelor's qualification; 0 otherwise
Postgraduate	Dummy variable: 1 if highest educational attainment of father is a postgraduate qualification; 0 otherwise
Wealth Index	Wealth index created from different household components; Is house own? Type of house; katcha, semipucca, and pucca. Is electricity available? Is tv available? Is mobile available?
Wealth Quartiles	Wealth quartiles created from wealth index;
Poorest	Dummy variable: 1 if it falls in the lowest wealth quintile; 0 otherwise
Poor	Dummy variable: 1 if it falls in the second lowest wealth quintile; 0 otherwise
Richer	Dummy variable: 1 if it falls in the second highest wealth quintile; 0 otherwise
Richest	Dummy variable: 1 if it falls in the highest wealth quintile; 0 otherwise
<b>Village characteristics</b>	
Health Facility Availability	Dummy variable: 1 if there is health facility in the village; 0 otherwise
Carpeted Roads Availability	Dummy variable: 1 if there are carpeted roads in the village; 0 otherwise
Bank Availability	Dummy variable: 1 if there is bank in the village; 0 otherwise
Post Office Availability	Dummy variable: 1 if there is post office in the village; 0 otherwise
Computer centre Availability	Dummy variable: 1 if there is computer centre in the village; 0 otherwise
Government schools	Total Number of Govt. schools in the village
Private schools	Total Number of private schools in the village
<b>Individual characteristics</b>	
Gender	Dummy variable: 1 if female; 0 otherwise
Child age	Child age
<b>School characteristics</b>	
Public School	Dummy variable: 1 if there is/are public school(s) in the village; 0 otherwise
Private School	Dummy variable: 1 if there is/are private school(s) in the village; 0 otherwise

Note: Data Source is ASER 2018

We already presented the details of the data-set in the general introduction and the first chapter of the dissertation. Nevertheless, here we will outline necessary details about the data used in this chapter. In this chapter, we employ the Annual Status of Education Report (ASER) Pakistan’s survey for 2018 (see for details in the general introduction). ASER asked respondents different sets of questions about children’s schooling, parental characteristics, and various household and village level attribute that likely influence children’s school attainment. ASER asked respondents different sets of questions about children’s schooling, parental characteristics, and various household and village level attribute that likely influences children’s school attainment see Table 2.3 for a detail description of variables included in our estimation.

### 2.3.1 Descriptive statistics

Table 2.2: Education status by gender of all ethnic groups in Pakistan

Ethnicity	Boys		Girls		Total		t-test	p-value
	Not Enrolled	Enrolled	Not Enrolled	Enrolled	Not Enrolled	Enrolled		
Punjabi	16.5	83.5	18.9	81.1	17.5	82.5	6.45	0.000
Pushto	27.3	72.7	47	53	35.4	64.6	58.40	0.000
Balochi	30.2	69.8	47.4	52.6	38	62	37.86	0.000
Sindhi	21.8	78.2	32.3	67.7	26.4	73.6	23.59	0.000
Sirayki	21.7	78.3	28.8	71.2	24.9	75.1	8.98	0.000
Urdu	17.3	82.7	22.3	77.7	19.7	80.3	4.34	0.000
Other	14.9	85.1	19.7	80.3	17.1	82.9	11.81	0.000
<b>TOTAL</b>	<b>23.2</b>	<b>76.8</b>	<b>34.9</b>	<b>65.1</b>	<b>28.3</b>	<b>71.7</b>		

Note: Author using ASER, 2018 data

In Table 2.2 we present the education status of children of age between 5 and 16 by gender of all ethnic groups. There exist a considerable gender gap in school enrolment in all ethnic groups. The enrolment rate is highest for ethnic Punjabi boys 83.5% and 81.1% for girls. This is followed by ethnic Urdu-speaking children 82.7% of boys and 77.7% of girls that are enrolled in school. Similarly, the enrolment rate is roughly 72.7% for ethnic Pashtun boys and only 53% for girls. Also evident is the considerable gender gap, of ethnic Baloch, 69.8% of ethnic Baloch boys and 52.6% of girls are enrolled in schools. The enrolment rate for ethnic Sindhi boys is 78.2% and 67.7% for girls also represents a bleak picture. The enrolment status for ethnic Sirayki is 78.3 % for boys and 71.2% for girls. The descriptive statistics illustrate that disparities in enrolment across the ethnic group are severe for girls compared to boys. Girls from ethnic Pashtun and Baloch groups are at much greater risk of being out of school.

### 2.3.1.1 Provincial and household characteristic

We present more descriptive statistics in the following Table 2.3, The descriptive statistic for the control variables used in our analysis shows that the majority of the residents of all ethnic groups live in their respective provinces. Pakistan is comprised of five provinces and the Pakistan Administered Kashmir. Recently, Pakistan's government changed the Federally Administered Northern Areas status and named it Gilgit Baltistan, and Federally Administered Tribal areas were merged into Khyber-Pakhtunkhwa Province to improve governance and security of the region (see for details (Anwar and Khan, 2017; Hussain, 2019)).

Similarly, most ethnic Muhajir lives in Punjab and Sindh Provinces, and the rest across the country, ethnic Pashtuns reside in Baluchistan, Federally administered areas, and Khyber-Pakhtunkhwa, a fraction of them i.e., 0.5% lives in Punjab. The majority of the ethnic Baloch lives in Baluchistan rural and around 0.2% lives in Sindh provinces. Similarly, the majority of Sirayki lives in Punjab and some in Baluchistan and Sindh. Living in urban centres and central Punjab would imply easy access to quality education and better job opportunities. There also exist noticeable differences in household characteristics by ethnicity. The average total number of ethnic Baloch children is 4.1, the highest, followed by 3.5 for Pashtuns and Sirayakis. Whereas for ethnic Punjabis and Urdu speaking its 3.3%. and 3.2% respectively

Also, there exist striking differences in parental education, 82.5% of ethnic Baloch children's mothers have never been to school, and around 76.8% of ethnic Pashtuns mothers have never attended schools. Likewise, 69.3% of ethnic Sindhi mothers have never attended school. Ethnic Punjabis and Urdu speaking children whose mothers have never attended schools are 55.1%, 39% respectively. There are similar trends and differences in father's school attendance across all ethnic groups. Baloch children whose fathers have never attended schools account for 63.2%, compared to others ethnic groups, for example, the percentage for ethnic Punjabis father and Muhajir that have never attended school are 37.6% and 30%. More than half 55.3% of ethnic Pashtun fathers have never attended school.

Similarly, majority of the children are enrolled in government school followed by private school and Madrassa. Interestingly the percentage of girls enrolled in a private school is higher than boys. Also, there is regional differences in the availability of private schools. They are mostly available in the urban centers and Punjab province.

Table 2.3: Descriptive statistics all, the numbers indicate % or mean(Std. Dev.)

Region	Punjabi	Pushto	Balochi	Sindhi	Sirayki	Urdu	Other	Total	
Punjab	99.3	0.5	0	0	95.9	53.9	1.6	22.1	57450
Sindh	0	0	0.2	90.8	0.3	8.7	0	14.1	36525
Balochistan	0.1	23.3	99.8	9.2	3.8	2.8	0.2	26.1	67706
Khyber Pakhtunkhwa	0.1	48.4	0	0	0	4.6	8	16.2	42,125
Gilgit Baltistan	0	0.1	0	0	0	5	47.2	6.5	16,828
AJ Kashmir	0	0	0	0	0	20.3	42.4	6.1	15,848
Islamabad	0.5	0.1	0	0	0	4.7	0.3	0.2	615
FATA	0	27.6	0	0	0	0	0.2	8.6	22,312
Total	42873	80558	44707	39605	11809	4830	35027		259,409
<b>Family characteristics</b>									
Child age	9.1(3.8)	8.4(3.7)	8.6(3.8)	8.5(3.6)	8.4(3.7)	9.2(3.9)	9.4(3.9)	8.7(3.8)	
No. of siblings under 17	3.3(1.4)	3.5(1.5)	4.1(1.6)	3.3(1.9)	3.5(1.5)	3.2(1.5)	3.5(1.5)	3.5(1.6)	
Mother Gone School	54.9	23.2	17.5	31.7	46	61	53	34.8	
Mother age	36.3(7.1)	35.9(7.7)	36.8(7.7)	35.3(7.1)	34.6(6.9)	36.3(6.7)	36.8(7.3)	36.1(7.4)	
Mother years of education	7.9(3.2)	7.7(3.7)	6.1(3)	7.2(4.4)	7.7(3.3)	8.9(3.5)	8.7(3.4)	7.8(3.6)	
Father Gone School	62.4	44.7	37.7	49	58	69.5	68.2	51.3	
Father age	41.5(8.2)	40.7(8.7)	40.6(8.4)	39.9(7.9)	39.8(7.9)	41.8(7.5)	42.1(8.3)	40.9(8.4)	
Father years of education	8.9(3)	9.5(3.7)	7.7(3.1)	8.9(4.1)	8.8(3.1)	9.5(3.4)	10(3.2)	9.1(3.5)	
<b>Wealth index</b>									
Poorest	14.3	34.8	34.1	22.5	12.5	12.7	16.5	25.5	
Poor	20.1	30.5	27.7	20.5	22.1	23	25.7	25.6	
Richer	22.5	19	29.8	27.9	20.5	28.2	35	25.2	
Richest	43	15.7	8.3	29.2	44.9	36.1	22.7	23.6	
<b>Village characteristics</b>									
Post office available	0.2(0.4)	0.1(0.4)	0.03(0.2)	0.009(0.1)	0.1(0.3)	0.4(0.5)	0.2(0.4)	0.1(0.3)	
Bank available	0.2(0.4)	0.1(0.2)	0.01(0.1)	0.1(0.2)	0.1(0.3)	0.4(0.5)	0.2(0.4)	0.1(0.3)	
Telephone facility available	0.2(0.4)	0.2(0.4)	0.2(0.4)	0.02(0.1)	0.1(0.3)	0.4(0.5)	0.2(0.4)	0.2(0.4)	
computer center available	0.2(0.4)	0.1(0.3)	0.04(0.2)	0.02(0.1)	0.1(0.3)	0.4(0.5)	0.1(0.3)	0.1(0.3)	
Health facilities available	0.4(0.5)	0.4(0.5)	0.5(0.5)	0.2(0.4)	0.3(0.5)	0.7(0.5)	0.5(0.5)	0.4(0.5)	
Road network available	0.5(0.5)	0.5(0.5)	0.5(0.5)	0.2(0.4)	0.4(0.5)	0.9(0.3)	0.5(0.5)	0.5(0.5)	
No. Govt. schools	1.1(1.2)	1.2(1.1)	1.5(1)	0.4(0.7)	0.7(1)	1.7(1.1)	1.6(1)	1.2(1.1)	
No. private schools	1.2(2)	0.4(1.2)	0.1(0.6)	0.1(0.3)	0.5(1.6)	1.7(1.8)	1.5(1.7)	0.6(1.4)	

Note: ASER 2018

## 2.4 Econometric model

Our dependent variable is binary in nature. Logit, Probit model and Linear probability model are possible choices in such settings. The choice of using between Probit and linear probability is widely discussed by various studies see for example (Greene, 2000). The main advantage of the linear probability model is that the parameter can be directly interpreted as the mean marginal effect of covariates on the outcomes. However, the disadvantage of the linear probability model is that the true relationship between a binary outcome and a continuous independent variable is inherently nonlinear, see Deke (2014) for a more detailed discussion. We choose Probit model as the main tool for econometric analysis in our study; this is a widely used model in studying the probability of a child's school enrolment. In the probit model the dependent variable Y has two discrete values: 1 enrolled and 0 otherwise. Although one can only observe child school enrolment in two states, enrolled and not enrolled, the probit model assumes that there is an underlying, continuous propensity to enrol variable that generates the observed state. The underlying model

shows how different explanatory variables affect the probability of child schooling

$$\text{Enrolment}_i^* = X_i\beta + \varepsilon_i \quad (2.1)$$

$\text{Enrolment}_i=1$  if  $\text{Enrolment}_i^*>0$   $\text{Enrolment}_i=0$  if otherwise  $\varepsilon=N(0,1)$  Where  $\text{Enrolment}_i$ , currently enrolled student is a binary variable, indicator of  $i^{\text{th}}$  individual determined by the underlying latent variable  $[\text{Enrolment}_i]^*$ ;  $X_i$  is a vector of control variables ( personal, household and regional characteristics),  $\beta$  is a vector of unknown parameters to be estimated; and  $\varepsilon_i$  is the error term. The usual normalisation is imposed so that the variance of the error term  $\varepsilon$  is normalised to 1 and the cutoff point is normalised to zero. The coefficients obtained in the probit estimation serve only to provide a sense of the direction of the effects of the covariates on the dependent variable and cannot be used for magnitude impacts of the explanatory variables on the probability of current school enrolment provided.

We control for variables that are related to the probability of attending school over not attending school that is our key independent variable. Important determinants of educational opportunity include children characteristics such as age and gender, household characteristics pertaining to asset, ownership, and parental levels of education. Data on parents include parent's age, education and number of children in each household. Mothers and father's education levels are included to account for genetic ability of children as well as the complementary home learning that may reduce the cost of schooling in households with better educated parents. Parent's education may also serve as a predictor of the parent's market earning potential that could be invested in schooling. Poverty level has been judged on the household indicators of wealth and possession of resources such as television, mobile phone, electricity connection, ownership of the house, house type, (Mud-house, semi-Mud house or Concrete house these are specified to proxy the permanent income available for education outlays Family characteristic are an important potential determinants of school attainment. If families are credit constrained, current income may influence a family's capacity to invest in child schooling. A wide range of literature on this subject provides justification for the importance of using these variables as controls, since they are correlated with both the dependent and independent variables see for example (Dancer and Rammohan, 2007).

### 2.4.1 Non-linear decomposition

Additionally, we report the enrolment gap between girls of ethnic majority Punjabis and other ethnic minorities we use (Fairlie, 2005) decomposition technique. The method has been previously used in various studies (Polidano et al., 2012; Schwiebert, 2015) to explain the gaps in school enrolment





Table 2.4: Probit estimation gender gap

	Model 1		Model 2		Model 3	
	Boys	Girls	Boys	Girls	Boys	Girls
	(0.0139)	(0.0139)	(0.0139)	(0.0141)	(0.0140)	(0.0141)
Child age <sup>2</sup>	-0.0530*** (0.000710)	-0.0515*** (0.000720)	-0.0533*** (0.000713)	-0.0519*** (0.000729)	-0.0535*** (0.000719)	-0.0521*** (0.000731)
<b>Ethnicities (Ref. cat. Punjabi)</b>						
Pushto	-0.273*** (0.0294)	-0.542*** (0.0306)	-0.255*** (0.0302)	-0.507*** (0.0317)	-0.0800 (0.0871)	-0.293*** (0.0925)
Balochi	-0.527*** (0.0365)	-0.928*** (0.0383)	-0.481*** (0.0406)	-0.795*** (0.0422)	0.0317 (0.103)	-0.305*** (0.112)
Sindhi	-0.118*** (0.0329)	-0.375*** (0.0332)	-0.0640* (0.0345)	-0.317*** (0.0348)	-0.124 (0.132)	-0.257* (0.134)
Sirayki	-0.108** (0.0428)	-0.290*** (0.0439)	-0.0712* (0.0432)	-0.245*** (0.0445)	-0.0683 (0.0433)	-0.244*** (0.0446)
Urdu	-0.0103 (0.0601)	-0.0867 (0.0574)	-0.0506 (0.0615)	-0.114* (0.0590)	-0.0615 (0.0750)	-0.182** (0.0723)
Other	0.114*** (0.0305)	0.0800*** (0.0307)	0.0877*** (0.0329)	0.0577* (0.0334)	0.0795 (0.0812)	-0.0783 (0.0844)
<b>Family Characteristics</b>						
Total surveyed children under 17	-0.000321 (0.00301)	-0.00746** (0.00316)	0.000718 (0.00302)	-0.00643** (0.00317)	0.00179 (0.00304)	-0.00539* (0.00319)
Mother age	-0.00159 (0.00256)	0.00845*** (0.00267)	-0.00214 (0.00257)	0.00738*** (0.00268)	-0.00218 (0.00257)	0.00723*** (0.00267)
Father age	-0.0334*** (0.00725)	-0.0365*** (0.00719)	-0.0356*** (0.00728)	-0.0377*** (0.00726)	-0.0312*** (0.00736)	-0.0335*** (0.00728)
<b>Family Wealth (Ref. cat. Richest)</b>						
Poorest	-0.243*** (0.0336)	-0.191*** (0.0357)	-0.249*** (0.0338)	-0.196*** (0.0361)	-0.243*** (0.0339)	-0.194*** (0.0362)
Poor	-0.128*** (0.0264)	-0.0971*** (0.0269)	-0.129*** (0.0265)	-0.0984*** (0.0271)	-0.132*** (0.0268)	-0.0976*** (0.0272)
Richer	-0.0826*** (0.0240)	-0.0722*** (0.0241)	-0.0850*** (0.0241)	-0.0761*** (0.0242)	-0.0746*** (0.0244)	-0.0657*** (0.0244)
<b>Mother Education; Ref. cat. No Qualification</b>						
School	0.189** (0.0922)	0.334*** (0.0928)	0.166* (0.0925)	0.332*** (0.0937)	0.179** (0.0908)	0.344*** (0.0928)
Post School	0.359*** (0.0984)	0.520*** (0.0988)	0.332*** (0.0988)	0.503*** (0.0997)	0.336*** (0.0971)	0.507*** (0.0987)
Bachelor's	0.385*** (0.102)	0.547*** (0.102)	0.360*** (0.103)	0.535*** (0.103)	0.369*** (0.101)	0.541*** (0.102)
Postgraduate	0.382*** (0.111)	0.564*** (0.112)	0.360*** (0.112)	0.534*** (0.114)	0.362*** (0.110)	0.537*** (0.113)
<b>Father Education; Ref. cat. No Qualification</b>						
School	0.633*** (0.0989)	0.604*** (0.105)	0.654*** (0.0996)	0.608*** (0.106)	0.663*** (0.0978)	0.603*** (0.105)
Post School	0.711*** (0.102)	0.669*** (0.108)	0.731*** (0.102)	0.668*** (0.109)	0.727*** (0.101)	0.651*** (0.108)
Bachelor's	0.743*** (0.104)	0.648*** (0.109)	0.759*** (0.104)	0.641*** (0.110)	0.756*** (0.103)	0.629*** (0.109)

Table 2.4: Probit estimation gender gap

	Model 1		Model 2		Model 3	
	Boys	Girls	Boys	Girls	Boys	Girls
Postgraduate	0.772*** (0.107)	0.652*** (0.113)	0.791*** (0.108)	0.645*** (0.114)	0.772*** (0.106)	0.628*** (0.113)
<b>Village Characteristics</b>						
Post office available			0.128*** (0.0313)	0.156*** (0.0328)	0.108*** (0.0319)	0.157*** (0.0334)
Bank available			0.00511 (0.0378)	0.103*** (0.0386)	-0.0205 (0.0382)	0.0846** (0.0388)
Telephone facility available			-0.0946*** (0.0302)	-0.296*** (0.0305)	-0.0706** (0.0306)	-0.268*** (0.0311)
Computer center available			0.0895*** (0.0326)	0.221*** (0.0350)	0.114*** (0.0336)	0.257*** (0.0355)
Health facilities available			-0.158*** (0.0266)	-0.102*** (0.0273)	-0.133*** (0.0273)	-0.0737*** (0.0278)
Road network available			0.0209 (0.0277)	0.0638** (0.0287)	0.0125 (0.0278)	0.0504* (0.0290)
Govt. school available			0.0790** (0.0308)	-0.0193 (0.0323)	0.141*** (0.0312)	0.0257 (0.0326)
Private school available			0.0771*** (0.0292)	0.121*** (0.0286)	0.0318 (0.0301)	0.0768*** (0.0292)
<b>Region; Ref. cat. Punjab</b>						
Sindh					0.110 (0.134)	-0.0125 (0.135)
Balochistan					-0.566*** (0.0993)	-0.531*** (0.108)
Khyber Pakhtunkhwa					-0.107 (0.0841)	-0.171* (0.0887)
Gilgit Baltistan					-0.0151 (0.0881)	0.115 (0.0889)
Kashmir					0.0353 (0.0812)	0.213** (0.0834)
Islamabad - ICT					-0.126 (0.170)	0.0491 (0.182)
FATA					-0.276*** (0.0982)	-0.291*** (0.105)
Constant	-4.372*** (0.102)	-4.356*** (0.110)	-4.452*** (0.103)	-4.436*** (0.112)	-4.547*** (0.104)	-4.504*** (0.113)
Observations	39,247	32,453	39,247	32,453	39,247	32,453

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 2.4 provides probit estimation for our analysis. Our baseline model only contains children characteristics, ethnicity and their interaction terms, we then add village characteristics and in the final model we add regional controls. We also run a separate regression for both boys and girls with all available covariates. By doing so we could observe the changes in the magnitude and

the significance of the coefficients for both gender and ethnicity . In the probit estimation of our baseline model, the ethnicity of child is statistically significant and negative for ethnic minority Pashtuns, Baloch, Sindhi and Sirayki. Stating that, children from these ethnic minority groups are less likely to attend school compared to ethnic majority Punjabis. The results slightly change when we control for village characteristics. However, when we control for provinces in the estimation for boys loses its significance. However, for girls the coefficient remains highly significant for girls belonging to ethnic Pashtun, Baloch and Sirayki girls.

In our estimation for enrolment of girls the results completely changes compared to our enrolment estimation model of boys. Ethnic Pashtun, Baloch Sindhi and Sirayki girls are less likely to attend school compare with ethnic Punjabi girls. When we control for region, girls in Baluchistan are less likely to enrol compared to Punjab and girls in Kashmir are more likely to enrol than girls in Punjab. This shows that enrolment of girls also depends on the administrative unit and region they are living. Mothers age negatively influence girls enrolment whereas age of the father positively influence girls school enrolment. Girls belonging to the poorest, poor and richer quartile are less likely to enrol compared to those in the richest quartile similarly, girls in the poorest quartile are less likely to enrol compared to those in the richest quartile meaning girls living in poorer household are unlikely to attend school. Availability of paved roads significantly increases girl's enrolment, girls having access to paved roads are more likely to enrol. Equally girls living in villages that had computer lab facility are more likely to attend school. For details the results are provided in Appendix B Table B.

### **2.5.2 Marginal effects**

Alternatively in Table 2.5 we extend the marginal effects from respective probit estimation of the school participation for all and then for each of the 6 ethnic groups; Punjabi, Pashtuns, Balochi, Sindhi, Sirayki and Muhajir separately. In our first estimation model the results shows that girls are less likely to enrol in school compared with boys. Regional control and household characteristics are our main covariates of interests in the first specification. Holding all other covariates at their means, as expected children living in Baluchistan, Khyber-Pakhtunkhwa, and Federally Administered Tribal areas are less likely to enrol in schools compared to Punjab whereas children in Pakistani administered Kashmir, Gilgit, and Islamabad are more likely to attend school compared to children living in Punjab. In our estimation of each ethnic group the gender gap is wider in ethnic Pashtun, Baloch, Sindhi and Sirayki ethnic groups, ethnic Pashtun girls are 0.0402 point less likely to enrol than Pashtun boys, Ethnic Baloch girls are 0.0735 points less likely to enrol than ethnic Baloch boys whereas ethnic Sirayki girls are 0.0344 points less likely to enrol than boys.

The number of additional siblings significantly reduces the chances children to enrol in school for all ethnic groups. However the marginal effects are of a smaller magnitude. Wealth index has a positive effect on child participation in school for all ethnicities. Children from household in the richest quartile are more likely to attend school compared to children from poorer household.

The effect of parent's education is statistically significant for all ethnic groups. Children of educated parents are more likely to enrol in school compared to children whose parents have never attended school. The effect of father education of children school enrolment for ethnic Pashtuns, ethnic Pashtuns children whose father are educated are 0.101 points more likely to attend school than children whose fathers have never been to school. Village characteristics have positive effects on children school enrolment but the marginal effects are of smaller magnitude.

### **2.5.3 Fairlie decomposition**

We will look into our result of gender gap in ethnic groups due to the difference in the observed characteristics specified in our model. Table 2.7 shows our results of Fairlie decomposition for gender gaps in school enrolment. We compare girls of Pashtun, Baloch, Sindhi; Saraiki; and Mohajir ethnic minority groups with girls of majority ethnic Punjabis using the related coefficients from the regression pertinent to Punjabis. We take an example of the enrolment rates gaps between Baloch and Punjabis that allows us to explore that if we gave Baloch girls the same observed characteristics as Punjabi girls; how much the ethnic gap in enrolment rates will be explained by the factors included in our model; also it will allow us to predict the gap due to cultural and other unobserved factors. The decomposition will also help us to guess the strength of each of the factor in our model that contributes to the explained gap. For example, how much of a contribution do differences play in school enrolment between Baloch girls and Punjabi girls make relative to the contribution of differences in individual, family characteristics, parents education, village and regional characteristics. We repeat this for every ethnic group specified in our model. The probability of school enrolment is 0.85 for Punjabi girls. This probability is 0.75 for Pashtun girls, 0.62 for Baloch girls 0.78 for Sindhi girls, 0.79 for Saryaki girls and 0.85 for Urdu speaking girls. The observed characteristics explain 40 percent of the gap between ethnic Pashtuns Punjabi girls gap, suggesting that Pashtuns girls would have 30 percent of higher rate of enrolment than Punjabi girls if they have had the same characteristics as Punjabi children. Region, Socio-economic status, parental education explains most of the gap. Our decomposition results of the explained gender gap between Punjabi girls and Baloch girls are not explained by the observable characteristics in our model. For ethnic Sindhi's girls the observable gap explained is 62.3 percent, the major contributor is region 21.3 percent mothers education 10 percent, Fathers education 13 percent and

poverty approximately 7 percent . Similarly for ethnic Sirayki girls the gap explained accounts for 21.7%. Socio-economic status and mothers education explains the major portion of the gap. For ethnic Mohajir girls who have the same enrolment rate 0.85 as that of Punjabi girls, if given the same observable characteristics of Punjabis their enrolment rate would decline roughly by 20 percent. Despite the ethnicity of children mother's education and socioeconomic status is the major contributor of the gaps in enrolment. Summarily for Baloch Sindhi and Sirayki girls there are certainly drivers of the enrolment gap that are not detected in our data which might be cultural specific and other un-observable characteristics. The increase in enrolment is one element of the education outcomes, beyond enrolment there are other important factors such as completion and retention of primary and secondary schooling.

## **2.6 Conclusion**

The results of this chapter suggest that there are substantial gender gaps in school enrolment in ethnic groups in Pakistan. Girls from ethnic Pashtuns, Balochs, Sindhis, and Sirayki have much lower enrolment rate, while ethnic Mohajir and Punjabi girls have comparatively higher enrolment rates.

Furthermore, the Fairlie decomposition technique permits us to identify each of the observable factors responsible for the gender gaps in enrolment between the ethnic majority and ethnic minority groups. Also, it allows us to measure the degree to which each of these observable factors explains them.

The results suggest that ethnicity directly influence school enrolment for girls implying that there are historical, cultural and other factors that blocks these girls from their right to have education. The demand for schooling is associated with the household and family characteristic. The illiterate and poorer household should be reached to enhance the school enrolment. Our study demonstrates that there is a wide gender gap in enrolment in some ethnic groups which shows that gender perspective is imperative to formulate and enforce a holistic, inclusive and nondiscriminatory regime of policies. Gender sensitisation should be an integral part for all social development intervention, but special positive discriminatory policies should be introduced for ethnic groups with large gender gaps. Access to schools in Gilgit- Baltistan, Pakhtunkhwa, and Baluchistan might be difficult due to the mountainous terrain, restricting student's accessibility especially girls. Offering transportation to girls could be one solution.

Overall, our results suggest that ethnic-based policies aimed at encouraging school entrance could ensure progress towards gender equality and universal enrolment.

Table 2.5: Marginal effects from Probit estimation of school enrolment of all ethnic groups boys and girls

	(1) All	(2) Punjabi	(3) Pushto	(4) Balochi	(5) Sindhi	(6) Sirayki	(7) Urdu	(8) Other
Child Age	0.189*** (0.00176)	0.167*** (0.00342)	0.216*** (0.00333)	0.267*** (0.00673)	0.187*** (0.00596)	0.219*** (0.00669)	0.158*** (0.00842)	0.150*** (0.00347)
Child Age (square)	-0.00885*** (9.54e-05)	-0.00812*** (0.000183)	-0.00994*** (0.000183)	-0.0127*** (0.000395)	-0.00876*** (0.000319)	-0.0105*** (0.000368)	-0.00728*** (0.000466)	-0.00692*** (0.000180)
Girls	-0.0263*** (0.00403)	-0.00785 (0.00611)	-0.0402*** (0.00922)	-0.0735** (0.0287)	-0.0498*** (0.0122)	-0.0344** (0.0138)	-0.00142 (0.0177)	-0.0101 (0.00732)
Total surveyed children under 17	-0.00546*** (0.00133)	-0.00175 (0.00253)	-0.00690** (0.00339)	0.00421 (0.00464)	-0.00858*** (0.00313)	-0.00453 (0.00498)	-0.000909 (0.00427)	-0.00603** (0.00244)
<b>WINDEX</b>								
Poorest	-0.0291*** (0.00801)	-0.0362** (0.0171)	-0.0321** (0.0148)	0.00254 (0.0312)	-0.0969*** (0.0193)	-0.0252 (0.0458)	0.0713* (0.0365)	-0.0509*** (0.0162)
Poor	-0.0171*** (0.00555)	-0.0105 (0.0106)	-0.0116 (0.0114)	0.0267 (0.0280)	-0.0470*** (0.0151)	-0.00150 (0.0227)	-0.0642*** (0.0248)	-0.0343*** (0.0101)
Richer	-0.00916* (0.00495)	-0.0142 (0.00958)	0.0199* (0.0105)	-0.0458* (0.0274)	-0.0329** (0.0150)	-0.0191 (0.0197)	0.00508 (0.0209)	-0.00202 (0.00841)
<b>Mother Years of Schooling;</b>								
School	0.0477** (0.0194)	-0.0181 (0.0346)	0.0473 (0.0296)	-0.0505 (0.107)	0.0871 (0.0648)	0.0108 (0.0761)	-0.0579 (0.0695)	0.0524 (0.0324)
Post School	0.0744*** (0.0196)	0.0138 (0.0349)	0.0635** (0.0307)	0.0865 (0.111)	0.109 (0.0664)	0.0315 (0.0775)	-0.0182 (0.0698)	0.0591* (0.0321)
Graduate	0.0806*** (0.0202)	0.0190 (0.0362)	0.0699** (0.0319)	0.147 (0.115)	0.107 (0.0670)	0.0280 (0.0750)	-0.0328 (0.0691)	0.0741** (0.0336)
Post Graduate	0.0787*** (0.0222)	0.0397 (0.0372)	0.0620 (0.0425)	0.184 (0.115)	0.0944 (0.0715)	0.00276 (0.0766)	-0.0123 (0.0771)	0.0665** (0.0304)
<b>Father Years of Schooling;</b>								
School	0.128*** (0.0270)	-0.0178 (0.0419)	0.147*** (0.0490)	0.394** (0.183)	0.0881 (0.0643)	0.362*** (0.0481)		0.00101 (0.0229)
Post School	0.137*** (0.0268)	-0.0129 (0.0424)	0.161*** (0.0485)	0.440** (0.183)	0.0756 (0.0656)	0.397*** (0.0507)		-0.00537 (0.0228)
Graduate	0.138*** (0.0273)	-0.0116 (0.0430)	0.159*** (0.0501)	0.442** (0.184)	0.0873 (0.0669)	0.380*** (0.0539)		0.00130 (0.0231)
Post Graduate	0.139*** (0.0276)	-0.0456 (0.0461)	0.157*** (0.0510)	0.522*** (0.193)	0.124* (0.0665)	0.438*** (0.0587)		0.00423 (0.0232)
Health facilities available	-0.0220*** (0.00592)	-0.00233 (0.0133)	-0.0277** (0.0141)	-0.0149 (0.0211)	0.0238 (0.0221)	0.0139 (0.0275)	-0.0450** (0.0224)	-0.0259*** (0.00838)
Bank available	0.00122 (0.00969)	0.00955 (0.0132)	0.0102 (0.0213)	0.233 (0.145)	0.0219 (0.0354)	-0.00470 (0.0393)	0.00517 (0.0306)	-0.00694 (0.0129)
Telephone facility available	0.0191** (0.00748)	0.00445 (0.0150)	0.0352*** (0.0118)	-0.0760* (0.0421)	-0.122** (0.0562)	0.00430 (0.0346)	0.0572* (0.0296)	0.00865 (0.0103)
Computer center available	0.0235*** (0.00814)	0.0369*** (0.0125)	0.0313** (0.0148)	-0.0267 (0.0417)	0.114*** (0.0278)	-0.000763 (0.0315)	0.0190 (0.0303)	0.0141 (0.0143)
Road network available	0.00202 (0.00637)	-0.00117 (0.0145)	0.0148 (0.0138)	-0.0262 (0.0220)	0.00272 (0.0233)	-0.00518 (0.0288)	0.0314 (0.0258)	0.0173** (0.00864)
Govt. school available	0.0149 (0.00996)	0.0217 (0.0160)	-0.0218* (0.0125)	0.0412 (0.0277)	0.0112 (0.0253)	-0.00202 (0.0264)	-0.0188 (0.0439)	0.0411 (0.0341)
Private school available	0.0108 (0.00679)	-0.00473 (0.0127)	-0.00392 (0.0115)	-0.00294 (0.0277)	-0.0504* (0.0285)	0.0165 (0.0269)	0.0190 (0.0225)	0.0113 (0.0130)
Sindh	-0.0141* (0.00792)						-0.0696 (0.0582)	
Balochistan	-0.129*** (0.0113)	-0.357*** (0.0390)	-0.110*** (0.0387)			-0.0686** (0.0331)	0.00339 (0.0393)	-0.193*** (0.0538)
Khyber Pakhtunkhwa	-0.0417*** (0.00883)	-0.113*** (0.0219)	-0.0503 (0.0366)				0.0432 (0.0266)	-0.0296 (0.0405)
Gilgit Baltistan	0.0145* (0.00849)						-0.0215 (0.0497)	-0.00260 (0.0300)
Kashmir	0.0233*** (0.00687)						0.0533** (0.0215)	-0.00570 (0.0283)
Islamabad - ICT	0.0638*** (0.0181)	0.0379 (0.0275)	-0.0152 (0.0404)				-0.000957 (0.0419)	-0.110 (0.0852)
FATA	-0.0800*** (0.0154)		-0.0760** (0.0383)					-0.127*** (0.0464)
Observations	72,208	18,170	14,289	5,901	10,484	4,228	2,362	16,263

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 2.6: Marginal effects from Probit estimation of school enrolment of girls

	(1) All	(2) Punjabi	(3) Pushto	(4) Balochi	(5) Sindhi	(6) Sirayki	(7) Urdu	(8) Other
Child Age	0.199*** (0.00239)	0.169*** (0.00438)	0.246*** (0.00487)	0.284*** (0.0112)	0.208*** (0.00787)	0.228*** (0.00907)	0.167*** (0.0104)	0.155*** (0.00442)
Child Age (square)	-0.00944*** (0.000135)	-0.00820*** (0.000241)	-0.0115*** (0.000296)	-0.0140*** (0.000680)	-0.00995*** (0.000438)	-0.0110*** (0.000521)	-0.00760*** (0.000568)	-0.00713*** (0.000233)
Total surveyed children under 17	-0.00617*** (0.00182)	0.00138 (0.00317)	-0.0118** (0.00476)	0.000554 (0.00663)	-0.0129*** (0.00457)	-0.00666 (0.00748)	0.00163 (0.00710)	-0.00572* (0.00315)
Mother Age	-0.000829 (0.000747)	0.00128 (0.00139)	-0.00551*** (0.00193)	-0.000436 (0.00297)	0.00105 (0.00217)	-0.00495* (0.00277)	-0.00371* (0.00216)	-0.000285 (0.00115)
Father Age	0.00144** (0.000617)	-8.14e-06 (0.00115)	0.00449*** (0.00163)	0.00273 (0.00230)	-0.000767 (0.00174)	0.00397* (0.00210)	0.00191 (0.00202)	0.000465 (0.000982)
<b>WINDEX</b>								
Poorest	-0.0348*** (0.00953)	-0.0301* (0.0177)	-0.0634*** (0.0199)	-0.00763 (0.0335)	-0.0991*** (0.0296)	-0.0139 (0.0432)	-0.0340 (0.0402)	-0.0254 (0.0169)
Poor	-0.0169*** (0.00616)	0.00996 (0.0108)	-0.0286** (0.0138)	-0.0546* (0.0319)	-0.0584*** (0.0209)	0.0233 (0.0245)	-0.00385 (0.0283)	-0.0200* (0.0110)
Richer	-0.0104* (0.00566)	-0.00324 (0.0104)	0.00988 (0.0154)	-0.0849*** (0.0283)	-0.0335** (0.0157)	-0.0111 (0.0220)	-0.00309 (0.0200)	-0.00282 (0.00926)
<b>Mother Years of Schooling;</b>								
School	0.0686** (0.0267)	-0.0212 (0.0463)	0.105** (0.0432)	0.104 (0.237)	0.0860 (0.0927)	0.110 (0.0982)		0.0113 (0.0262)
Post School	0.0981*** (0.0276)	0.0160 (0.0470)	0.126*** (0.0458)	0.294 (0.241)	0.129 (0.0947)	0.170* (0.101)		0.00369 (0.0279)
Graduate	0.103*** (0.0277)	0.0100 (0.0478)	0.153*** (0.0489)	0.358 (0.242)	0.119 (0.0966)	0.117 (0.0980)		0.0291 (0.0270)
Post Graduate	0.103*** (0.0322)	0.0343 (0.0498)	0.135** (0.0574)	0.194 (0.262)	0.0997 (0.104)	0.115 (0.102)		0.0382 (0.0337)
<b>Father Years of Schooling;</b>								
School	0.129*** (0.0351)	0.0245 (0.0820)	0.125** (0.0583)		0.130 (0.0939)			0.0204 (0.0269)
Post School	0.137*** (0.0352)	0.0326 (0.0829)	0.141** (0.0578)		0.0976 (0.0961)			0.0125 (0.0271)
Graduate	0.133*** (0.0359)	0.0253 (0.0835)	0.137** (0.0596)		0.0976 (0.0991)			0.0232 (0.0273)
Post Graduate	0.133*** (0.0362)	0.00971 (0.0853)	0.126** (0.0601)		0.158 (0.0971)			0.0112 (0.0282)
Health facilities available	-0.0208*** (0.00776)	0.00369 (0.0169)	-0.0320 (0.0209)	-0.0386 (0.0264)	0.0154 (0.0316)	0.0412 (0.0380)	-0.0488 (0.0360)	-0.0143 (0.0105)
Bank available	0.00805 (0.0122)	0.0208 (0.0167)	0.0130 (0.0253)	0.443*** (0.152)	0.00981 (0.0591)	-1.78e-05 (0.0553)	0.0344 (0.0420)	-0.0204 (0.0150)
Telephone facility available	0.0222** (0.00999)	0.00663 (0.0189)	0.0353*** (0.0180)	-0.194*** (0.0654)	-0.126* (0.0650)	0.0277 (0.0495)	0.0668 (0.0416)	0.0208* (0.0122)
Computer center available	0.0354*** (0.0106)	0.0452*** (0.0157)	0.0688*** (0.0197)	-0.0964* (0.0496)	0.0967** (0.0436)	-0.00692 (0.0496)	0.00921 (0.0415)	0.0220 (0.0166)
Road network available	0.00349 (0.00832)	0.00756 (0.0188)	0.0166 (0.0208)	-0.0185 (0.0270)	-0.0146 (0.0340)	-0.0256 (0.0426)	0.0283 (0.0332)	0.0220** (0.0109)
Govt. school available	0.00713 (0.0118)	0.0103 (0.0193)	-0.0398** (0.0193)	-0.00480 (0.0490)	0.0364 (0.0381)	0.0157 (0.0376)	0.0136 (0.0538)	0.0336 (0.0331)
Private school available	0.0170** (0.00846)	-0.00466 (0.0158)	-0.000450 (0.0176)	0.0414 (0.0341)	-0.0194 (0.0536)	-0.00161 (0.0349)	-0.00439 (0.0310)	0.00363 (0.0140)
Sindh	-0.0334*** (0.0107)						-0.114 (0.0872)	
Balochistan	-0.167*** (0.0148)	-0.477*** (0.0667)	-0.0881* (0.0510)			-0.273*** (0.0613)		-0.210*** (0.0623)
Khyber Pakhtunkhwa	-0.0663*** (0.0113)	0.000584 (0.0213)	-0.0481 (0.0470)				0.0318 (0.0421)	-0.0290 (0.0468)
Gilgit Baltistan	0.0165 (0.0106)						-0.0295 (0.0513)	0.0156 (0.0328)
Kashmir	0.0297*** (0.00865)						0.0730** (0.0293)	0.0155 (0.0309)
Islamabad - ICT	0.0661*** (0.0216)	0.0440 (0.0352)					0.00421 (0.0650)	-0.142 (0.114)
FATA	-0.110*** (0.0205)		-0.0727 (0.0497)					-0.134*** (0.0520)
Observations	32,694	8,337	425,989	2,661	4,670	1,913	1,163	7,695

Standard errors in parentheses. \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

ph!

Table 2.7: Decomposition of gender gap in school enrolment

VARIABLES	Pvs Pu	% Explained	Ba vs Pu	% Explained	Si vs Pu	% Explained	Sir vs Pu	% Explained	Uedu vs Pu	% Explained	Other vs Pu	% Explained
	0.85 - 0.75		0.85 - 0.62		0.85 - 0.79		0.85 - 0.79		0.85 - 0.85		0.85 - 0.86	
	0.106		0.239		0.065		0.065		0.009		-0.008	
Total difference	-0.00149***	-0.014%	-3.7205	-0	5.12007	-0.004%	5.12007	0	0.000463**	0.4%	0.000200***	0.2%
Individual Characteristics												
Girl	3.87e-05	0	-0.00457***	-4.3%	0.000525***	-0.2%	0.000525***	0	0.000248	0.0	-0.000173	-0.0
Family Characteristics	0.0127***	0.1	0.00951***	0.08	0.00381***	0.035	0.0205***	0.1	-0.000143	-0.0	0.000206	0.0
Total Children under 17	0.00254**	0.02	0.00260**	0.02	-5.55e-06	-5.2	0.00139	0.08	-0.000275	-0.9	-7.62e-05	-0.087
Mother Age	0	0	0.00119	0.01	0.00694***	0.065	0	0	6.65e-05	0.0006	0.000394**	0.0037
Wealth Index:	-0.00416***	-0.03	0	0	0.000281	0	0.000281	0	0	0	0	0
Poorest	-0.000143	-0.08	0.00380***	0.035	-0.000105	-0.0009	0.000372	0.0035	0.000192	0.0018	-0.00120	-0.0111
Richer	0.00959***	0.09	0.00199	0.01	0.00330***	0.03	-0.00168**	-0.06	0.00150	0.01	0.00331***	0.03
Richest												
Parent Education												
Mother Years of Schooling:												
No Qualification	0.000421	0	0	0	0.0106***	0.1	0	0	-6.90e-06	-6.5E-05	0	0
School	-0.000134	-0.0	0.00297	0.0	-0.00308*	-0.02	-0.000302	-0.0069	-0.00225	-0.0	0.00390*	0.036
Post School	-4.44e-05	-0.0004	0.000585	0.0	4.39e-05	0.0	-1.46e-05	-0.00013	-0.000223	-0.002	-0.00119	-0.011
Graduate	2.65e-05	0.00025	0.000243	0.6	-1.61e-05	-0.0001	2.67e-05	0.00025	-0.000128	-0.001	-0.00201*	-0.018
Post Graduate	0	0	0.000120	0.001	0	0	1.21e-05	0.00001	0	0	-0.000760*	-0.007
Father Years of Schooling:												
No Qualification	0.00325***	0.03	0	0	0.0139***	0.138	0	0	0	0	0	0
School	-0.00212	-0.02	-0.00157	-0.014	0.00238	0.02	0.000732	0.0069	-0.000727	-0.006	0.00629	0.054
Post School	-0.000340	-0.003	0.000499	0.00472	-4.68e-05	-0.0	-0.000433	-0.00	-1.31e-05	-0.00017	-0.00146	-0.01
Graduate	0.000567	0.0	-0.000235	-0.002	0.000846	0.007	-0.000117	-0.001	0.000754	0.0071	-0.00104	-0.0098
Post Graduate	0	0	0.00110	0.0103	0	0	-7.79e-05	-0.08	0.00363	0.0349	-4.74e-05	-0.00044
Village Characteristics												
Health facilities available	0.00136***	0.01	0.000868*	0.0081	-0.00118	-0.011	5.80e-06	5.4715E-05	0.00335*	0.031	0.00466***	0.04
Bank available	0.000753	0.007	0.00338**	0.031	0.00162***	0.015	0.00101	0.0095	-0.00206	-0.019	-6.15e-05	-0.0005
PCO available	0.00111***	0.01047	0.00167	0.0157	0.00118	0.01113	0.000454	0.004094	-0.00251**	-0.02367	-0.000695**	-0.006
Computer center available	-0.000792***	-0.007	0.00313***	0.029	0.00217**	0.0205	0.000605**	0.0	-0.00695***	-0.06	-7.51e-05	-0.006
Road network available	2.07e-05	0.00019	-0.000598*	-0.005	0.00158	0.014	8.82e-06	85	-0.00330	-0.031	0.000564	0.00
Govt. school available	-0.000131	-0.00	-0.0145***	-0.1	-0.00197	-0.018	0.00360**	0.03	-0.00244	-0.023	-0.0113***	-0.106
Private school available	8.64e-05	0.008	-0.00258	-0.024	0.00211	0.015	-0.000433***	-0.040	0.00233	0.021	-0.000381*	-0.035
Region	0.00912	0.0866	-0.00903	-0.085	0.0226***	0.211	0.000114	0.0010	-0.0137***	-0.1	-0.0170	-0.160
Total difference explained	0.032	0.30	0.0005	0.004	0.066	0.62	0.023	0.2	-0.022	-0.201	-0.021	-0.198
Observations	32,494		24,100		28,689		22,389		20,614		34,439	

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
 Pu= Punjabi, P= Pushto, Ba= Balcob, Si=Sindhi, Sir= Siryaki



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## Chapter 3

# School enrolment and learning of children with disabilities

### 3.1 Introduction and literature review

In recent years, there has been a significant increase in school enrolment for children globally (UNICEF et al., 2020). However, research suggests that marginalised children are prone to exclusion from schools. If enrolled, these children face severe challenges in learning (Luo et al., 2020; Mizunoya et al., 2018; Trani et al., 2012). Not only this, just being enrolled in a school system does not translate into attending school regularly for children from marginalised sections of society.

A UNESCO (2017) report suggest that roughly 264 million children worldwide were out of primary and secondary schools. The report highlighted the learning crisis. Approximately 617 million school-going children were lagging behind minimum levels in learning basic literacy and mathematics. Of this, 80% children are concentrated in South Asia. In Pakistan, a staggering 22.84 million children were estimated to be out of school in 2015-16 (National Education Management Information System , NEMIS). Of these, the majority were female or children belonging to ethnic minorities and lower socioeconomic background and children with disabilities.

These high numbers point in the direction of much needed research and debate on how to build

disability-inclusive schools and education system<sup>1</sup>. They also emphasise the significance of collecting data<sup>2</sup> for research purpose that can advise policy practitioners and assist the progress towards accomplishing the rights of education and decent living for people with disabilities (of [Economic and Disability, 2019](#)). In this regard the purpose of this chapter is to assess the enrolment and learning gaps of children with disabilities. The effect of compulsory education law on educational outcomes. Empirically, we use a probit model for enrolment gaps and linear probability model technique to test the learning gaps. The results suggest that children who were identified by their parents as having severe disabilities were disadvantaged to enrol in school and they have lower level of learning in literacy and mathematics compared with children recorded without any disability. Similarly, girls are disadvantaged and have lower level in English literacy compared to boys. This might be due to the restriction in attending private tuition or unavailability of qualified teachers for girls as the region faces strictly segregated schools for boys and girls. The results signify double discrimination for girls with disabilities in the region. An important finding of the study is that children with disabilities are more likely to be enrolled in Madrassas (religious schools) compared to regular schools.

The remainder of the chapter is organised as follows. Section 2 presents the key findings of previous literature on children with disabilities. Section 3 throws light on the policy overview in Pakistan concerning children with disabilities, followed by a brief discussion on the plight of the children living in Pakistan's periphery. In sections 4 and 5, we describe the data and variables exploited for this study along with the descriptive statistics. In section 6, we detail the empirical strategy. In section 7, we present our results, and finally, the next section 7 concludes our study with recommendations.

***Contribution of this chapter and key differences from previous research*** : This chapter aims to address the issues pertaining to the enrolment and learning gaps of children with disabilities through data from [Annual Status of Education Report \(ASER\) \(2018\)](#) in Pakistan. Specifically, we perform this study for the Khyber-Pakhtunkhwa (KPK) and Federally Administered Tribal Areas (FATA) region. The availability of recent data in this region makes it an interesting avenue of research considering that this region has been riddled with several decades of conflict and internal displacement. To the best of our knowledge and review, there is no study that has used data pertaining to Khyber Pakhtunkhwa and Federally Administered Tribal Areas to uncover the disparities in attendance and learning outcomes (performance) of children with disabilities in this

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<sup>1</sup>It is estimated that the world economy suffers losses roughly 3- 7% of global GDP due to the exclusion of people with disabilities from the world work market. In its annual meeting 2019 in Davos, the world economic forum stressed on the plight of people with disabilities that, "there is a need to build a more inclusive society that must include the estimated 1 billion people in the world living with a disability".

<sup>2</sup>The World Health Organisation in 2011 highlighted the lack of data and evidence on people with disabilities in several sectors, including education that hinders a comprehensive plan for understanding their issues and taking action.

area. The study is the first one to systematically explore the disability gaps by considering the heterogeneity of children with difficulties based on severity of difficulty as well as its type.

Additionally, this study examine the various types of difficulties (seeing, hearing, walking, self-care, being understood and remembering) in a dis-aggregated fashion. This has important implication for policy since there exist difference in education enrolment and performance across different types of disabilities faced by children. This becomes pertinent for want of better understanding how inclusive education policies improve school eco-system for children with various functional difficulties, as well as by identifying areas of weakness in existing education policies. Through an understanding of disability gaps by functional domain, local governments and educational institutes can modify their policies and infrastructure respectively in line with needs of these children.

## 3.2 Literature review

In Pakistan, people with disability lag behind on several socio-economic indicators including education, healthcare, employment and rehabilitation (Singal, 2016; Singal et al., 2011). Roman Stephan (2014) argue that little has changed since a report published approximately two decades ago by the Japan International cooperation which noted that children with disabilities in Pakistan are one of the most marginalised groups who are unheard, unseen, and even not counted (JICA, 2002; Roman Stephan, 2014). Studies suggest that education of children with disabilities has never been part of the national discourse in Pakistan (Singal, 2016; Singal et al., 2018). Children with disabilities who somehow manage to attend schools face problems such as lack of basic facilities, quality teaching, and overcrowded classrooms (Mkumbo, 2008).

Previous literature on the plight of people with disabilities suggests that the extra costs of living with a disability are correlated with poverty in developing countries. Moreover, the disability-poverty link is associated with fewer years of formal education (Braithwaite and Mont, 2009; Mete, 2008; Mont and Cuong, 2011). Various studies suggest that children with disability are disadvantaged compared to their peers with respect to access to schools and learning outcomes (Bickenbach, 2011; of Economic and Disability, 2019). Mizunoya et al. (2018) by using data from 15 countries, found a negative relationship between disability and school enrolment. The study identifies and stresses that enrolment gaps of children with disabilities are country-specific and heterogeneous in nature. Similarly, school enrolment of children with disability does not guarantee basic school completion (Mizunoya et al., 2018). Children with disability are more likely to drop out compared with children with no disability (Sabates et al., 2013). There is ample evidence that the gap in school enrolment is wider between children with or without disability than the household financial situation, rural/urban

residence, and gender differences (Bines and Lei, 2011; Filmer, 2008). Similarly, Mont and Nguyen (2013) found in a study pertaining to Vietnam that children of parents with disability are less likely to attend schools and are unlikely to complete higher grades compared with children of parents with no disability. The effect was higher in case of mother's disability compared to father's disability (Mont and Nguyen, 2013).

An analysis on the development of education with disabilities in India and Pakistan Singal (2016) found that compared to India, Pakistan has failed to improve the condition of children with disability and they remains out of school. Additionally, compared to women, men with disabilities have better access to both education and lifework opportunities. In Pakistan, a girl with a disability faces higher discrimination in access to education, healthcare, employment, and finding a life partner.

Regarding gaps in learning, studies by Singal et al. (2020, 2018) have measured enrolment and learning gaps of children with disabilities in Pakistan specific to the Punjab region. The studies find that children with disabilities are less likely to attend schools, and those who attend school have lower levels of learning in basic reading and maths solving tasks. The researcher also found that being a sibling in a household with a child with disability is associated with lower levels of learning in reading and counting. Studies on out of school children in low-income and middle-income countries suggest that there is a need for research on the reasons of out of school children with disabilities. Likewise, in the context of rural Punjab, the researchers also found that children with disabilities are less likely to be enrolled have lower learning outcomes in both literacy and numeracy skills compared to their peers. However, contrary to the popular belief that children with disabilities attend specific schools, the study found that they are enrolled in the mainstream (public and private schools).

### **3.3 Regional context**

#### **3.3.1 Children with disabilities in Pakistan**

Historically, religious institutions were the major providers of services to children with disabilities in Pakistan. It was only in 1959 that the National Commission on Education put Children with a disability on the government agenda and proposed provisions of vocational education for them and training their handlers. In the 1980s, funds were increased in the budget for the education of children with disabilities. In the same years, the government established 200 institutions solely for children with disabilities all over the country and also the Federal Directorate General of Special

Education (Lari, 2006). Pakistan became the signatory to the Salamanca Statement and Framework for action on special needs education (Unit and of Public Information, 1994).

However, researchers have argued that in recent two decades, the government of Pakistan has paid little attention to the children with disabilities (Roman Stephan, 2014; Singal et al., 2018). The 2002 national policy for persons with a disability remains the only comprehensive official document for the children with disability that lacks the way forward by referring to the international commitment of making education accessible for all through the integration of the children with special needs in the normal education system (Singal, 2016). The promulgation of article 2A that ensures the right of free education to children age 5-16 years, in 2012, is an important legislative landmark. However, it does not specifically mention children with disabilities. Recent studies show that in Pakistan, the devolution of the ministry of education from federal to provincial governments has a negative impact on children with disabilities, taking it out as a priority item from the federal list (Hilhorst Rosemar and Mohammad, 2019; Roman Stephan, 2014).

Studies suggest that provincial governments do not have the ability and resources to provide quality education to the children with disabilities. Moreover, there is a gaping hole in the pool of trained teachers for children with disabilities (Hameed and Manzoor, 2016; Roman Stephan, 2014). Further, each province focuses differently on the issue. For example, Punjab's focus is more on extending the educational services to its population with disabilities compared to Khyber-Pakhtunkhwa, which provides assistance in employment support (Hilhorst Rosemar and Mohammad, 2019; Roman Stephan, 2014). However, the non-availability of data at the national level and, lack of trained professional with requisite skills has further worsened the situation by making it difficult to address the issue. The legal framework is nonexistent or weak regarding protecting the right of persons with disabilities. The only legislation passed for persons with a disability was put forward in 1981, and since then, minimal changes have been made to the law. Also, research proposes that private and public agencies are not abiding by the existing quota of 2% allotted for the person with disabilities (Roman Stephan, 2014). A country with a diverse society does not have any anti-discriminatory law making the marginalised more vulnerable. Although, Pakistan did ratify the convention on the rights of persons with disabilities (CRPD) in July 2011.

### **3.3.2 Khyber Pakhtunkhwa and Federally Administered Tribal Areas (FATA)**

Khyber Pakhtunkhwa and tribal areas are located in the North West region of Pakistan on the Durand line with Afghanistan (See Map 3.1 for geographical placement of the regions in Pakistan).

The Tribal areas were merged into the Khyber-Pakhtunkhwa Province of Pakistan in 2017. These



Figure 3.1: Khyber Pakhtunkhwa (KPK) and erstwhile Federally Administered Tribal Areas (FATA), Pakistan

Based on maps from <http://www.kp.gov.pk>

were previously governed under colonial law of frontier crime regulation (Cyan et al., 2017; Yousaf, 2019). The frontier crimes rules are one of the least known political engineering of British Raj. The indigenous people were deprived of accessing colonial administration in British India such that by stereotyped them as “Tribal” and lawless people who were not interested in accepting “civilisation”. The colonisers justified their rule with such colonial discourse (Hopkins, 2015). The purposeful occlusion shaped the colonial subjects to be acted upon free of any obligation potentially having the status of colonial objects. The physical blockade was to confine them to the reservations. For example the consequences of putting native Americans in reservations resulted in their dependence on governmental aid (Hopkins, 2015). The British colonial rulers left the legacy of oppression in the shape of local militias and colonial administration which deprived them of fundamental civil and political rights. Instead of investing in the schools, colleges and legal system as the rest of British India enjoyed, the tribal region was reserved for strategic depth to keep influence on Afghanistan (Ahmed, 1978). Pakistan continued the British colonial policies towards the people of FATA by denying them fundamental human rights (Fair, 2014). The area is used as a

launching pad for training Jihadist to fight the Soviets and Americans in Afghanistan and India in Kashmir (Fair, 2009; Waldman, 2010). The restriction posed by security agencies as no go area and the nurturing of non-state actors served the Pakistani state interests of maintaining the status quo in the region (Edwards, 2003). The effect of these policies destroyed the social fabrics of the society (Yousaf, 2019) resulting in radicalism and religious extremism. The Post 9-11 and Pakistan military operations in the Tribal areas resulted in the Taliban's frequent attacks on educational institutions, specifically targeting girls and their schools (Khan et al., 2018). Millions of people were displaced, making Pakistan on the top of the list for internally displaced people. There are insufficient arrangements for the rehabilitation and settlement both at policy and implementation level (Asad et al., 2013; Chan and Kim, 2010). The internally displaced population especially children, is subjected to massive adversities such as missing from their families, mental problems, violence, and rape (Irfan et al., 2011).

The region has the lowest literacy rate 13.6% in Pakistan. Nonetheless, Pakistan assumes a low standard of illustration of literacy. The region has the lowest literacy rate, 13.6% in Pakistan. Nonetheless, Pakistan assumes a low standard of illustration of literacy. The national census includes anyone ten years or older as literate if they can read a newspaper and write a letter in any language (Najam and Bari, 2017). FATA ranked lowest in the country on its human development index (Zia, 2019). Pakistan is also one of the few countries in which polio virus still persists, and most cases are found in tribal areas and Khyber Pakhtunkhwa (Verma et al., 2018). Moreover, the region is contaminated with land mines. These mines continue to injure the civilians, mostly children (Chandran and Joseph, 2001). It is estimated that women and girls constitute almost 35% of mine victims, injured while fetching fodder for animals, crossing agriculture fields, and carrying out their daily activities (Hynes, 2004). The security forces have laid roughly 10,000 landmines only in the Mehsud inhabited area alone. In September 2017 Pakistan Parliamentary Committee on SAFRON (State and Frontier Regions) urged the government to establish a fund for landmines victims. A 2018 report on living conditions among people with disabilities in Federally Administered Areas by Islamic relief (the only international NGO permitted to work in the area) found that the trend of inter-family marriages in the FATA region put the newborn at high risk to be born with disabilities. People with disabilities lack access to health care and education. Furthermore, negative attitudes towards people with physical disabilities, risky working conditions, and gender roles within families are a few of the challenges people with disabilities face. Moreover, there is an inaccessible physical environment such as unpaved roads and streets at the village level block the movement of people with disabilities (Farooq, 2018).



## 3.4 Data measurement and research questions

### Data

#### ASER 2018: an overview

Our study's data is from the ASER survey conducted in 2018 in 154 rural districts of Pakistan. We have already explained the details about this survey in our previous two chapters. However, in this chapter, the focus is on children with disabilities, and we would like to present additional details. The data includes questions specifically concerned with disability prevalence. However, this information is only available for two provinces, namely Punjab and Khyber Pakhtunkhwa, along with Islamabad's capital territory. It is the first time that such data has been collected in the newly formed districts of former Federally Administered Tribal Areas or FATA. The data also comprises information on socioeconomic and demographic characteristics, parental education, and village characteristics such as availability of schools, health facilities, etc. Our chapter draws on data collected on 118,977 children age 3 to 16 years old. Less than 1 percent of children reported difficulties with seeing, hearing, walking, self-care, understanding. The learning assessment method is constructed specified by the Pakistani national curriculum 2006 on grade two to grade three.

#### Disability measurement in ASER 2018 Data

Disability is a complex phenomenon that has been measured in different ways (Mitra, 2017; Mont, 2007; Sen, 1985, 1993). However, our study follows the recommendations of the Washington Group (WG) on Disability Statistics, established especially for this purpose by UN Statistical Commission ( see for details: [www.cdc.gov/nchs/washington\\_group.htm](http://www.cdc.gov/nchs/washington_group.htm)). The ASER household data employs the definition and measure of disability undertaken by the Washington city group on disability statistics. In contrast, Pakistan's official census used a binary approach simply by asking whether someone is classified as disabled or not disabled. Keeping in view the negative socio-cultural norms associated with disability, many people decline to identify any family member as disable (Mont, 2007). Similarly, Jeffery and Singal (2008) in their study noted that non-disclosure could be the family members may not be aware of the real condition due to lack of information and the non-availability of health care facilities in rural areas. The Washington Group disability tested tools is one of the widely internationally accepted tools. The conceptual framing of disability in six physical and mental conditions are namely (walking, seeing, hearing, remembering and concentrating, self-care and communication). These conditions were measured on a four-point scale (no difficulty, some difficulty, a lot of difficulty, cannot do at all), and these measuring of

functioning are in contrast to the conceptual frameworks based on recording impairment or loss of various body structures, which lead to underestimates of disability prevalence criticised by major health functioning. The Washington Group short set of questions on disability has gone through ample cognitive and field testing in different languages and regions (Altman, 2016; Madans et al., 2011). In ASER 2018 the set of questions included were from the domain exhibited in Table 3.1.

## **Descriptive statistics on type and severity of disability**

Initially we presented the descriptive statistics of the children with disabilities concerning the type and severity of the disability. Our sample includes children of age 5 to 16 among which 2593 are those children with some type of disability making 4.2 percent of the total sample, (see Table 3.2 ). Out of those children 1919 that is 3.1 percent are with mild disabilities and 837 meaning 1.4 percent are with severe disabilities, this category includes children with a lot of difficulties. The purpose of identifying children disabilities according to type and severity is to identify the relationship with that of school enrolment and learning outcomes compared to children who were identified by the parents with having no disability. Further, according to the six-functioning domain of children disabilities the descriptive statistic shows that 714 children do have difficulty in seeing, of which 567 are with mild difficulty and 147 with severe disability. Children having difficulty in hearing makes 507 of which 337 are with mild disability and 170 are with severe disability. Children having difficulty in walking makes 598 that is 1 percent in total of which 381 (0.6 %) with mild disability and 217 (0.4%) with severe disability. Children who need help in self-care are 671 of which 452 are with mild and 219 with severe disability. With relation to being understood 671 out of which 487 with mild and 187 with severe difficulty. Similarly with relation to remembering 917 children were reported out of which 793 with mild and 154 with severe difficulty. The children who are having difficulties with remembering make the highest percentage in the children who were reported to have difficulties. This might refer to the psychological effects of war displacement and terror on children's mind in remembering (El-Khodary and Samara, 2019). Refer Table 3.2.

## **School enrollment**

Overall 76.55% of children age 5-16 in the ASER 2018 sample are enrolled in school whereas in Khyber Pakhtunkhwa a total of 67.5% of children are enrolled. The Table 3.3 shows the number of children with disabilities who are out of school by the type of disability in six functioning domains. Due to small sample size in the six domains of disabilities we cluster into three categories

Table 3.1: Survey question related to disabilities

Sr. No.	Question	Options
1	Does your child have difficulty in seeing, even if wearing glasses?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot see at all
2	Does your child have difficulty in hearing, even if wearing hearing aids?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot hear at all
3	Does your child have difficulty in walking, compared with children of same age?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot walk at all
4	Does your child have difficulty with self-care such as feeding or dressing him/herself, compared with children of same age?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot do at all
5	Does your child have difficulty in being understood by others using customary/usual language, compared with children of same age?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot understand at all
6	Does your child have difficulty in remembering things that he/she has learned, compared with children of same age?	Blank=No response 1=No difficulty 2=Yes some difficulty 3=Yes a lot of difficulty 4=Cannot remember at all
7	Does your child use any aids and appliances (tick as many as application)	Blank=No response 1=glasses 2=Hearing aids 3=Mobility aids (crutches, wheel chair etc) 4=others

Table source : [Annual Status of Education Report \(ASER\) \(2018\)](#).

to have meaningful analysis. We group each domain into three categories in the following way. The category I include, seeing, hearing and walking, category II consists of self-care and category III comprises being understood and remembering by doing so we will have significant analytical

Table 3.2: Disability prevalence for children age 5 to 16 in Khyber-Pukhtunkhwa and FATA (ASER Pakistan 2018)

Type of Difficulty	Total		Mild Disability		Moderate/Severe Disability	
	Freq.	%	Freq.	%	Freq.	%
Any Difficulty	2593	4.2	1919	3.1	837	1.4
Seeing	714	1.2	567	0.9	147	0.2
Hearing	507	0.8	337	0.6	170	0.3
Walking	598	1	381	0.6	217	0.4
Self-care	671	1.1	452	0.7	219	0.4
Being Understood	671	1.1	484	0.8	187	0.3
Remembering	947	1.5	793	1.3	154	0.3
<b>Total Sample</b>	<b>61209</b>					

Source: Author, using the ASER Pakistan database.

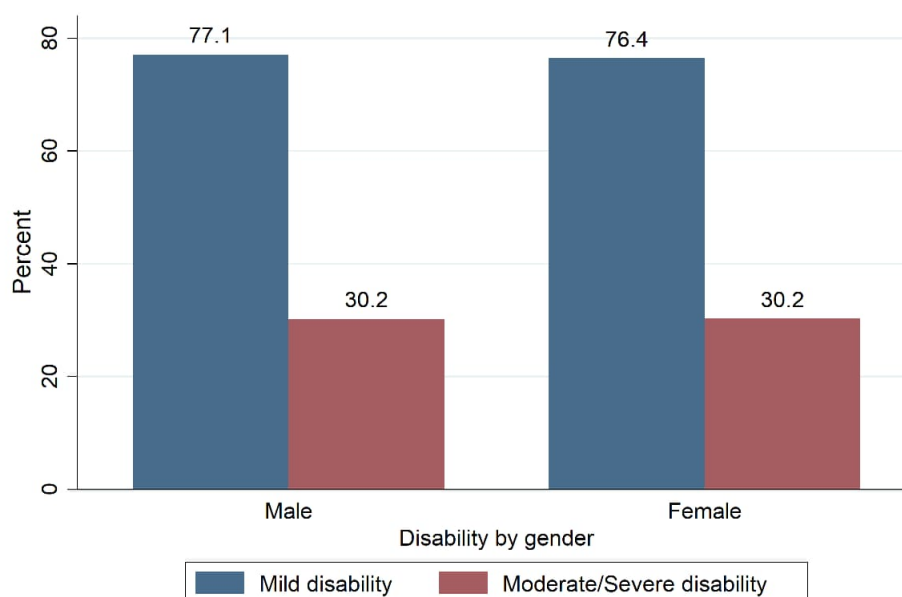


Figure 3.2: Moderate to severe disability by gender

Source: Author by using ASER 2018

robustness. Similar strategy has been followed by previously study (Malik et al., 2020; Singal et al., 2018).

Further, the percentage of girls out of school is higher than boys.

Table 3.3: School enrollment of Children with disabilities

Disability	Any Disability		Enrolled	Enrolled	Total	Total
	Not Enrolled					
	No.	%	No.	%	No.	%
Any Difficulty	743	3.7	1850	4.5	2593	4.2
Seeing	190	1	524	1.3	714	1.2
Hearing	135	0.7	372	0.9	507	0.8
Walking	179	0.9	419	1	598	1
Self-care	202	1	469	1.1	671	1.1
Being Understood	216	1.1	455	1.1	671	1.1
Remembering	271	1.4	676	1.6	947	1.5
<b>Total Sample</b>	<b>19,914</b>	<b>32.5</b>	<b>41,295</b>	<b>67.5</b>	<b>61,209</b>	

Source: Author, using the ASER Pakistan database.

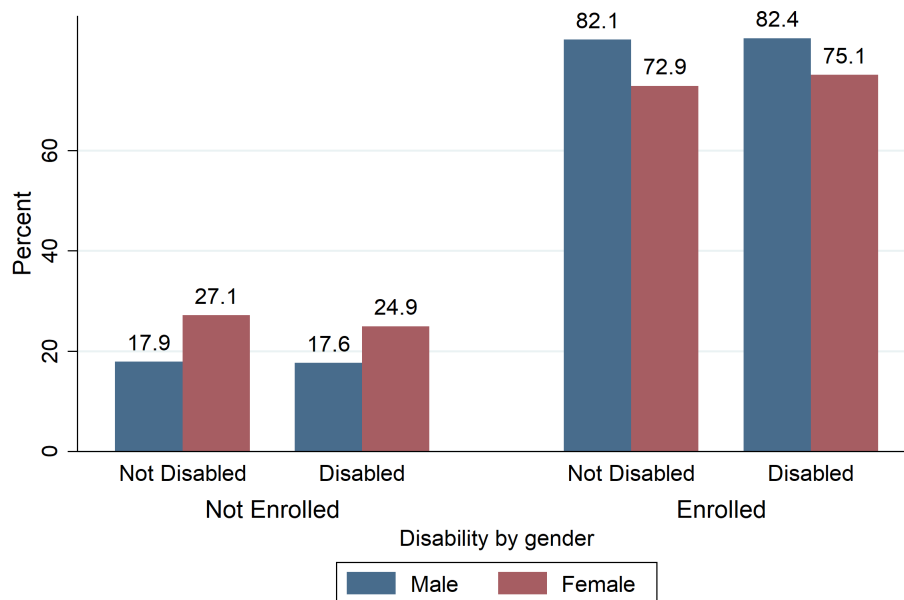


Figure 3.3: Education status of children by gender and disability

Source: Author by using ASER 2018

### 3.5 School enrolment and performance on reading and Maths assessment

ASER survey for the first-time adapted sign language and braille in collaboration with sight savers and family education services foundation (FESF) to assess learning outcomes in children with disabilities. The data on children education attainment is in categorical level and the purpose is

to screen children if they have basic proficiency in reading, English and Mathematics. According to ASER survey descriptions the highest difficulty level in each assessment can be interpreted as equal to Year 2 (age 5 years) of the Pakistan national curriculum level. This corresponds to children who are 5 years and older, who should be able to read sentences and short story written in English, and should perform simple sums in arithmetic. These are categorised in such a way that (Level 1) communicates to children who enter the school system with no prior learning experience. Similarly, (Level 2) correspond to those children who can recognise capital letters in English and numbers (1-9). The third category (Level 3) includes children who are able to read one syllable word, identify small letters of English, and identify number from (10-99). The fourth category (Level 4) is when a child is able to read short sentences, can read one syllable word in English and can do double figures subtraction sum. The fifth category (Level 5) is when a child is able to read a short story, read sentences in English, and able to do division operation in arithmetic's.

In our chapter, since the shift from one level to the next represents the same change in learning. That is to say, going from no knowledge level to basic level is supposed to be the same as going from recognition of words to paragraph reading. The same is true for the assessment of arithmetic level. The average values of the key independent variable are simply the fraction of children at that learning level in the sample. Children were assessed in three basic competencies, reading language, Urdu/Pushtu/Sindhi, reading in English and finally competency in Mathematics. The children in Khyber Pakhtunkhwa were assessed in Urdu, the national language and Pashto the mother tongue of the majority of people in the region. The basic reading test assesses if children are able to recognise letters, words, read sentences, and read a short story. These are followed by a bonus question on reading comprehension.

The assessment of English reading level includes if a child recognises capital letters, small letters, can read words and can read a sentence written in English. The reading score is categorised in five categories i.e. from nothing to highest level. The assessment of arithmetic levels of children contains if a child can recognise the numbers (1-9), (10-99), (100-200) and can perform simple sums of subtraction and division. For our own simplicity to make sense of learning levels, we dichotomized our dependent variable of arithmetic level, basic learning level in reading local language and basic learning level in English. It takes on a value of 1 if a child has mastered letters of (level 2) and 0 otherwise (cannot recognise any letter and is still on level 1 or 2). The arithmetic level is also binary and takes on a value of 1 if a child is assessed to be on level 3, 4, 5, mastered single digit number (level 2) and 0 otherwise (i.e. still has to master levels 1 or 2). The dichotomization of variable let us interpret the coefficients of our regression estimates without any difficulty. Similar method has been followed in studies concerned with educational attainment of children (see for example (Aslam and Atherton, 2014; Siddiqui, 2017; Siddiqui and Gorard, 2017; Singal et al., 2018)).

The assessment is guided on a one-to-one basis where the enumerator asks children to recognise a letter or number and continue with sentences and more difficult tasks. Children who are unable to complete a level of task difficulty are not tested further. ASER learning assessment methodology has a concurrent validity and higher inter-rater reliability (Banerji et al., 2013).

Table 3.4: Learning performance in literacy and Mathematics for children with Disabilities

	Beginner/Nothing		Recognition of 1-9		Recognition of 10-99		Recognition of 100-200		Subtraction		Division		Total	
<b>Numeracy</b>	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct
Disabled	268	3.9	124	3.9	212	4.6	286	4.6	422	4.8	661	3.8	1973	4.2
Mild Disability	159	2.3	94	3	128	2.8	220	3.6	358	4.1	520	3	1479	3.1
Moderate/Sever Disability	128	1.8	42	1.3	90	1.9	86	1.4	88	1	179	1	613	1.3
<b>Literacy</b>	<b>Beginner/Nothing</b>		<b>Letter</b>		<b>Words</b>		<b>Sentences</b>		<b>Story</b>					
Disabled	573	3.9	163	4.4	272	4	451	4.8	665	4.3			2124	4.3
Mild Disability	405	2.7	110	3	216	3.2	387	4.2	489	3.2			1607	3.2
Moderate/Sever Disability	208	1.4	64	1.7	76	1.1	91	1	213	1.4			652	1.3

Source: Author, using the ASER Pakistan database

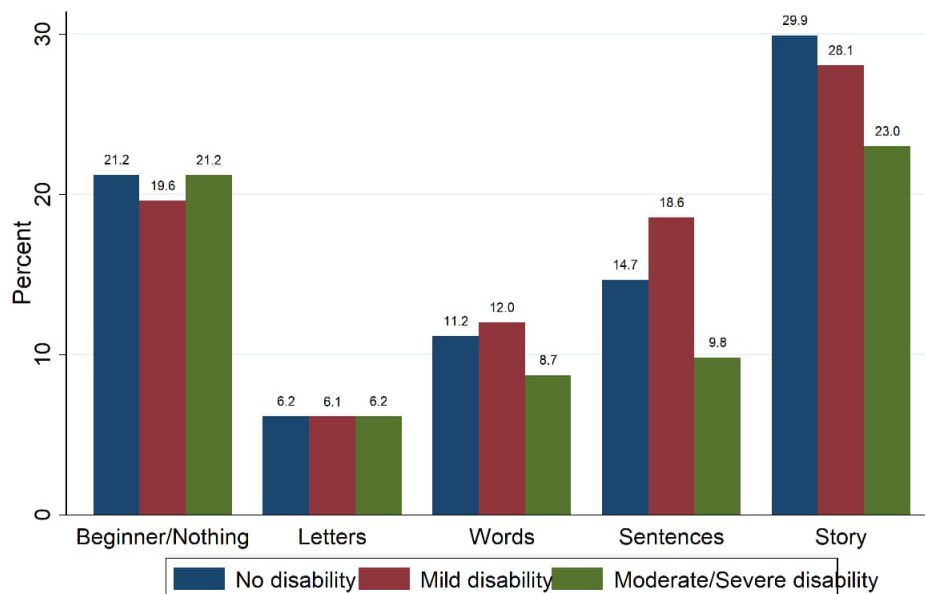


Figure 3.4: Type of disability and learning performance in literacy

Source: Author by using ASER 2018

Table 3.4 shows the overall performance in the reading, English and Maths proficiency tests of children reported as age 5 to 16. The assessment of children with any disability's mathematics assessment shows that the percentage of students who are unable to recognise one digit is higher in children who were reported as having any difficulty, this is true for both assessment of local language and English reading. The descriptive statistics also shows that overall there is learning crisis

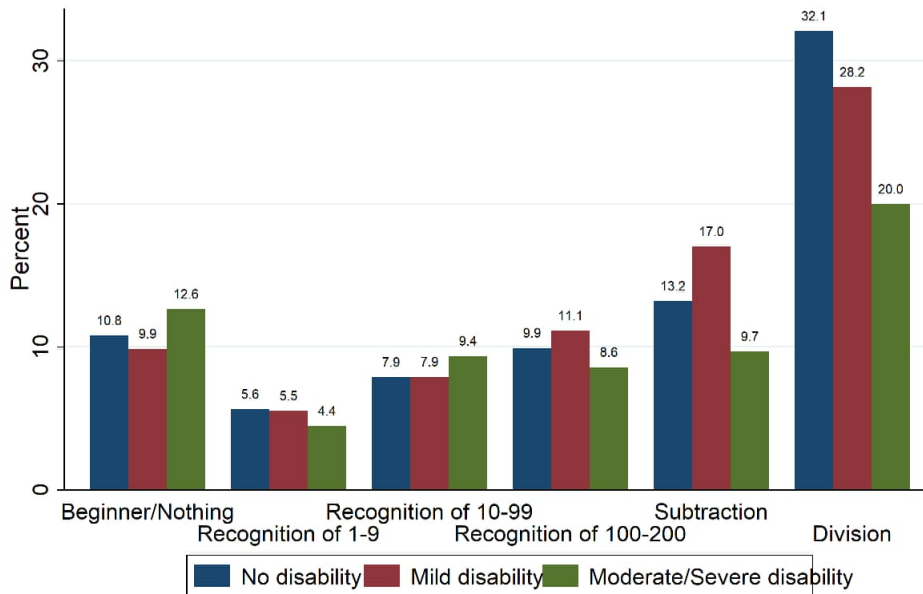


Figure 3.5: Type of disability and learning performance in Mathematics  
 Source: Author by using ASER 2018

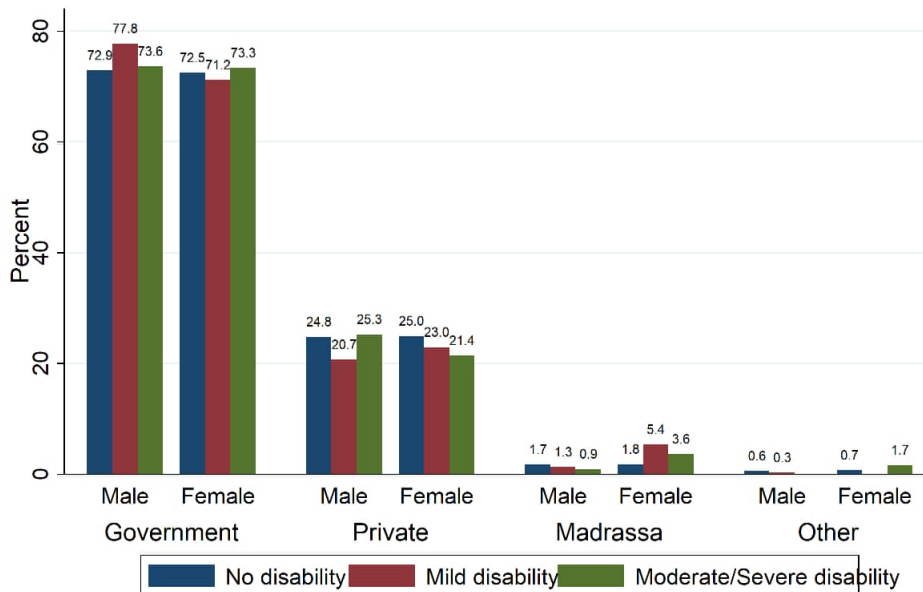


Figure 3.6: School enrollment Public, Private and Madrasa by gender and type of disability  
 Source: Author by using ASER 2018

Having identified indicators for disability, and education outcomes in the survey this chapter will now address empirically the following research questions.

1. Are children with disabilities less likely to be enrolled in school compared to children without



disabilities?

- Does school enrollment differ by degree and type of difficulty?
  - What are the determinants of school enrollment for children with disabilities such as socioeconomic status, education of parents and gender dimension?
2. Conditional on children school enrollment, are children with disabilities learning at school?
- Is there any difference in the learning outcome by the type and degree of difficulty?
  - What are the determinants of learning outcomes of children with disabilities such as socioeconomic status, education of parents and gender dimension?

### 3.6 Econometric framework

The convention on the Rights of people with disabilities was signed by Pakistan and education for Children with disabilities should be perceived as a human right and equity issue. By applying capability approach (Sen, 1999), advocates to provide inclusive education for all children with or without disabilities. The right of education for all may restrict children with disability having the opportunity to enrol and learn if they are not provided primary care givers, teachers and accommodation since there is an additional cost for these services. The capability approach (Sen, 1999) argues that providing the same resources to the people might not be a good idea of ensuring the same level of capabilities (opportunities). Sen notion of conversion handicap refers to limited ability to convert a given income into the good life. In this context we will try to find the access of schooling to all children as a step towards the delivery of providing practical opportunities for every child regardless of their disability status as our first research question identified above in our chapter. We use Probit model to analyse school enrolment of children who reported to be having any disability compared with children reported to be with no disability. Our dependent variable is binary in nature (0-1) used previously in similar studies (Kameyama, 2019; Lamichhane and Kawakatsu, 2015; Singal et al., 2020). The detailed description of variables used in our study are presented in Table 3.5. We estimate the following equation to analyse school enrolment

$$Pr(Y_{ij}) = \alpha + \beta_1 Di_j + \beta_2 MDi_j + \beta_3 SDi_j + \gamma_j + \beta_d + \varepsilon_{ij} \quad (3.1)$$

Where,  $Y_i$  is binary variable for enrolment of child  $i$  living in household  $j$ .  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  captures the effects of disability, mild disability (MD) and moderate/severe disability (SD) respectively.  $\gamma_j$  controls for parents and household characteristics.  $\beta_d$  are district fixed effects.

Table 3.5: Description of Variables

Variable	Definition
<b>Dependent variable</b>	
Enrolment	Binary : 1 if child is currently enrolled in school; 0 if either never enrolled or dropped out of school
Numeracy	Arithmetic levels: 1 if the child can recognise 1-9, 10-99, 100-200, subtraction and division; 0 if beginner or nothing
Reading local language	Basic Learning Levels: Reading in Local/National language.
Reading English	1 if the child can read letter, words, sentences and story; 0 if beginner/nothing. Basic Learning Levels: Reading in English language.
Family characteristics	1 if the child can read capital letters, small letters, words, and sentences; 0 if beginner/nothing.
Total-Children	Total Number of children under 17 in the household
Mother-Age	Mother's age
Mother Gone School	Binary : 1 if mother gone to school; 0 otherwise
Father-Age	Father's age
Father Gone School	Binary : 1 if father gone to school; 0 otherwise
Wealth Index	Wealth index created from different household components; Is house own? Type of house; katcha, semipucca, and pucca. Is electricity available? Is tv available? Is mobile available?
Wealth Quartiles	Wealth quartiles created from wealth index;
Poorest	Binary : 1 if it falls in the lowest wealth quintile; 0 otherwise
Poor	Binary : 1 if it falls in the second lowest wealth quintile; 0 otherwise
Richer	Binary : 1 if it falls in the second highest wealth quintile; 0 otherwise
Richest	Binary : 1 if it falls in the highest wealth quintile; 0 otherwise
Child going to Madrassa	Binary : 1 if the child if going to madrassa; 0 otherwise
Child going to Government schools	Binary : 1 if the child if going to public school; 0 otherwise
Child going to Private schools	Binary : 1 if the child if going to private school; 0 otherwise
Individual characteristics	
Gender	Binary : 1 if female; 0 otherwise
Child age	Child age

Source: Author, using the ASER Pakistan database

For our assessment of learning pertaining to children who are enrolled, we take a child's ability in learning maths and reading. For this purpose, we code the learning outcomes into binary variables at level 2. See Table 3.5. We are primarily estimating the number of children in our sample who have the knowledge and are able to identify the alphabets in case of (reading) and recognise single digit numbers in case of assessment of (Maths). We use a linear regression model (linear probability model) to estimate the parameters of the model that is associated with children's disadvantage in functioning with their knowledge in the two tests. We condition our estimation on children school enrolment and the type of school (public or private) they are enrolled. Additionally, we control for age, gender, and family characteristics and region. Further, we explore the performance of children in reading and maths of children with disabilities according to type and severity of disability. we estimate the following equation to analyse our the learning outcome

$$Pr(Y_{ij}) = \phi(\alpha_0 + \beta_1 MD_{ij} + \beta_2 SD_{ij} + \gamma_{ij} + \beta_d + \varepsilon_{ij}) \quad (3.2)$$

Where,  $Y_i$  is binary variable for learning outcome of child  $i$  living in household  $j$ .  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  captures the effects of disability, mild disability (MD) and moderate/severe disability (SD) respectively.  $\gamma_{ij}$  controls for parents and household characteristics.  $\beta_d$  are district fixed effects.

## 3.7 Results

### 3.7.1 Child enrolment Public Private and Madrassa

Our estimation results in Table 3.6 show that children reported having Moderate to severe disability in Khyber-Pakhtunkhwa province in Pakistan are 0.0344 points less likely to be enrolled compared with children who were reported having no disability. After controlling for individual characteristics such as gender and child age, family wealth, parental age and education along with regional controls (Model 1). Gender and wealth are one of the important determinants of school enrolment. In our estimation, girls are 0.138 points less likely to be enrolled in schools compared with boys. Moving next to the effect of household wealth on children with severe disabilities on school enrolment, we find that wealth has strong effect on children with severe disabilities. children who are in the poorest quartile are 0.0145 points less likely to enrol compared to children in the richest quartile. children living in the richer quartile are more likely to enrol compared to children in the richest quartile meaning those children in the rich household are better off compared with children of poorer household. The effect of parental education on school enrolment show that children with educated parents are more likely to enrol compared with parents who have never attended school.

Table 3.6: Marginal effects of school enrolment of children with disabilities

	Public School		Private School		Madrassa	
	(1)	(2)	(3)	(4)	(5)	(6)
Enrollment						
Any Difficulty	-0.000831 (0.00818)		5.17e-05 (0.0107)		0.0114 (0.0108)	
Mild Difficulty		0.0129 (0.00952)		0.00222 (0.0121)		0.0165 (0.0116)
Severe/Mod-difficulty		-0.0344** (0.0144)		-0.0184 (0.0196)		-0.00917 (0.0236)
Childage	0.222*** (0.00150)	0.222*** (0.00150)	0.192*** (0.00216)	0.192*** (0.00216)	0.111*** (0.00299)	0.111*** (0.00299)
Childage (square)	-0.00996*** (8.99e-05)	-0.00996*** (8.99e-05)	-0.00816*** (0.000128)	-0.00817*** (0.000128)	-0.00417*** (0.000159)	-0.00417*** (0.000159)
Girl	-0.138*** (0.00317)	-0.138*** (0.00317)	-0.115*** (0.00409)	-0.115*** (0.00409)	-0.0758*** (0.00442)	-0.0759*** (0.00442)
Total children	-0.00369*** (0.00117)	-0.00376*** (0.00117)	-0.0140*** (0.00148)	-0.0140*** (0.00148)	0.00151 (0.00145)	0.00148 (0.00145)
Poorest	-0.0146** (0.00580)	-0.0145** (0.00580)	-0.0759*** (0.00721)	-0.0759*** (0.00721)	-0.00693 (0.00843)	-0.00679 (0.00844)
Poor	-0.000700 (0.00508)	-0.000596 (0.00508)	-0.0613*** (0.00621)	-0.0613*** (0.00621)	-0.00538 (0.00778)	-0.00530 (0.00778)
Richer	0.0149*** (0.00574)	0.0150*** (0.00574)	-0.0124* (0.00698)	-0.0123* (0.00698)	-0.00464 (0.00927)	-0.00444 (0.00927)
Mother Gone School	0.0180*** (0.00432)	0.0180*** (0.00432)	0.0424*** (0.00539)	0.0424*** (0.00539)	-0.0400*** (0.00724)	-0.0400*** (0.00725)
Father Gone School	0.0341*** (0.00393)	0.0342*** (0.00393)	0.0571*** (0.00520)	0.0571*** (0.00520)	0.0268*** (0.00558)	0.0269*** (0.00558)
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53,549	53,549	45,478	45,478	26,389	26,389

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author, using the ASER Pakistan database

### 3.7.2 Type and severity of disabilities and child school enrolment

Our result presented in Table 3.7 on the type and severity of disability of children show that children who were reported having mild difficulties in (CAT III UR) are more likely to enrol in both Public and private school. Children with mild disability in (CAT III UR) are 0.131 points more likely to enrol in Public schools compared with children with no disabilities, on the contrary children with severe disabilities (CAT III UR) are 0.105 points less likely to enrol in Public schools compared with children with no disabilities. Children with moderate to severe disabilities are 0.106 points less likely to enrol in private schools compared to children with no disabilities. This implies that children with severe disabilities are less likely to enrol in both public and private schools. overall the results suggest that children with moderate disabilities are more likely to remain out of education system.

Table 3.7: Marginal effects of school enrolment relating type of school and difficulty

VARIABLES			
Enrolment	Cat I (SHW)	Cat II (SC)	Cat III (UR)
<b>Public Schools</b>			
Mild Disability	0.0430 (0.0324)	0.0164 (0.0633)	0.131*** (0.0384)
Moderate to Severe Disability	-0.0482* (0.0264)	-0.0230 (0.0408)	-0.105*** (0.0289)
<b>Private Schools</b>			
Mild Disability	0.0305 (0.0405)	-0.0526 (0.0457)	0.0753 (0.0463)
Moderate to Severe Disability	-0.0414 (0.0361)	0.0645 (0.0402)	-0.106*** (0.0345)
<b>Madrassa</b>			
Mild Disability	0.0425 (0.0561)	0.219** (0.103)	0.112 (0.0758)
Moderate to Severe Disability	-0.0228 (0.0451)	-0.0142 (0.0588)	-0.0581 (0.0605)

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author, using the ASER Pakistan database.

### 3.7.3 Learning assessment of Children in Reading and Mathematics

We would now turn to our results on learning conditional on school enrolment. Our estimation in (Table 3.8, Model 1) examine those children who are reported having any disability have 10 percentage points lower probability of being able to complete a single digit number recognition than children with having no disability recorded. Likewise, children who are reported having any disability have 10.1 percentage point lower probability of being able to recognise any alphabet in local language compared to children with no disability recorded (Table 3.8 Model 3). The assessment for assessment of English language shows that children who are having any disability have 11.9 percentage points less probability to recognise any alphabet compared to children with no disabilities. Similarly, our estimation shows that there is no difference in the likelihood of girls being able to recognise single digit and recognise alphabet in local language compared to boys. Whereas conditional on school attendance girls have less likelihood to recognise English alphabets compared to boys. The family wealth has positive effect on children likelihood meaning children with disabilities living in poorest household are less likely to perform well in learning assessment compared to children living in richest household, but overall wealth has very little effect on children learning. Next moving to the degree of difficulty, our estimation demonstrates that children with

any difficulty are 10 percentage points less likely to identify single digit, 10.1 percentage point less likely to identify the alphabet in local language and 11.9 percentage point less likely to identify English alphabet (see Table 3.8 column 1, 3, and 5) compared to children with severe disabilities who are 5 percentage points less likely to identify single digit and 7 percentage point less likely to identify the alphabet in local language ( Table 3.8 column 2 and 4). Our results presented in Table

Table 3.8: Parameter estimated std. errors for coefficients associated with type of difficulty to performance in Mathematics and Literacy

VARIABLES	Numeracy		Local Language		English Language	
	(1)	(2)	(3)	(4)	(5)	(6)
Any Difficulty	-0.100** (0.0470)		-0.101** (0.0480)		-0.119** (0.0563)	
Mild Difficulty		-0.0120 (0.0328)		-0.0285 (0.0360)		-0.0258 (0.0412)
Severe/Moderate Difficulty		-0.0521* (0.0287)		-0.0743** (0.0323)		-0.0494 (0.0377)
<b>Individual Characteristics</b>						
Childage	0.186*** (0.00363)	0.186*** (0.00363)	0.218*** (0.00378)	0.218*** (0.00378)	0.205*** (0.00433)	0.205*** (0.00433)
Childage (square)	-0.00756*** (0.000158)	-0.00756*** (0.000158)	-0.00885*** (0.000165)	-0.00885*** (0.000165)	-0.00840*** (0.000199)	-0.00840*** (0.000199)
Girl	0.000309 (0.00313)	0.000352 (0.00313)	0.000527 (0.00341)	0.000580 (0.00341)	-0.0321*** (0.00431)	-0.0321*** (0.00431)
<b>Family Characteristics</b>						
Mother Age	0.000138 (0.000433)	0.000143 (0.000433)	0.000401 (0.000463)	0.000407 (0.000462)	-0.00215*** (0.000555)	-0.00215*** (0.000555)
Father Age	-0.000512 (0.000370)	-0.000508 (0.000370)	-0.000519 (0.000401)	-0.000514 (0.000401)	0.000189 (0.000465)	0.000191 (0.000465)
<b>Family Wealth (Ref. Cate. Richest)</b>						
Poorest	-0.0254*** (0.00506)	-0.0251*** (0.00506)	-0.0185*** (0.00545)	-0.0181*** (0.00545)	-0.0174** (0.00684)	-0.0172** (0.00685)
Poor	-0.0171*** (0.00418)	-0.0169*** (0.00418)	-0.0112** (0.00449)	-0.0109** (0.00449)	-0.0127** (0.00580)	-0.0126** (0.00580)
Richer	-0.0233*** (0.00466)	-0.0229*** (0.00466)	-0.0216*** (0.00503)	-0.0212*** (0.00504)	-0.0191*** (0.00652)	-0.0189*** (0.00653)
Mother Gone School	-0.00363 (0.00374)	-0.00355 (0.00374)	-0.00143 (0.00399)	-0.00133 (0.00399)	-0.00494 (0.00507)	-0.00489 (0.00507)
Father Gone School	-0.00234 (0.00347)	-0.00237 (0.00347)	0.000556 (0.00379)	0.000500 (0.00379)	-0.00922* (0.00477)	-0.00924* (0.00477)
Child enrolled in public school	0.129*** (0.0146)	0.129*** (0.0146)	0.122*** (0.0158)	0.122*** (0.0158)	0.419*** (0.0163)	0.419*** (0.0163)
Child enrolled in private school	0.125*** (0.0148)	0.125*** (0.0148)	0.125*** (0.0161)	0.126*** (0.0161)	0.420*** (0.0168)	0.420*** (0.0168)
District FE	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Constant	-0.176*** (0.0271)	-0.177*** (0.0271)	-0.367*** (0.0285)	-0.368*** (0.0285)	-0.615*** (0.0330)	-0.615*** (0.0330)
Observations	34,064	34,064	32,570	32,570	32,985	32,985

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author, using the ASER Pakistan database. Note: Disability interactions with family characteristics are included but not showed here

3.9 on the type of children with disabilities shows that those children who reported to having mild difficulties in (CAT II SC) are on average 18.7 percentage less likely to recognise a single digit numbers compared to children who were reported with no disabilities. Similarly, in (CAT III UR) children with severe disabilities are on average 6.3 percentage point less likely to recognise single digit numbers compared to children with no disabilities. In the same way in (CAT II SC) children

with mild disabilities are on average 16.7 percentage points less likely to recognise alphabets in local language compared with children with no disabilities. the children with severe difficulty (CAT I SHW), (Cat II SC) and (Cat III UR) are on average 6.38, 11.1 and 9.56 percentage points less likely to recognise alphabets in local language compared to children with no disability recorded. Finally children who were reported having mild difficult in (CAT II SC) are 12.8 percentage point on average to recognise alphabet in English , and children with severe difficult in the same category are 11 percentage point less likely to recognise alphabet in English compared to other children who were recorded with no disabilities. overall there are learning gaps in children with both mild and sever disabilities compared to children with no disabilities.

Table 3.9: Parameter estimated std. errors for coefficients associated with type of difficulty to performance in Mathematics and Literacy

VARIABLES	Cat I (SHW)	Cat II (SC)	Cat III (UR)
<b>Numeracy</b>			
Mild Disability	-0.00562 (0.0268)	0.187*** (0.0590)	0.0326 (0.0381)
Moderate to Severe Disability	-0.0288 (0.0222)	-0.110*** (0.0359)	-0.0630** (0.0264)
<b>Local Language</b>			
Mild Disability	0.0137 (0.0311)	0.167** (0.0659)	0.0495 (0.0404)
Moderate to Severe Disability	-0.0638** (0.0254)	-0.111*** (0.0389)	-0.0956*** (0.0263)
<b>English Language</b>			
Mild Disability	-0.0203 (0.0411)	0.128* (0.0652)	-0.0199 (0.0533)
Moderate to Severe Disability	-0.00401 (0.0319)	-0.110** (0.0437)	-0.0364 (0.0348)

Robust standard errors in parentheses\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: the model control for age, gender, wealth index, parental education, school type, and district FE.

Total number of observation for numeracy are 36,255 and for literacy 36169

### 3.8 Conclusion and discussion

Using a large sample data from Pakistan, our study examined the school enrolment and learning level for children with disabilities in the post-conflict scenario in the Khyber Pakhtunkhwa province and the newly merged districts of federally administered tribal areas (FATA) of Pakistan. Our

finding suggests that children with severe disabilities face difficulties in school enrolment compared to children without disabilities. Moreover, girls with disabilities are less likely to enrol compared to boys. Further, our results suggest that regardless of disability status children living in poorer household are less likely to enrol compared to children from richer households. Our results are consistent with previous studies ([Lamichhane and Kawakatsu, 2015](#); [Mitra, 2017](#); [Singal et al., 2018](#)).

We find that children who were identified as living with any disability are more likely to enrol in public schools than in private schools. Children with severe/Moderate disabilities are less likely to enrol in private schools. The results signify the parental tendency of sending their children with disabilities to low-cost public schools. Our results are in line with previous studies in a similar context, which show that parents neglect children with disabilities and reluctant to spend money on their children with disabilities ([Singal, 2016](#)). Although, we do not have any information regarding the parental decision in the data. Further research is needed to find out the access of children with disabilities into public and private schools.

One interesting finding of our study is that the children from a madrassa (religious seminaries) our results show that children who were reported as having mild disabilities are more likely to enrol in madrassas compared to children with no disabilities. Madrassas education is one of the largest in the region. They are free of cost and offer children accommodation and food. Our results show that parents prefer to send children with disabilities to madrassas instead of schools. Previous research indicates that Khyber Pakhtunkhwa faltering education system compels parents to send their children to madrassas, especially those who cannot afford to raise their children. Research suggests that children are exploited as suicide bombers in wars from this region ([Fraser et al., 2017](#)). However, further research is needed to find if children with disabilities are exploited in wars and are enrolled in madrassas.

Our results for learning performance of children reported as having any difficulty had lower learning levels in literacy and mathematics than children with no disabilities recorded. Girls are disadvantaged and have a lower level of English literacy compared to boys. This might be due to the restriction in attending private tuition or unavailability of qualified teachers for girls as the region faces strictly segregated schools for boys and girls. The results signify double discrimination for girls with disabilities in the region.

An important finding of our study is regarding the learning of children with the category of learning. In CAT II of self-care, children's performance in both literacy and mathematics are better than children with no disability recorded. However, overall, children with severe difficulties have lower learning levels in all categories. Although the ASER data on assessing learning outcomes for



children is criticised for its quality in linking it assessing student's ability and making judgements in relation to a broader definition of meaningful learning, ASER learning tools; for the first time, are also being adapted Sign Language and Braille in collaboration with Sight-savers and Family Education Services Foundation (FESF). Nevertheless, this is the only available data on out of school children and educational outcomes in the Pakistani context. Moreover, the data is supportive in highlighting the learning crisis and post-conflict scenario with a focus on children with disabilities. Our findings suggest that an inclusive education policy is necessary for achieving universal agenda of enrolment and quality education.

# Chapter 4

## Education and women empowerment disparities in Afghanistan

### 4.1 Introduction

Gender inequality exists in a major part of the world but is severe in developing countries. Girls have fewer educational opportunities, reduced labour force participation, less autonomy over choosing a partner, and childbearing (Dhar et al., 2018; Duflo, 2012). Studies suggest that cultural norms play an important role in shaping women's roles in society (see for example; Fernández et al., 2004). Gender discriminatory practices such as cultural stereotypes at school and work, restriction of women mobility in public spaces, parental attitude towards their daughter education, early child marriage are few hurdles in achieving gender equality goals. Moreover, studies have emphasised the importance of cultural norms in shaping gender gaps (Bertrand et al., 2015). Societies have different cultural beliefs about women's appropriate role in a society deeply embedded in their historical roots (Fernandez, 2007; Nunn, 2009).

Moreover, societies differ in gender norms regarding women's role in labour participation, education, marriage, fertility choice, and domestic violence. Gender norms directly influence women's well being (Giuliano, 2017). These norms pass from one generation to another and continue to persist

(Attias-Donfut, 2000). Legal, traditions, customs, religious or cultural constraints constitute one of the several factors that may widen these gender gaps and inequalities. Moreover, there is some evidence that early childhood and youth exposure to conflict impact attitude to domestic violence in later life (La Mattina et al., 2017). Similarly, research shows that civil war and genocide impact women's bargaining power in later life (La Mattina, 2017).

Afghanistan was under Taliban rule from (1996 -2001) and imposed gender-specific restrictions throughout its rule. Women were restricted to the four walls of the boundaries. Taliban banned women from appearing in public. The group banned girls from attending schools and accessing health care (Ahmed, 2000). The event of 9/11 and the subsequent invasion of the United States resulted in the removal of the Taliban from power in 2001; a new government was replaced by an elected president (Larson, 2009).

This chapter will try to analyse if individual exposure to Taliban rule has some impact on labor, educational outcomes, and women empowerment in later life. Little is known about women's education and well-being at the time of the Taliban's rule, and particularly the impact of social constraints on education and women empowerment. This chapter's concern is to analyse the effect of 'Taliban's rule' on educational outcomes and women empowerment in Afghanistan. In this regard, our empirical strategy relies on the difference and difference model taking the rule of Taliban as a natural experiment. Taliban ruled the majority 90 percent of the country's territory. However, they never succeeded in taking control of some provinces; these provinces remained under the Northern Alliance's control, the rival group that opposed the Taliban's rule. The rule of the Taliban was gradual depending on the year starting from 1994 of Kandahar province and succeeding Kunduz and Parwan provinces' control in late 1999. The number of years of exposure for individuals differed depending on the province of residence and year of birth while they were of school age. Firstly, we examine the effect of the Taliban rule on educational, labour outcomes of women depending on their year of birth and place of residence women who were exposed to the Taliban's rule. Next, we look into the effect of individuals' exposure to the Taliban regime on women's empowerment, such as economic autonomy, decision-making autonomy, and emotional autonomy.

Our results show that an increase in the number of years of exposure to Taliban rule, while the women were of her school-age negatively effect the educational outcomes of women compared to the control group. Similarly, for our outcome variables of women empowerment. We find that women who were of her school-age during Taliban rule are more likely to own land than women in the control group. Our results in the economic category of women empowerment outcome show that women who were exposed to the Taliban rule are less likely to have a say in how to spend their husbands' income compared to the women in the control group. Further, for the decision making autonomy, we find that women exposed to Taliban rule are less likely to decide about their

healthcare, visit their relatives and decide on household purchase compared to the control group. For our outcome variables of emotional autonomy, women's perception on beating. Women who were exposed to the Taliban's rule are more likely to view that their beating by husband is justified compared to the control group. Finally, we find that men who were exposed to the Taliban rule are more likely to justify wife-beating when she goes out without informing him compared to the men who were in the control group.

We compute a set of placebo regressions to support the assumption of parallel trends for the treatment and control groups. Placebo regression is essential while using the difference and difference method. For our placebo regression, we exclude all those individuals who were of school age in the Taliban rule. We compare all those individuals who were of school age (5-17) and were exposed to the rule of President Burhanuddin Rabbani in the year (1992-1996) with women at school age who were exposed to the government of President Najibullah (1987-1992). Our results for the placebo regression are statistically insignificant, which gives us validation for the methodology difference and difference model that we have adopted. It also supports the idea that our findings are not because of any policy shift and government change before the Taliban.

For robustness check of our result that control for differences across provinces, we include the emigration rates and the violent events that occur before, during, and after the Taliban's rule. The rest of the chapter is organized as follows: Section 2 presents a comprehensive literature review. Next, in section 3, we briefly elaborate on Afghanistan's demographic and political background, followed by Afghanistan's education system. In section 4, We then proceed by explaining the data set and descriptive statistics. Further, in section 5, we highlight our econometric strategy adopted for this study. Finally, in sections 6 and 7, we will discuss our results and conclude the chapter with recommendations.

## **4.2 Literature review**

### **4.2.1 Women empowerment issues and challenges**

Women empowerment is a multidimensional concept that aims to measure not only women's ability to control resources but also their ability to choose and control different outcomes and enhance their self-esteem (Narayan-Parker, 2005). Empowerment refers to the process of achieving agency - that is, achieving an ability of making a choice on one's own behalf (Kabeer, 2005). The empowerment process involves various level of changes that assists women in achieving the agency (Njoh and

Ananga, 2016). Empowerment is not merely the ability to exert power over people and resources. It involves the exercise rather than possession of power. Empowerment is a process allowing both men and women to get involved as well as to oppose and subvert power relationships. Its institutionalised and discursive practice where individuals and groups experience and encounter empowerment through developing skills consciousness and making decisions. Developing consciousness, making decisions, and skill development take place within the structural and institutional constraints of society. Groups are empowered through collective actions, but they are hampered by the structure of power they came across. In the words of Naila Kabeer, 'empowerment is both a process and an outcome. It is a process in that it is fluid, often unpredictable, and requires attention to the specificity's of struggles over time and place. Empowerment can also be seen as an outcome that can be measured against expected accomplishments. In recent years, subjective measures of well-being on subjective judgements have been helpful in measuring human development (Anand, 2016). Empowerment for women only happens when they can envisage a different life and consider themselves able and entitled to make decisions. studies have assessed empowerment across multiple domains (see, for example, detailed discussion on the topic (Malhotra et al., 2002; Mishra and Sam, 2016; Pratley, 2016; Sharaunga et al., 2019)).

Researchers come up with two different approaches on how to use the information contained in the woman's responses are prominent. The first approach focuses on specific dimensions of autonomy. It reflects the rationale that female autonomy is context-specific and that the importance of different dimensions may vary from one setting to the next Jejeebhoy and Sathar (2001), for instance, consider women's autonomy in terms of freedom from violence, mobility, control over resources, and contributions to decision making while Vlassoff (1992), Jejeebhoy and Sathar (2001) as well as Morgan and Niraula (1995) consider three dimensions of autonomy, control over resources and contributions to decision-making power and mobility. Chavoshi et al. (2004) use distinct variables on mobility, decision-making access, control over resources and freedom from threat to analyses women's reproductive behaviour in Iran. A drawback of this approach is in the underlying assumption that the answers to the questions provide a perfect measure of the underlying unobserved autonomy trait. The second approach employs summary indices constructed from answers to questions mentioned above. For example, Hogan et al. (1999) construct an index using questions on who purchases major items, consumption patterns, resource allocation, joining a women's club, sending children to school, and age at which girls should marry. Afridi (2005) summarises the various aspects of female autonomy into a single index as do Chakraborty and De (2011) who create an index from the principal components of a variety of household variables on which the mother of a child takes decisions. However, Agarwala and Lynch (2006) criticise this approach on the grounds that it is too simplistic and ignores differences across measures. The addition of qualitative answers into a single index implies that each answer is given equal

weight in determining a woman's autonomy. However, there are good reasons to believe that some aspects of a woman's life are most important for her autonomy than others. [Ewerling et al. \(2017\)](#) developed a SWPER index, constructed by using Demographic and Health Survey data of 34 African countries by targeting currently partnered women. The principal component analysis method is used to extract the components. The index encompasses three well recognised domains of women's empowerment (attitude to violence, social independence, and decision making. The SWPER enables within-country and between-country comparison.

These indices have three significant limitations: first, the weightings used for the items were chosen subjectively, they are only applied to married women because most questions related to empowerment are restricted to this group; and third, they were designed for specific countries or small groups of countries preventing broader comparisons across countries.

In summary, all measures of autonomy used to date have faced problems of endogeneity of covariates in the model or measurement errors. The set of variables concerning women empowerment included in our analysis is justified in the context of Afghanistan. The demographic and health survey asked a wide range of questions that assess maternal decision-making autonomy on a range of issues. We consider women empowerment based on a different set of questions asked from women in the survey as our outcome variables independently.

#### **4.2.2 Social constraints and access to public goods**

A burgeoning economic literature has examined the delivery of public goods such as security, justice, education, and health by radical religious groups. Studies suggest that radical religious groups may become a major provider of public services in countries with weaker institutions ([Berman, 2003](#); [Berman and Laitin, 2008](#); [Iannaccone, 1998](#); [Iannaccone and Berman, 2006](#)). In the context of Afghanistan, "The Taliban deal with a wide range of public delivery services such as health, education, finance, and media relations ([Jackson and Weigand, 2019](#)).

Similar groups in other parts of the world exist, such as Hamas in the Gaza Strip and Hezbollah in Lebanon. The three groups share attributes as being a radical militants group. However, there are some differences in the type of public goods based on the demand by their people in each country (see ([Berman, 2011](#))). Each group legitimises their rule and increases support for their respective groups where there is a high demand for each type of public goods service. Hamas and Hezbollah provided public goods such as education and health whereas, the Taliban provided Public safety and justice ([Berman, 2003](#)). In addition, recent years have witnessed the expansion of public services such as justice, health, and education by the Taliban ([Noury and Speciale, 2016](#)).

Religious groups or sects view secular society as threatening and therefore distance themselves from secular society employing prohibitions and sacrifice. Religious prohibitions are restrictions on behaviour, for example, dietary restrictions, dress code, restriction on sexual behaviour, etc. sacrifices are acts, which are expensive or impossible to reverse, such as circumcision, bloodletting, and other initiation rites. The group usually demand high levels of commitment and high rates of participation. The rational choice framework for the study of religious sects, proposed by studies predicts that the threat of group member's defection can rationally explain episodes of destructive behaviour and gratuitous cruelty for example in the case of the Afghanistan Taliban subjugated women, homosexuals, and minorities (Berman and Laitin, 2008). The control of behaviour is not only limited to the members of the religious or political group but also the non-group members of the society (Iannaccone, 1998).

Similarly, Berman and Laitin (2008) suggested that the repression and abuses of the masses in Afghanistan strengthen the Taliban's control fraternity in both higher ranks and troops, restricting member's defection by mixing with outsiders. Similarly, studies have documented early age exposure to civil war on domestic violence in later life (La Mattina et al., 2017) . Consequently, these studies indicate that exposure to gender-inclusive or discriminatory interventions can have an impact on gender attitudes over a lifetime (Dhar et al., 2018).

Noury and Speciale (2016) by using data from the National Risk and Vulnerability Assessment (NRVA) 2007-2008 survey found that an additional year of exposure to the religious rule in Afghanistan reduces the probability of women completing basic schooling by two percentage points. They are more likely to be employed in an agricultural farm of the household and less likely to be employed outside. Further, the exposure to religious rule increases their chance to get married at an early age and have more children. However, the study is limited to the human capital outcomes of women under the Taliban's rule.

Recent years have seen a surge in the amount of literature in the context of Afghanistan. However, it continues to be understudied when compared to other underdeveloped countries. To our knowledge, no other study has examined the economic consequences and well being of women under Taliban rule. The research is of considerable importance in a country where the literacy rate, school enrolment, and women's well-being depict a bleak picture. Also, women are historically excluded from the public sphere and deprived of their fundamental human rights. Recent reports suggest that the Taliban controls more than one-third of Afghanistan. The US and Taliban agreed on a conditional peace deal in February 2020 (Pilster, 2020). All these advancements will have both economic and social consequences for women in the future. Therefore, this study will be an important contribution to the literature on Afghanistan and particularly the effect of social constraints on educational outcomes and women empowerment.

### 4.3 Afghanistan's demographic and political background

Afghanistan is a landlocked country with approximately 32 million inhabitants (Bindu, 2017). Women and girls make half of the total population (United States central intelligence agency 2017). Afghanistan scores very low on the human development index (GROUP et al., 2018). The country ranked last on the United Nations gender inequality index out of 170 nations (Blum et al., 2019). Women face extreme economic and social constraints, owing to three decades of civil conflict. Women live under strict tribal codes and cultural mores that curtail interactions between unmarried men and women. Afghanistan a strictly gender-segregated society, women virtue is associated with family honour, and men have the power to exercise the authority to restrict their behaviour and movement (Moghadam, 2002). The principle of purdah dictates that women should be away from public view. These norms render local governance a strictly male-dominated activity (Boesen, 2004). Besides historical, religious, and legal forces, ethnicity is an important factor at play (Chiovenda, 2014). There are regional variations in norms among different ethnic groups, with women being restricted to houses in the majority Pashtun areas (Azarbaijani-Moghaddam, 2010). The foundation of governance in rural Afghanistan is the local jirga or shura; a participatory council made up of men (Behera and Pfeffer, 1999; Ginsburg, 2011).

Historically, the shura has traditionally managed local public goods and adjudicated disputes due to incompetence and lack of resources of the central government to exercise local control and provide resources in any part of the country (Barfield, 1984). The primary role of rural Afghan women is in the household, taking care of children and other family obligations. Though women also look after livestock and tend to small plots of land, few of them own such assets (Grace, 2005). Women autonomy over their own economic and family affairs is severely restricted by the commonly held norms that women and their offspring are under the proprietary control of the male head of household as manifested in their inability to inherit property and make choices about marriage partners and their children (Boesen, 2004). One such example in these societies is the occasional practice of giving girls in marriage to settle intra-household feuds or debts. Female mobility is also constrained by customs that require a woman travelling outside her village to have a male relative as an escort and even place restrictions on women's movement within their village. These measures prevent girls from attending school beyond a certain grade. Lack of access to education and without free mobility, women are left with few opportunities to generate income and exercise control over any assets in their possession (Blum et al., 2019).

The country has been in armed conflict for more than four decades. From the Soviet invasion to the civil war and the consequent years of the Taliban rule, women have experienced the wrath of the conflict in the form of severe human rights violations. Historically the gender issue in



Afghanistan served as a symbolic instrument serving to foster large political ideals. The most significant state-initiated gender policies occurred during King Amanullah’s reign (1919-1929) as part of his modernisation plan; the Marxist regime (1978-1989) as part of their revolutionary political scheme; the Mujaheddin/Taliban regime (1992-2001) as part of ‘pure Islamization’ of the nation. Finally, the current Islamic Republic of Afghanistan (2002 to the present) with the establishment of the first-ever ministry of women affairs (Zulfacar, 2006). Taliban (1996-2001)



Figure 4.1: Taliban occupation of Afghanistan  
Source: BBC

a religious and political group whose majority members belong to ethnic Pashtuns (Johnson and Mason, 2007). The majority of Taliban leadership studied in Pakistani (Deobandi) madrasas, which had their origin from India. Taliban emerged during the 1994 civil war in Kandahar province under the leadership of Mullah Omar during the provisional government of Burhanuddin Rabbani after the fall of the last Soviet-backed government (1992-1994) of president Muhammad Najibullah. The rule of the Taliban was gradual (see Map in Figure 4.1) on the occupation timing at the provincial level. The yellow colour represents the provinces captured by the Taliban in the Year 1994, such

as Zabul, Uruzgan, Daikondi, and Kandahar, which is also (the birthplace of its supreme leader Mullah Umar). The year 1995 saw major territorial gain for the Taliban, provinces in the grey such as Hilmand, Nimroz, Farah, Ghor, Herat, Ghazni, Paktika, Khost Logar, and Wardak were captured. The group announced the Islamic Emirate of Afghanistan in September 1996 after seizing Kabul along with provinces coloured in pink such as Paktya, Nangarhar, Logar, Kunara, Nuristan, and Badghis (Magnus, 1997).

After the announcement of Islamic Emirates of Afghanistan, the group made further territorial gains in 1997; the provinces Takhar, Faryab, Sari Paul, Jawzjan, and Balkh were captured in 1997 (see Map in Figure 4.1 coloured in black) followed by Bamyan, Samangan, and Baghlan in 1998 (see Map in Figure 4.1 coloured in green). The last provinces captured by Taliban were Kunduz, and Parwan coloured in Orange. However, Taliban failed to capture two provinces in the north of Afghanistan. Panjshir, and Badakhshan provinces remained under the control of the rival group Northern Alliance (D.1 see map coloured in red). The Northern Alliance was a group of opponent parties that resisted the Taliban's rule under the nominal leadership of President Burhanuddin Rabbani. Influential leaders of the Northern Alliance were mainly non-Pashtuns, such as Ahmad Shah Masood of Jamiat-i-Islami, General Abdul Rashid Dostum ethnic Uzbek Junbish-i-Milli (National Movement). Karim Khalili of The Hizb-i-Wahadat-i-Islami-ye- Afghanistan (Islamic Unity Party Of Afghanistan) among others (Ghufran, 2001). Provinces such as Baghlan, Kapisa, Laghman, Kunar, Nuristan, and Takhar were captured or contested until the United States and its allies overthrew the Taliban in response to the 9/11 attacks (Katzman, 2010; Magnus, 1998; Rashid, 2000). The group implemented Shariyah. Women were restricted to their homes, not allowed to seek healthcare or visit relatives without donning burqa and being accompanied by a male family member (Rubin, 1999).

Girls older than eight years were not allowed to interact with any male outside the family (Griffin, 2001; Iacopino, 1998); the Taliban used violence in the form of public punishments to enforce such restriction (Goodson, 2001). The regime was termed as an extremist religious group by major world powers Russia and the United States, and the UN. Among other differences, three countries, Pakistan, Saudi Arabia, and the United Arab Emirates, recognised Afghanistan's government. On the contrary, the Northern Alliance government represented Afghanistan on the diplomatic front in the major part of the world, despite having two provinces in their control.

The attack on the world trade centre on 9/11 led to the US invasion of Afghanistan that eventually resulted in formally ending the rule of the Taliban and paved the way for the establishment of a new democratic government in 2002. The invasion was ideologically justified under the banner of democracy and women's rights. The new government undertook several initiatives to improve the situation of women, including policy changes and programmatic supports for women and children

(Samar et al., 2014). Afghan women still face widespread discrimination such as domestic violence, abduction, rape by armed groups, trafficking, forced and child marriages. Girls in Taliban controlled provinces are less likely to attend schools, do shopping, and visit hospitals. The Taliban regrouped in neighbouring Pakistan and launched attacks on government installations, schools, hospitals, offices, and public spaces along with attacks on the allied forces international security assistance force (ISAF) and the Afghan security forces. In the words of Jackson and Weigand (2019): “The Taliban are no longer a shadowy insurgency; they are now a full-fledged parallel political order.”

The current head of the Taliban is Sheikh Haibatullah Akhundzada with two deputies, Mullah Yaqoob s/o Mullah Umar and Sirajuddin Haqqani s/o Jalal Uddin Haqqani. The head is advised by the council, who had key positions in the movement, followed by the advice of the council comprising key figures across the movements based in each district. Both military and civil commissions are dealing with a wide range of public delivery services in each district, from health and education to finance and media relations. The leadership of the Taliban is residing in Pakistan cities, mainly Peshawar and Quetta. According to the United States special inspector for Afghanistan reconstruction, the number of districts Taliban control has doubled between 2015 and 2018.

Gender relations in Afghanistan are not static. They are constantly in the process of change (Shalinsky, 1996; Smith, 2009). Li et al. (2018) found that majority of Afghans, both men and women justify interpersonal violence such as husbands beating wives and parents beating children. Human rights watch reported that due to early marriages and domestic violence, an estimated 2,000 Afghan women attempt suicide by setting themselves on fire every year. Despite post-Taliban legal reforms, including enshrining gender equity and the introduction of new laws against domestic violence in the constitution of Afghanistan the country ranked 154th out of 157 in gender equality (UNDP, 2015). Young girls are raised and dressed as boys to avoid rigid gender norms. This serves as an alternative for women and girls to get an education, acquire mobility and participate in revenue-generating activities (Corboz et al., 2019).

In Afghanistan, primary education consists of grades 1 to 6 starting at age six, lower secondary education consists of grades 7-9 (twelve to fourteen years old) and higher secondary for grades 10-12 (fifteen to eighteen years old). Education is free at public institutions from grade 1 until the undergraduate level. Enrolment is heavily skewed toward the lower grades and boys. There exist significant disparities by province and gender exist in the enrolment. The country has a long way to meet the universal primary enrolment rate (Arooje and Burridge, 2020).

## 4.4 Data and descriptive statistics

### 4.4.1 Data

The data used in this analysis come from the 2015-16 Afghanistan Demographic and Health Surveys (AFDHS). The data is the first of its kind from the war-torn country and nationally representative. The sample survey provides detailed information on household demographic and socioeconomic information, including fertility rates, family planning, childhood care, adult and childhood mortality, domestic violence, decision-making, and other questions. The survey interviewed 29,461 women aged 15-49 concerning well being and women empowerment for example if the women have ever experienced domestic violence, they can go outside for shopping and meeting relatives, etc. Further, the survey also obtained information on the schooling of all household members such as the highest grade achieved, level of literacy, and current school enrolment of the household member.

The AFDHS followed a stratified two-stage sample design in urban and rural areas and for each of the 34 provinces of Afghanistan. The difficulty in gathering quality data in the presence of a prolonged conflict suggests that the available literature in social sciences subjects such as economics and political science that utilised data from Afghanistan is relatively recent. The ethical responsibility for the AFDHS lies with the respective institution that completed the survey. The data is available for research purposes upon request to the DHS authorities.

We utilise the data on violence intensity compiled by the Uppsala Conflict Data Program (UCDP). This data records all the events on organised violence and armed conflicts. The data for Afghanistan is available since 1989. The type of violence (State-based conflict, non-state conflict, and one-sided violence) dis-aggregates the data. Previously used in various studies (see for example (Noury and Speciale, 2016; Oskorouchi, 2019)).

During the decade of wars, many Afghan migrated to neighbouring countries, the two main destinations for the Afghans were Pakistan and Iran (Margesson, 2007). In our regression analysis we include emigration rates at the province level. we sum the number of Afghans in Iran and the number of Afghans in Pakistan. we then normalise this stock variable by the population in each province of origin to get emigration rates. The data for emigration rates come from United Nations High Commissioner for Refugees Iran (UNHCR). where as the data of Pakistan come from the census of Afghan refugees in Pakistan.

Table 4.1: Descriptive statistics

Individual characteristics	Women		Rural Women		Pashtun Women		Men	
	Mean (Std. Dev)		Mean (Std. Dev)		Mean (Std. Dev)		Mean (Std. Dev)	
Complete years of education	1.408	(3.052)	1.042	(2.570)	0.86	(2.383)	3.225	(4.309)
Completed 9 grade of schooling	0.065	(0.246)	0.044	(0.205)	0.039	(0.194)	0.171	(0.377)
Literacy	0.146	(0.196)	0.095	(0.168)	0.072	(0.161)	0.483	(0.220)
Labor force participation	0.131	(0.194)	0.127	(0.204)	0.086	(0.141)	0.967	(0.298)
Wage work	0.09	(0.148)	0.086	(0.147)	0.053	(0.119)	0.875	(0.282)
Family work	0.066	(0.159)	0.068	(0.174)	0.039	(0.104)		
Agricultural employment within the household	0.019	(0.112)	0.025	(0.129)	0.018	(0.064)		
Non-agricultural employment within the household	0.046	(0.114)	0.042	(0.117)	0.021	(0.082)		
No. of Kids	3.923	(2.675)	3.882	(2.674)	3.849	(2.680)		
Age at first Cohabitation	17.91	(3.525)	18.02	(3.445)	18.09	(3.356)		
Age at first birth	19.28	(3.522)	19.36	(3.460)	19.31	(3.370)		
Year exposure to Taliban	3.182	(2.683)	3.139	(2.704)	4.145	(2.65)	2.367	(2.810)
Province Variables								
Violent events before Taliban (normalised by population)			All provinces		Treatment		Control	
Violent events during Taliban (normalised by population)			0.018	(0.021)	0.018	(0.022)	0.006	(0)
Violent events after Taliban (normalised by population)			0.758	(0.715)	0.796	(0.719)	0.126	(0.093)
Total No. of deaths before Taliban (per 1000 people)			0.059	(0.062)	0.061	(0.062)	0.006	(0)
Total No. of deaths during Taliban (per 1000 people)			0.709	(1.163)	0.731	(1.180)	0.139	(0)
Total No. of deaths after Taliban (per 1000 people)			1.697	(1.830)	1.751	(1.835)	0.0540	(0)
			3.531	(3.624)	3.697	(3.663)	0.771	(0.638)

Data source: Author (using data from Afghan Demographic and Health survey 2015 for individual characteristic. The Uppsala Conflict Data Program (UCDP), for the violent events). N = 29,461.

## 4.4.2 Descriptive statistics

Table 4.1 shows detail descriptive statistics of our human capital variables such as completed years of education, high school completion, and basic literacy (individuals who can read and write). Other variables include labour force participation; wage work, family work, either individual is employed within household agriculture, the rate of non-agriculture employment within the household, total number of children, age at the time of first marriage and years of exposure to the Taliban's rule.

The total mean years of education of women in our sample is 1.40 compared to 3.22 years for men. The mean years of education decreases to 0.86 years for Pashtun women. Our next outcome variable of interest is if an individual has completed high school, which shows that only 6 percent of women have completed 9th grade compared to 17 percent of men those who have completed 9th grade. Only 4 percent of Pashtun women have completed the 9th grade of schooling. Similarly, only 14 percent of women in our estimation can read and write compared to 51 percent of men, which decreases to 9 percent for women living in rural areas and 7 percent for Pashtun women.

Next, our outcome variables of labour force participation, 13 percent of women were employed before the survey, compared to 97 percent of men. Similarly, roughly 9 percent of women are employed as wage workers compared to 85 percent of men. Wage work participation is only 5 percent for Pashtun women. On average, each couple has 4 kids in total. The mean age at first cohabitation is 18 years for women. The fact that the number of provinces that came under Taliban control were ethnic Pashtun majority provinces. The descriptive statistics evidently shows that overall women's exposure to Taliban rule is higher 4.1 years for Pashtun women compared to 3.1 for non Pashtun women's. women.

We also present the descriptive statistics on violence taken from the Uppsala Conflict Data Program (UCDP). This data records all the events on organised violence and armed conflicts. The type of violence recorded in the survey (State-based conflict, non-state conflict, and one-sided violence) dis-aggregates the data. We observe three different periods; violence and death before, during, and after the Taliban rule. The first period is before Taliban rule which includes 1989 (the period when the data of the year 1989 is available) to 1994 (The year when Taliban captured Kandahar). The second period is during Taliban rule which started from the year 1995 until 2001 when Taliban were ousted. Finally, the third period starts from 2002 to 2015). The mean value of the number of people killed before Taliban occupation is 1028, and the death during the Taliban occupation increased to 1299, and lastly the deaths jumps to 2496 after the Taliban period to 2496. In our analysis in this paper we divide the total number of people killed by the province population. we get the mean value of 0.709 total number of death before Taliban period (per 1000 people) 1.697 total number of

death during Taliban period (per 1000 people) and 3.531 total number of death after Taliban (per 1000 people).

Table 4.2: Descriptive statistics women empowerment, household, emigration and violence

Variable	Mean	Std. Dev.	Min	Max
<b>Women</b>				
<b>Economic autonomy</b>				
Own house	0.478	0.500	0	1
Own land	0.329	0.470	0	1
Earn more than husband	0.0200	0.140	0	1
Work (last 12 months)	0.131	0.337	0	1
How to spend husband earn	0.326	0.469	0	1
How to spend own earning	0.0480	0.213	0	1
<b>Decision-making autonomy</b>				
Who decides on;				
Respondent's health care	0.429	0.495	0	1
Large HH purchases	0.397	0.489	0	1
Visits to family or relatives	0.491	0.5	0	1
<b>Emotional autonomy</b>				
Beating justified if wife;				
Goes out without asking	0.712	0.453	0	1
Neglects children	0.507	0.5	0	1
Argue with him	0.63	0.483	0	1
Refuse to have sex	0.395	0.489	0	1
Burns food	0.204	0.403	0	1
<b>Men</b>				
<b>Mens attitude towards violence</b>				
Beating justified if wife;				
Goes out without asking	0.625	0.484	0	1
Neglects children	0.313	0.464	0	1
Argue with him	0.445	0.497	0	1
Refuse to have sex	0.198	0.398	0	1
Burns food	0.0880	0.284	0	1
<b>Household characteristics</b>				
Household size	9.654	5.054	1	48
Sibling under 5	2.166	1.682	0	16
Wealth index	2.944	1.334	1	5
<b>Women characteristics (All sample)</b>				
Years exposure to Najib govt. (Women only)	1.816	2.141	0	5
Years exposure to Rabbani govt. (Women only)	1.831	2.132	0	5
Years exposure to Taliban (Women only)	3.597	2.574	0	8
Women educational attainment	1.298	3.234	0	13
Women Literacy	0.157	0.364	0	1
Women Labor force participation	0.132	0.338	0	1
Women wage work	0.075	0.263	0	1
Women family work	0.086	0.28	0	1
Women agricultural employment within the household	0.043	0.203	0	1
Women non-agricultural employment within the household	0.043	0.202	0	1
Women age at first birth	18.93	3.211	10	38
Women age at first cohabitation	17.65	3.241	8	35
<b>Men characteristics</b>				
Years exposure to Najib govt. (Men only)	2.402	2.164	0	5

Table 4.2: Descriptive statistics women empowerment, household, emigration and violence

Variable	Mean	Std. Dev.	Min	Max
Years exposure to Rabbani govt. (Men only)	3.333	1.877	0	5
Years exposure to Taliban (Men only)	3.83	2.679	0	8
Father educational attainment	1.504	1.773	0	5
Men literacy	0.518	0.5	0	1
Men Labor force participation	0.965	0.183	0	1
Men wage work	0.857	0.35	0	1
<b>Emigration and violence</b>				
Emigration rate	147.8	130.2	13.71	461.7
Violence Information				
Violent events before Taliban occupation	25.41	69.06	1	387
Violent events during Taliban occupation	44.23	59.05	2	322
Violent events after Taliban	547.7	582.5	5	2928
Deaths before Taliban occupation	1028	2946	1	16256
Deaths during Taliban occupation	1299	1939	42	9649
Deaths after Taliban occupation	2496	2811	19	14609

Data source: Author using data from Afghan Demographic and Health survey 2015 for individual characteristic. The Uppsala Conflict Data Program (UCDP), for the violent events. Census for Afghan in Pakistan 2005 (UNHCR) and United Nations High Commissioner for Refugees Iran for the emigration rate.

### 4.4.3 Women empowerment

In Table 4.2, we present the summary statistic of variables related to women empowerment. We include different set of questions that are important indicators of women empowerment in the Afghan context.

#### 4.4.3.1 Economic Autonomy

They all are dummy variables assuming value 1 if a woman alone and jointly own a house and 0 otherwise. 47 percent of women own a house alone or jointly with her husband. Similarly, 32 percent of women own land alone or jointly with their husband. Our variable of interest if Woman earn more than her husband shows that only 2 percent of women earn more than their husbands. Likewise, 32 percent of women have say in how to spend their husband earnings. And only 4 percent of women have to say in spending their own earnings. The labour market participation variable takes the value of 1 if the woman has participated in the labour market during the past 12 months of survey 0 otherwise. We find that only 13 percent of women have worked and participated in the labour market.



#### **4.4.3.2 Decision-making Autonomy**

The decision-making autonomy variable is a dummy variable that takes the value of 1 if a woman alone decides to visit healthcare and 0 otherwise. 42 percent of women can decide alone to seek healthcare. Next, our variable of interest is coded 1 if she can alone decide on a visit to family or relatives 0 otherwise. 49 percent of women can decide to visit their family and relatives. The decision making regarding large household purchase takes the value 1 if she can decide on household purchase 0 otherwise. Similarly, 39 percent of women can decide about large household purchases.

#### **4.4.3.3 Emotional Autonomy**

The emotional autonomy variable includes several variables that take value 1 if woman feels that beating is justified under different circumstances and is 0 otherwise. 71 percent of women think that beating is justified if a wife goes outside without her husband's permission. Also, 50 percent of women think that beating a wife is justified if she neglects the children. 63 percent of women are of the view that beating is justified if the wife argues with her husband. Similarly, 39 percent of women thinks that beating is justified if the wife refuses to have sex with her husband. Lastly, 20 percent of women think that beating is justified if the wife burns the food.

#### **4.4.4 Men's perception towards violence**

We also consider men's perception towards wife beating. The variables takes value 1 if men think that beating her wife is justified in different circumstances and 0 otherwise. In our sample 62 percent of Men thinks that beating wife is justified if she goes out without her permission. 31 percent of husbands think that beating is justified if she neglects the children. Similarly, 45 percent of men justify violence if she argues with her husband. Likewise, 19 percent of them justify beating if she refuses sex with her husband. Finally, 8 percent feel that beating is justified if she burns the food.

The set of variables included in our analysis will measure the extent to which the woman is involved in the decision-making process of the household. Physical autonomy denotes how much freedom the woman has to move around, and economic autonomy quantifies the woman's control over her finances. The variables regarding men perception towards wife beating signifies the intimate partner violence. The set of variables included in our analysis signifies women's status and attitude to women in the society.

## 4.5 Econometric strategy

The econometric strategy adopted for this study is inspired by the previous study of [Noury and Speciale \(2016\)](#) which computed the impact of social constraints on women education and employment in Afghanistan by using National Risk and Vulnerability Assessment (NRVA) 2007/2008 survey. We extend the study by using the first ever demographic and health survey for the year (DHS) 2015, and extend the model by including various outcome variables such as educational outcome and women empowerment variables.

We report outcomes for the main sample based on the following two empirical models. First, we present our analysis of the effects of the Taliban's rule on the education outcomes of Afghan women (see equation 4.1). Next, we analyse the effect of the Taliban's rule on women empowerment (see equation 4.2).

### 4.5.1 Education outcomes of Afghan women

For our analysis, we have adopted a difference-in-difference approach see for example ([Duflo, 2001](#); [Galiani et al., 2005](#)). The treatment group comprises all those individuals who were living in the provinces, partially or fully occupied by the Taliban ( see [Figure 4.1](#) provinces in Yellow). The control group includes all those individuals that were living in the provinces that never came under the Taliban rule ( see [Figure 4.1](#) provinces in red). Alternatively, we will check the robustness of our results by only using the provinces that came in later years under Taliban control as our treatment group ( see [Figure 4.1](#) provinces in black). The control group will include all provinces contested between Northern Alliance and Taliban. Which include (Takhar, Nouristan, Kunarah, Laghman, Baghlan, Kapisa). Whereas the treatment group comprises of all those individuals who were exposed to the Taliban occupation while they were of school age. Individuals in, the control group were in the territories of the Northern Alliance). The major differences between both groups is ethnic and ideological. The Northern Alliance ideologically differed in practising Islam and women were not subject to restriction, girl's education remained in place in provinces and districts under Northern Alliance control.

$$\begin{aligned} Y_{idt} = & \alpha_0 + \alpha_1 \times \text{Exposure to Taliban's rule Years}_{ipt} + \alpha_2 \times \text{Pashtun}_{idt} \\ & + \alpha_3 \times \text{Exposure to Taliban's rule Years}_{ipt} \times \text{Pashtun}_{idt} \\ & + \gamma_{idt} + \beta_d + \beta_t + \varepsilon_{idt} \end{aligned} \quad (4.1)$$

Where  $Y_{ipt}$ , are three alternative outcome variables. First, we assess the number of years of completed education. Next, we add a dummy variable equal 1 if the individual finished schooling to grade 9th, and zero otherwise. Finally, we include a dummy variable equal to one if the individual can read and write, zero otherwise. "Exposure to Taliban's rule years" corresponds to the period a woman was exposed Taliban's rule while she was of school age. It is equal to zero for all cohorts of birth if the individual resided in a province of the control group. It varies from zero to eight years of exposure depending on the year of birth for women living in a province of the treatment group as well as the year of Taliban occupation of the province.

In our analysis for women's education we restrict our sample to women whose birth year is between 1976 and 1998 i.e  $1976 \leq t \leq 1998$ . This makes women age over 15 years at the time of the survey. women in the earlier cohort are excluded from the sample.

In our regression analysis we perform difference and difference model by using sampling weights and cluster standard errors at the cohort of birth and provincial level. The two way clustering follows the dimensions of variation of our independent variable and make sure that we have large number of clusters i.e (34 provinces x 23 cohorts of birth).

The mean value of exposure to the Taliban is about three years. "Pashtun" is a dummy variable if woman is ethnic Pashtun, zero otherwise. The ethnic composition is important in the Afghanistan case as Northern Alliance were mostly Persian speaking Tajiks and Uzbek's and Taliban's are majority Pashtun people. This lets us remove the biases that could result from the permanent difference in the outcome of interest between the groups of individuals living in the area under the control of Northern Alliance.

We include additional control variables, the residence of individual Urban/rural, wealth index that influence our outcome variables and are denoted by  $\gamma_{ipt}$ .  $\beta_d$  and  $\beta_t$  are dummies for district and year of birth, respectively.

## 4.5.2 Women empowerment

$$\begin{aligned}
 Y_{idt} = & \alpha_1 \times \text{Mother's years of exposure to Taliban's rule Years}_{ipt} \\
 & + \alpha_2 \times \text{Father's years of exposure to Taliban's rule Years}_{ipt} \\
 & + \gamma_{idt} + \beta_d + \beta_t + \varepsilon_{idt}
 \end{aligned} \tag{4.2}$$

In the second part of our analysis (Equation 4.2),  $Y_{idt}$  indicates the outcome variable. The outcome variables are economic autonomy, decision-making autonomy, and emotional autonomy. Men Years of exposure Taliban" and "Women year's exposure Taliban" represents the number of years a

father/mother was exposed to the Taliban rule (1996-2001) while he/she was a school-going age. It is equal to zero for all cohorts of birth if the individual resided in a province of the control group. It varies from zero to eight years of exposure depending on the year of birth for father/mother living in a province of the treatment group as well as a year of Taliban occupation of the province.

We also include additional control variables such as gender, ethnicity, and rural residence, parental education, wealth index that influence our outcome variables and are denoted by  $\gamma_{ipt}$ .  $\beta_d$  are dummies for districts. Our assumption that of the main data/hypothesis on the assumption that in the absence of the Taliban regime, the educational outcomes and women empowerment would have similar trends regardless of which group administered the province.

## 4.6 Results

### 4.6.1 Parallel trends assumption

In order to check for the intern validity of the parallel trend assumption that is essential when using different and difference method, we assume that, in the absence of the Taliban rule; women in the provinces who were ruled by Taliban would have experienced the same evolution in our outcome variables compared to the provinces who were not controlled by Taliban. In Figure 4.2 we graphically present the average years of education of women by birth cohort i.e  $1976 \leq t \leq 1981$  and residence of province that were governed by Taliban and the province those were not. We analyse the exposure of the rule of Taliban when in the year 1996 Taliban officially declared the Emirates of Afghanistan. The graphs shows that women who were not of school age i.e  $1976 \leq t \leq 1981$  during the times of Taliban's Emirates of Afghanistan the lines are parallel and flat for both provinces. The provinces that were later occupied by Taliban and the provinces that were not. The graph provide some evidence of the pre- treatment data that without the rule of Taliban the two groups would have the similar trends. However women in the age cohort who might have exposed to the rule of the Taliban's Islamic Emirates of Afghanistan (1996-2001) women's who's birth year was i.e  $1981 \leq t \leq 1992$  in the provinces controlled by Taliban and those who were not during the Taliban rule, the years of education increases for women who were exposed to Taliban rule, stressing that younger women have more years of education compared to those born in earlier birth cohort.

Similarly, in Figure 4.3 we present the secondary school completion of women by birth cohort which suggests that provinces that were not occupied by Taliban rule individuals have better rate of

completion of secondary schooling compared to those individuals who were living in the provinces that were under Taliban rule. The graph shows a sharp decline in secondary school completion during the Taliban rule. Next, Figure 4.4 suggests that the provinces that were not under Taliban control have better literacy rate compared to the provinces which later came under their control. Our parallel trends evidently shows that the exposure to Taliban rule has significantly effected the educational outcomes of women. Moreover the trends provide some evidence that there has been an increase in the investment in education. Over all the trends shows that exposure to Taliban has negatively impacted women years of education, completion and literacy.

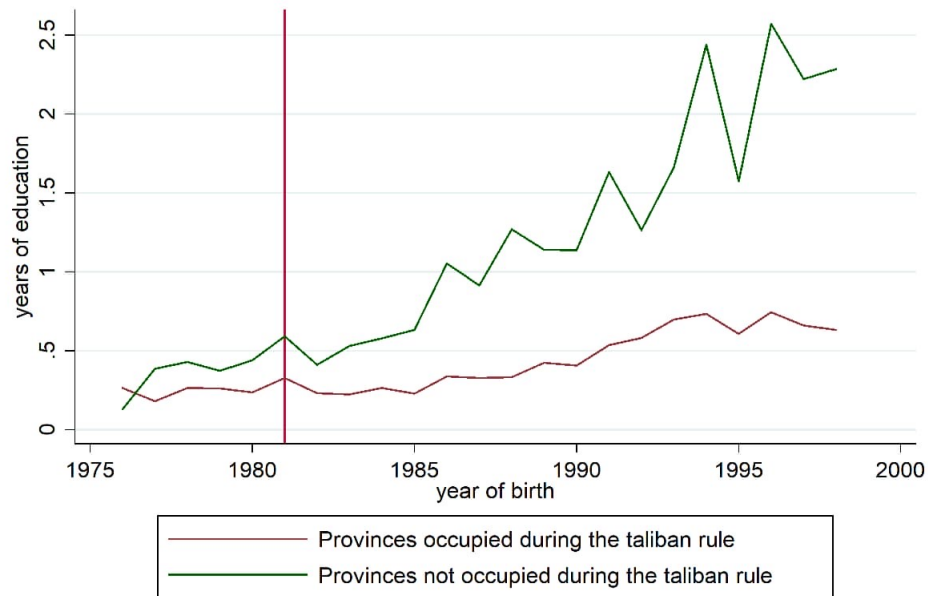


Figure 4.2: Years of education

Source: Author by using data from Central Statistics Organization (CSO), Ministry of Public Health (MoPH) (2015)

#### 4.6.2 Placebo regression

In 1992 the Soviet back President of Afghanistan Mohammad Najibullah was replaced by the leader of the Mujaheddin Burhanuddin Rabbani, and later in the year 1996 Taliban overtook Kabul by establishing the Islamic Emirates of Afghanistan. We would like to test a placebo regression that will be an additional support for our parallel trend assumption.

The estimation of difference and difference for our robustness check is the same as above except that we estimate the educational outcomes of those women that resided in the provinces that were later ruled by Taliban and those who were not between the age of 6 and 15 during the Taliban's occupation.

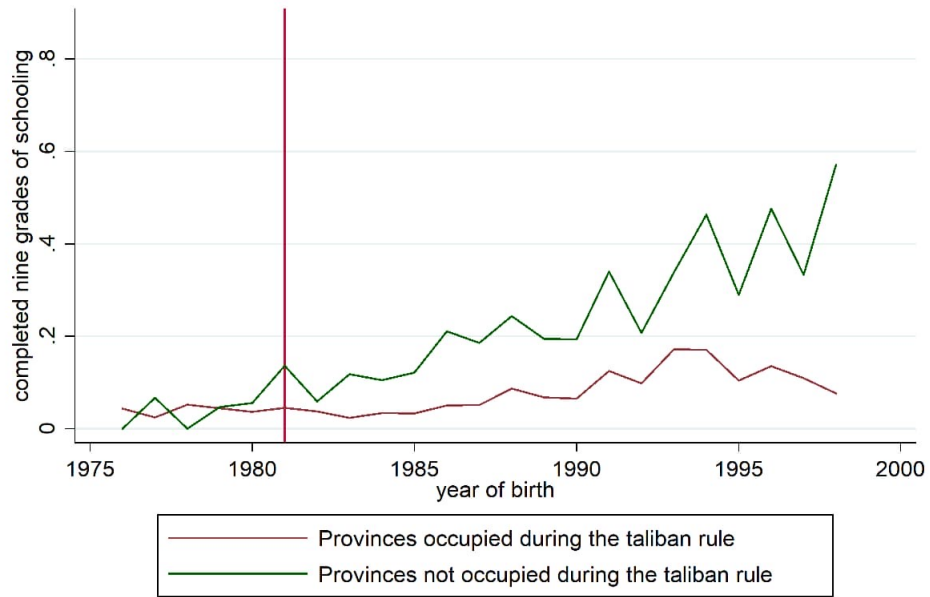


Figure 4.3: Completed 9th grade of schooling

Source: Author by using data from Central Statistics Organization (CSO), Ministry of Public Health (MoPH) (2015)

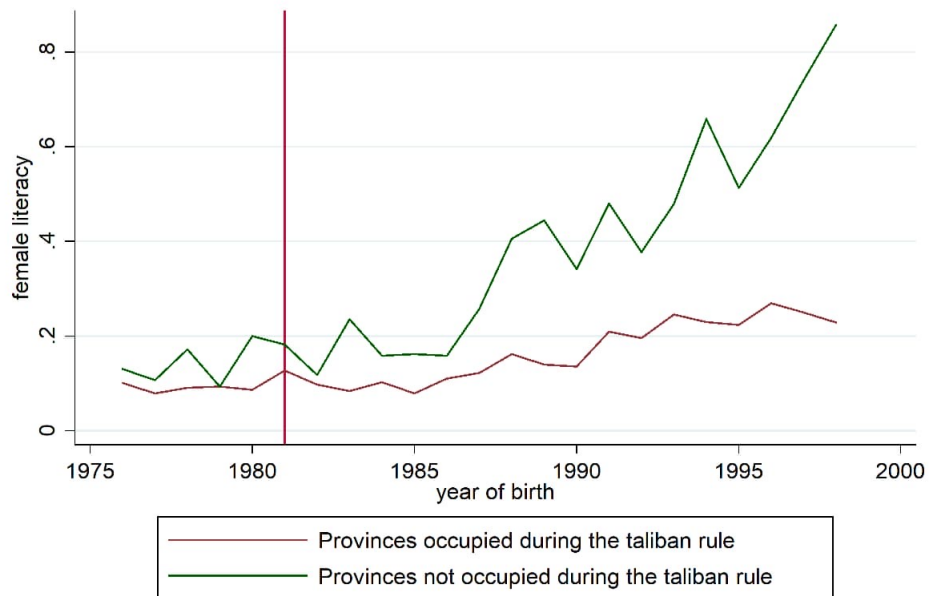


Figure 4.4: Literacy

Source: Author by using data from Central Statistics Organization (CSO), Ministry of Public Health (MoPH) (2015)

In this placebo regression we compute whether exposure to the Mujaheddin government of Burhanuddin Rabbani (1992-1996) while women were of school age affected the educational outcomes differently in the provinces that were later ruled by Taliban's and those provinces that were not Badakhshan and Panjsher as control group. In the analysis we exclude all those women

from regression who were between ages of 6 to 15 ( i.e we consider those with year of birth less than 1980). we compare women who were of school age and were exposed to Burhanuddin Rabbani’s government in the Year between (1992-1996) with those of the Soviet backed President Muhammad Najeebullah in the year between (1987-1992).

The result presented in the Table 4.3 of the placebo regression support our parallel trend assumption.

Table 4.3: Placebo regression

VARIABLES	(1) Years of education	(2) Completed 9 grades of schooling	(3) Literacy
Cohort of birth 1977–1980	-0.0150	0.00343	0.00481
× province Taliban	(0.132)	(0.00820)	(0.0155)
Pushtun	-0.449***	-0.0305***	-0.0595***
	(0.124)	(0.0103)	(0.0154)
Women age (35 - 39)	-0.376	-0.0412	-0.0413
	(0.434)	(0.0443)	(0.0494)
Household size	-0.0266**	-0.00129	-0.00256
	(0.0124)	(0.00107)	(0.00165)
Rural	-0.441	-0.0329	-0.0348
	(0.277)	(0.0245)	(0.0308)
Poor	0.307***	0.00636	0.0438***
	(0.0802)	(0.00579)	(0.0124)
Middle	0.289***	0.0117	0.0325***
	(0.0910)	(0.00823)	(0.0124)
Rich	0.593***	0.0359***	0.0671***
	(0.150)	(0.0125)	(0.0173)
Richest	1.456***	0.0864***	0.202***
	(0.323)	(0.0285)	(0.0401)
Year of birth dummies	Yes	Yes	Yes
District dummies	Yes	Yes	Yes
Constant	0.644	0.0532	0.0653
	(0.434)	(0.0447)	(0.0495)
Observations	3,741	3,757	3,757
R-squared	0.110	0.079	0.128

Note. Robust standard errors in brackets, clustered at the province and cohort of birth level. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The estimation sample includes women whose year of birth is  $1972 \leq t \leq 1980$ . "Cohort of birth 1977–1980" is a dummy variable equal to 1 if the woman was born between 1977 and 1980, 0 otherwise. "Province Taliban" is a dummy variable equal to 1 if the woman resided in a province occupied by the Taliban, 0 otherwise. The control group includes Badakhshan and Panjsher. "Years of education" is the number of years of completed education. "Completed 9 grades of schooling is a dummy variable equal to 1 if the woman completed nine grades of schooling, 0 otherwise. "Can read and write" is a dummy variable equal to 1 if a woman can read and write, 0 otherwise

The result show that none of the coefficient of our interest in the model is statistically significant. it provide some evidence that the differences in the educational outcomes between provinces later governed by Taliban and the provinces in the control group were not due to the advent of the President Burhanuddin Rabbani government.

Table 4.4: Difference-in-Difference estimation of the effect of Taliban exposure on Women’s educational outcomes

VARIABLES	(1)	(2)	(3)
	Years of education	Completed 9 grades of schooling	Literacy
Year Exposure to Taliban	-0.106*** (0.0371)	-0.00591** (0.00277)	-0.00566 (0.00455)
Yrs exposure Taliban × Emigration rate	6.87005 (0.000135)	7.20006 (1.09e-05)	5.75006 (1.58e-05)
Emigration rate	-0.000691 (0.000618)	-7.73e-05 (4.90005)	-4.63e-05 (7.07005)
Household size	-0.00238 (0.00837)	-0.000649 (0.00103)	-0.000788 (0.000929)
Rural	-0.146 (0.182)	-0.0319 (0.0366)	0.00337 (0.0247)
Pushtun	-1.216*** (0.105)	-0.0744*** (0.0108)	-0.148*** (0.0113)
Year Exposure to Najibullah govt.	-2.140 (2.570)	0.145 (0.218)	0.00921 (0.379)
Year Exposure to Rabbani govt.	0.801 (0.613)	-0.00644 (0.0523)	0.0388 (0.0924)
Year of birth dummies	Yes	Yes	Yes
District dummies	Yes	Yes	Yes
Constant	11.30*** (0.490)	0.889*** (0.0542)	0.802*** (0.0550)
Observations	22,822	23,104	23,104
R-squared	0.187	0.129	0.183

Note - Robust standard errors in brackets, clustered at the province and cohort of birth level.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The estimation sample includes women whose year of birth is  $1976 \leq t \leq 1998$ . "Cohort of birth 1976–1998" is a dummy variable equal to 1 if the woman was born between 1976 and 1998, 0 otherwise. "Province Taliban" is a dummy variable equal to 1 if the woman resided in a province occupied by the Taliban, 0 otherwise. The control group includes Badakhshan and Panjsher. "Years of education" is the number of years of completed education. "Completed 9 grades of schooling is a dummy variable equal to 1 if the woman completed nine grades of schooling, 0 otherwise. "Can read and write" is a dummy variable equal to 1 if a woman can read and write, 0 otherwise

Table 4.4 presents our results from estimating equation 1. The treatment group comprises all those individuals who were living in the provinces, partially and fully occupied by the Taliban (see Figure 4.1 provinces in Yellow). The control group includes all those individuals that were living in the



provinces that never came under the Taliban rule Badakhshan and Panjsher.

Our estimation results for the impact of the Taliban rule on women's education show that an increase of 2.6 years in the number of years of exposure to Taliban rule while the women were of her school-age decrease in women's education by 0.27 years compared to the control group.

Similarly, an increase of 2.6 years of exposure to Taliban rule while the woman is of her school-age result in a lower likelihood of 1.5 percentage points of complete grade 9th schooling compared to the control group. Our next outcome variable literacy shows that the same size of increase of Taliban exposure will decrease women ability to read and write by 1 percentage point. Being a Pashtun in the treatment group Pashtun women have 1.359 fewer years of education compared to the control group.

### **4.6.3 The role of cultural differences among ethnic groups**

To test for the heterogeneity on the effect of Taliban rule on education we will try to look into whether there is any change in the results across ethnic groups in Afghanistan. As previously discussed in our chapter that the movement of Taliban emerged from Pashtun majority provinces and the majority of them were ethnic Pashtuns. Moreover, the occupation of Pashtun districts took less time compared to their advancement and occupation of the non-Pashtuns districts of the country. The Pashtuns follow the tribal code of Pashtunwali, which might influence women education and mobility through its concept of gender boundaries (Kakar, 2004). According to Steul (1981) in Pashtunwali women are subordinate to men but at the same time the locus of honour to be look-after and protected above all. The seclusion of women through Purdah veil reduces women's ability to freely access public goods (Ginsburg, 2011).

The effect of culture on education has relevance; we would expect the effect of Taliban's rule greater on the non-Pashtuns. The estimation in Table 4.5 show that the effect of Taliban rule is significantly different between Pashtuns and non-Pashtuns for our outcome variables. For our outcome variable years of education of woman, a one standard deviation increase in the number of years of exposure to Taliban's rule reduces the number of years of education of woman by 3.48 years  $(-0.0107-1.234) \times 2.6$  and 0.2  $(-0.107 \times 2.6)$  in non pashtun areas. Similarly for our outcome variable completed 9th grade of schooling, a one standard deviation increase in the number of years of exposure to Taliban reduces the completed 9th grade of schooling by 0.2 grades  $(-0.00612-0.0779) \times 2.6$  of women. Next, moving to our variable Literacy ability to read and write the impact is larger for Pashtuns compared to non-Pashtuns. Our results shows that the impact of the Taliban's rule is larger in the ethnic majority Pashtuns areas.

Table 4.5: Difference-in-Difference estimation of the effect of Taliban exposure on women's educational outcomes. Heterogeneity of effects of ethnicity non-Pashtun vs Pashtuns

VARIABLES	Years of education	Completed 9 grades of schooling	Literacy
Year Exposure to Taliban	-0.107*** (0.0390)	-0.00612** (0.00293)	-0.00427 (0.00478)
Year Exposure to Taliban * Pashtun	-1.234*** (0.155)	-0.0779*** (0.0138)	-0.124*** (0.0164)
Pashtun	0.00480 (0.0331)	0.000958 (0.00335)	-0.00635* (0.00382)
Yrs Exposure to Taliban * Emigration rate	-0.000659 (0.000619)	-7.09e-05 (4.84e-05)	-8.87e-05 (7.25e-05)
Emigration rate	5.99e-05 (0.000137)	5.45e-06 (1.26e-05)	1.74e-05 (1.69e-05)
20 - 24	-0.415 (0.418)	0.0624* (0.0352)	-0.0671 (0.0769)
25 - 29	-2.354*** (0.669)	-0.107 (0.0665)	-0.290*** (0.0959)
30 - 34	-2.212*** (0.797)	-0.112 (0.0751)	-0.255** (0.111)
35 - 39	-2.416*** (0.904)	-0.140 (0.0873)	-0.279** (0.120)
Household size	-0.00240 (0.00836)	-0.000654 (0.00103)	-0.000757 (0.000926)
Rural	-0.146 (0.182)	-0.0318 (0.0366)	0.00320 (0.0246)
Poor	0.303*** (0.0713)	0.0227*** (0.00564)	0.0349*** (0.00859)
Middle	0.483*** (0.108)	0.0501*** (0.0122)	0.0665*** (0.0132)
Rich	1.019*** (0.135)	0.0792*** (0.0149)	0.105*** (0.0153)
Richest	2.895*** (0.286)	0.162*** (0.0392)	0.330*** (0.0298)
Year Exposure to Najibullah govt.	-2.138 (2.570)	0.145 (0.218)	0.00630 (0.377)
Year Exposure to Rabbani govt.	0.800 (0.613)	-0.00652 (0.0522)	0.0394 (0.0919)
Year of birth dummies	Yes	Yes	Yes
District dummies	Yes	Yes	Yes
Constant	11.31*** (0.499)	0.890*** (0.0552)	0.792*** (0.0564)
Observations	22,822	23,104	23,104
R-squared	0.187	0.129	0.183

Note. Robust standard errors in brackets, clustered at the province and cohort of birth level. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 4.6: Difference-in-Difference estimation of the effect of Taliban exposure on Women's educational outcomes. Controlling for violence before, during and after the Taliban regime

VARIABLES	Years of education			Completed 9 grades of schooling			Literacy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year Exposure to Taliban	-0.106*** (0.0371)	-0.0778* (0.0427)	-0.0778* (0.0435)	-0.00591** (0.00277)	-0.00302 (0.00346)	-0.00220 (0.00379)	-0.00566 (0.00455)	-0.00484 (0.00527)	-0.00541 (0.00525)
Year Exposure to Taliban * Emigration rate	6.87e-05 (0.000135)	4.11e-05 (0.000145)	4.13e-05 (0.000146)	7.20e-06 (1.09e-05)	6.85e-06 (1.19e-05)	6.71e-06 (1.19e-05)	0.00000575 (1.58e-05)	-0.00000022 (1.65e-05)	6.72e-07 (1.66e-05)
Emigration rate	-0.000691 (0.000618)	-0.000426 (0.000652)	-0.000518 (0.000668)	-7.73e-05 (4.90e-05)	-2.46e-05 (4.89e-05)	-2.83e-05 (5.04e-05)	-4.63e-05 (7.07e-05)	-1.24e-05 (7.28e-05)	-1.98e-05 (7.38e-05)
Household size	-0.00238 (0.00837)	0.00765 (0.00974)	0.00796 (0.00991)	-0.000649 (0.00103)	0.000134 (0.00117)	2.86e-05 (0.00123)	-0.000788 (0.000929)	0.000457 (0.00107)	0.000739 (0.00108)
Rural	-0.146 (0.182)	0.0299 (0.206)	0.0326 (0.203)	-0.0319 (0.0366)	-0.0209 (0.0396)	-0.0153 (0.0343)	0.00337 (0.0247)	0.0264 (0.0274)	0.0160 (0.0250)
Pushtun	-1.216*** (0.105)	-0.971*** (0.118)	-0.967*** (0.120)	-0.0744*** (0.0108)	-0.0566*** (0.0113)	-0.0548*** (0.0112)	-0.148*** (0.0113)	-0.123*** (0.0128)	-0.123*** (0.0127)
Year Exposure to Najibullah govt.		-1.625 (2.825)	-1.488 (2.792)	0.203 (0.250)	0.203 (0.250)	0.244 (0.254)		0.0124 (0.393)	-0.0133 (0.389)
Year Exposure to Rabbani govt.		0.666 (0.677)	0.628 (0.669)	0.628 (0.669)	-0.0202 (0.0598)	-0.0308 (0.0610)		0.0381 (0.0962)	0.0441 (0.0949)
"Violent events before Taliban (normalized by population)"		-4.859* (2.493)		-0.674** (0.339)				-0.0687 (0.281)	
"Violent events during Taliban (normalized by population)"		-1.880** (0.773)		-0.111 (0.0764)				-0.330*** (0.0903)	
"Violent events after Taliban (normalized by population)"		-0.416*** (0.0843)		-0.0355*** (0.00912)				-0.0398*** (0.00842)	
Total No. of deaths before Taliban (per 1000 people)			-0.0759 (0.0505)			-0.00945* (0.00501)			-0.00642 (0.00532)
Total No. of deaths during Taliban (per 1000 people)			0.0109 (0.0220)			0.00630 (0.00524)			-0.00847** (0.00340)
Total No. of deaths after Taliban (per 1000 people)			-0.0644*** (0.0145)			-0.00446*** (0.00113)			-0.00847*** (0.00151)
Year of birth dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	11.30*** (0.490)	11.35*** (0.576)	11.17*** (0.570)	0.889*** (0.0542)	0.896*** (0.0614)	0.875*** (0.0564)	0.802*** (0.0550)	0.815*** (0.0644)	0.801*** (0.0621)
Mean value of dependent variable for control group	3.698608	3.698608	3.698608	0.8673656	0.8673656	0.8673656	0.0056995	0.0056995	0.0056995
Mean value violence before occupation (1989-1994)	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095
Mean value violence during occupation (1995-2001)	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095	0.0063095
Mean value violence after occupation (2002-2015)	0.1263922	0.1263922	0.1263922	0.1263922	0.1263922	0.1263922	0.1263922	0.1263922	0.1263922
Mean value deaths before occupation (1989-1994)	0.1388081	0.1388081	0.1388081	0.1388081	0.1388081	0.1388081	0.1388081	0.1388081	0.1388081
Mean value deaths during occupation (1995-2001)	0.0536304	0.0536304	0.0536304	0.0536304	0.0536304	0.0536304	0.0536304	0.0536304	0.0536304
Mean value deaths after occupation (2002-2015)	0.7709779	0.7709779	0.7709779	0.7709779	0.7709779	0.7709779	0.7709779	0.7709779	0.7709779
Observations	22,822	16,727	16,727	23,104	16,909	16,909	23,104	16,909	16,909
R-squared	0.187	0.193	0.192	0.129	0.141	0.141	0.183	0.188	0.188

Note: Robust standard errors in brackets, clustered at the province and cohort of birth level. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The estimation sample includes women whose year of birth is 1976 ≤ t ≤ 1998. "Cohort of birth 1976-1998" is a dummy variable equal to 1 if the woman was born between 1976 and 1998. 0 otherwise. "Province Taliban" is a dummy variable equal to 1 if the woman resided in a province occupied by the Taliban, 0 otherwise. The control group includes Badakhshan and Panjshir. "Years of education" is the number of years of completed education. "Completed 9 grades of schooling is a dummy variable equal to 1 if the woman completed nine grades of schooling, 0 otherwise. "Can read and write" is a dummy variable equal to 1 if a woman can read and write, 0 otherwise

#### **4.6.4 The role of violence and uncertainty**

The effect of violence on educational outcomes is well documented in various studies (Akresh et al., 2014; La Mattina et al., 2017; Lee, 2014; Verwimp and Van Bavel, 2014). In the regression analysis, we divide the total number of deaths by the province population. The mean value of this variable is about 0.2% during the Taliban and 0.1% before and after the Taliban. We control for the effect of violent events that took place in the decades of war in Afghanistan. Various studies suggest the wars and deteriorating security situation disrupts and destroy the education system. Afghanistan has witnessed a prolonged period of violence in both the treatment and control provinces. We use the Uppsala Conflict Data Program (UCDP) data information that includes data on the number of violent events and deaths due to violence. We put it in three periods; before, during, and after the Taliban's rule. Similarly, the total number of death before, during, and after the Taliban's rule. Our result in table 4.6 shows that our variable of interest 'years of exposure to Taliban rule' does not link to the violence channel.

#### **4.6.5 Results**

##### **4.6.5.1 Economic autonomy**

Table 4.7 reports our coefficient of interest. We find that women who were exposed to the Taliban rule are roughly 2-percentage point more likely to own land compared to women who were in the control group. It is estimated that there are roughly 1 million widows in Afghanistan. These widows might have the land rights inherited from deceased husbands in the decade long conflict (Wily, 2004). There are very few studies pertaining to the land ownership in Afghanistan especially for women. Also, it is not only a question of ownership but involves a high degree of uncertainty in land ownership see for example for more details on the land rights in Afghanistan (Wily, 2003).

Similarly, our results in the economic category of women empowerment outcome shows that women who were exposed to the Taliban rule are 3-percentage point less likely to have a say in how to spend husband's income compared to the women in the control group.

##### **4.6.5.2 Decision-making autonomy**

Table 4.8 we present our result for women decision making autonomy. The result shows that women who were exposed to Taliban rule are 4 percentage point less likely to decide about her health care compared to the women in the control group who were not exposed to the Taliban rule. Our

Table 4.7: Economic autonomy

Variables	Own House	Own Land	Earn more than husband/partner	Work	How to spend husband earn?	How to spend respondent earn?
Year Exposure to Taliban	0.0102 (0.00909)	0.0248*** (0.00712)	-0.00251* (0.00137)	0.00503 (0.00448)	-0.0384*** (0.00707)	-0.00513* (0.00295)
Year Exposure to Taliban * Emigration rate	-2.2905 (4.17005)	-3.8405 (3.2205)	-9.47007 (3.3906)	3.5605* (1.9905)	-4.77005** (2.3505)	2.19005** (1.0605)
Emigration rate	0.000822*** (0.000146)	0.000686*** (0.000112)	2.40e-05 (1.70e-05)	1.86e-05 (7.79e-05)	0.000129 (0.000121)	-1.21e-05 (4.61e-05)
Year Exposure to Najibullah govt.	0.331 (0.489)	0.639* (0.361)	-0.154* (0.0917)	0.147 (0.308)	-0.623* (0.351)	-0.114 (0.133)
Year Exposure to Rahbani govt.	-0.0501 (0.115)	-0.158* (0.0842)	0.0403* (0.0223)	-0.0278 (0.0736)	0.154* (0.0835)	0.0325 (0.0321)
20 - 24	-0.0166 (0.0674)	0.0733 (0.0501)	-0.0220 (0.0197)	0.0107 (0.0566)	0.0851 (0.0615)	-0.0130 (0.0254)
25 - 29	-0.105 (0.0919)	0.0544 (0.0929)	-0.0171 (0.0212)	-0.00924 (0.0723)	0.111 (0.101)	-0.00340 (0.0356)
30 - 34	0.0562 (0.117)	0.0794 (0.106)	-0.0108 (0.0229)	-0.127 (0.128)	0.205* (0.121)	-0.000182 (0.0473)
35 - 39	0.104 (0.131)	0.0830 (0.120)	-0.0204 (0.0255)	-0.156 (0.131)	0.489*** (0.136)	-0.0281 (0.0575)
Household size	0.00911*** (0.00131)	0.00844*** (0.00109)	0.000561* (0.000312)	0.00201* (0.00106)	-0.00416*** (0.00111)	-2.88e-05 (0.000652)
Rural	0.206*** (0.0233)	0.161*** (0.0178)	-0.00149 (0.00698)	-0.0288 (0.0189)	0.0485** (0.0245)	-0.0180 (0.0112)
Poor	0.118*** (0.0169)	0.0549*** (0.0154)	0.00288 (0.00424)	0.0505*** (0.0136)	-0.0221 (0.0140)	0.0163* (0.00921)
Middle	0.0822*** (0.0203)	0.0262 (0.0177)	0.00737 (0.00448)	0.0442*** (0.0161)	-0.0112 (0.0173)	0.0287** (0.0111)
Rich	0.100*** (0.0223)	-0.0216 (0.0177)	0.00521 (0.00419)	0.0186 (0.0161)	0.0480*** (0.0186)	0.0242** (0.0101)
Richest	0.120*** (0.0311)	-0.0168 (0.0245)	0.00296 (0.00784)	0.0280 (0.0231)	0.0655** (0.0291)	0.0241* (0.0139)
Pushfun	0.0352* (0.0200)	0.0970*** (0.0168)	-0.0146*** (0.00290)	-0.0896*** (0.0124)	-0.0504*** (0.0152)	-0.0377*** (0.00643)
Year of birth dummies	Yes	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.212** (0.0951)	-0.0787 (0.0690)	-0.0130 (0.0125)	-0.0613 (0.0586)	-0.0259 (0.0679)	-0.0491 (0.0316)
Observations	23,104	23,104	22,940	23,104	23,104	23,104
R-squared	0.103	0.119	0.012	0.037	0.065	0.020

Note: Outcomes are dummy variables that assume value 1 if the variable description is true and is 0 otherwise. Omitted category are individuals aged below 17 years or above 37 years. Data source is AFDHS (2015). \*\*\*, \*\*, \* and \* indicate statistical significance at the 1%, 5% and 10% level of significance respectively. "Other Controls" include dummies for household wealth quintile; whether the household is in rural area.

Table 4.8: Decision-making autonomy

Variables	(1) Respondent decide on health care	(2) Respondent decide on visit to family or relatives	(3) Respondent decide on household purchase
Year Exposure to Taliban	-0.0460*** (0.00667)	-0.0646*** (0.00797)	-0.0560*** (0.00696)
Year Exposure to Taliban * Emigration rate	3.11e-05 (2.04e-05)	-1.42e-06 (2.36e-05)	-4.67e-06 (2.46e-05)
Emigration rate	-0.000248** (0.000104)	-5.99e-05 (0.000117)	-0.000110 (0.000113)
Year Exposure to Najibullah govt.	-1.003** (0.457)	-0.945** (0.478)	-0.325 (0.420)
Year Exposure to Rabbani govt.	0.277** (0.111)	0.283** (0.113)	0.133 (0.101)
20 - 24	-0.0555 (0.0827)	0.0862 (0.0865)	0.113 (0.0829)
25 - 29	-0.0960 (0.107)	-0.0693 (0.140)	0.0319 (0.120)
30 - 34	-0.0511 (0.138)	0.0619 (0.163)	0.132 (0.156)
35 - 39	0.0512 (0.165)	0.175 (0.193)	0.182 (0.178)
Household size	-0.00280** (0.00127)	-0.00651*** (0.00125)	-0.0100*** (0.00133)
Rural	0.0508* (0.0292)	0.0496* (0.0276)	0.0489 (0.0318)
Poor	-0.00649 (0.0157)	-0.0439*** (0.0147)	-0.0553*** (0.0154)
Middle	-0.0105 (0.0192)	-0.0330* (0.0187)	-0.0545*** (0.0174)
Rich	0.0413** (0.0198)	0.000995 (0.0194)	-0.0164 (0.0216)
Richest	0.129*** (0.0323)	0.0107 (0.0309)	-0.00262 (0.0377)
Pushtun	-0.148*** (0.0168)	-0.0790*** (0.0156)	-0.138*** (0.0170)
Year of birth dummies	Yes	Yes	Yes
District dummies	Yes	Yes	Yes
Constant	-0.113 (0.0818)	0.0120 (0.0766)	0.0185 (0.0703)
Observations	23,104	23,104	23,104
R-squared	0.087	0.094	0.114

Note: Outcomes are dummy variables that assume value 1 if the variable description is true and is 0 otherwise. Omitted category are individuals aged below 17 years or above 37 years. Data source is AfDHS (2015). \*\*\*, \*\* and \* indicate statistical significance at the 1% , 5% and 10% level of significance respectively. "Other Controls" include dummies for household wealth quintile; whether the household is in rural area

findings are similar with a recent study done on the determinants of maternal healthcare utilisation in Afghanistan. Mumtaz et al. (2019) found large disparities and low utilisation of maternal healthcare services in Afghanistan. Similarly women who were exposed to Taliban rule are 6 percentage point

less likely to visit her family and relatives compared to the women in the control group. Finally women exposed to Taliban rule are 5 percentage points less likely to decide on household purchase compared to the control group. These results are consistent with the previous studies where despite making mandatory participation in development program does not change the status of women in decision making and the role of women in the Afghan society (Beath et al., 2013).

#### **4.6.5.3 Emotional Autonomy**

Table 4.9 report the findings for women's outcomes. In particular, it reports the results on attitude to wife-beating among women. The first row reports our coefficient of interest. We find that women who were exposed to the Taliban rule are roughly 2-percentage points more likely to justify wife-beating when she goes out without informing him compared to women who were in the control group. Similarly, the results show that women who were exposed to the Taliban rule are close to 2-percentage point less likely to think that women beating is justified when she neglects children compared to the women in the control group. Likewise, women who were exposed to the Taliban rule are roughly 4 percentage points more likely to remain afraid of their husband/partner compared to the women who were in the control group. The results suggest strong effect of social constraints on women mobility and rationalisation of violence. It might be the effect of the effect of the tribal code (Pashtunwali) in the sedentary societies see for a detail discussion on the subject (Ginsburg, 2011; Kakar, 2004). Our results are consistent with past available studies on Afghanistan where strict social norms restrict woman's autonomy to have control over her body and mobility (Samar et al., 2014; Wylie, 2003).

#### **4.6.5.4 Men's perception towards violence**

Table 4.10 of our analysis shows men's perception towards partner violence. The first row of table 4.10 reports our coefficient of interest. We find that men who were exposed to the Taliban rule are roughly 4-percentage point more likely to justify wife-beating when she goes out without informing them compared to men who were in the control group. Similarly, the results show that men who were exposed to the Taliban rule are close to 2 percentage point more likely to think that women beating is justified when she neglects children, and 2 percentage points more likely to beat her if she argues with the husband compared to the control group.

Table 4.9: Emotional autonomy

Variables	(1) Goes without telling him?	(2) Neglects children	(3) Argue with husband	(4) Refuses to husband have sex with husband	(5) Burns food	(6) Accuses of unfaithfulness	(7) Afraid of husband
Year Exposure to Taliban	0.0162** (0.00763)	-0.0188*** (0.00716)	0.00859 (0.00638)	0.00463 (0.00829)	-0.00200 (0.00629)	-0.00598 (0.00454)	0.0366*** (0.00675)
Year Exposure to Taliban * Emigration rate	5.79e-05*** (2.00e-05)	3.73e-05 (2.69e-05)	3.71e-05* (2.24e-05)	2.85e-05 (2.62e-05)	7.65e-05*** (2.23e-05)	-7.64e-06 (1.52e-05)	-2.94e-05 (2.17e-05)
Emigration rate	0.000114 (0.000107)	0.000177 (0.000124)	-0.000270*** (0.000103)	0.000342*** (0.000117)	1.58e-05 (8.90e-05)	0.000187*** (6.67e-05)	0.000103 (9.15e-05)
Year Exposure to Najibullah govt.	0.380 (0.421)	-0.607 (0.618)	0.0648 (0.437)	0.320 (0.402)	0.0984 (0.324)	0.0539 (0.378)	0.706** (0.345)
Year Exposure to Rabbani govt.	-0.131 (0.103)	0.112 (0.151)	-0.0595 (0.103)	-0.106 (0.0951)	-0.0342 (0.0776)	-0.0245 (0.0906)	-0.177*** (0.0819)
20 - 24	0.0359 (0.0703)	-0.0223 (0.111)	-0.0429 (0.0720)	0.0508 (0.0514)	-0.0196 (0.0510)	0.176*** (0.0691)	0.0513 (0.0518)
25 - 29	0.147* (0.0787)	0.136 (0.132)	0.158 (0.115)	0.165* (0.0895)	0.0750 (0.0731)	0.301*** (0.0917)	0.0718 (0.0683)
30 - 34	0.174 (0.138)	0.118 (0.184)	-0.0368 (0.127)	-0.116 (0.144)	-0.134 (0.110)	0.338*** (0.103)	-0.0739 (0.127)
35 - 39	0.246 (0.158)	0.255 (0.215)	0.0151 (0.153)	-0.0135 (0.155)	-0.161 (0.135)	0.338*** (0.114)	-0.112 (0.152)
Household size	-0.000726 (0.00125)	-0.00462*** (0.00137)	-0.00271** (0.00121)	0.000926 (0.00118)	0.000960 (0.000947)	-0.0322*** (0.00138)	-0.0122*** (0.00103)
Rural	-0.00577 (0.0356)	-0.0593** (0.0287)	-0.0217 (0.0275)	0.0479* (0.0284)	-0.0369* (0.0215)	0.0106 (0.0363)	-0.00603 (0.0216)
Poor	-0.0518*** (0.0155)	-0.0574*** (0.0200)	-0.0587*** (0.0152)	-0.0803*** (0.0180)	-0.0222* (0.0124)	-0.00479 (0.0129)	-0.00910 (0.0128)
Middle	-0.0180 (0.0169)	-0.0435*** (0.0190)	-0.0673*** (0.0165)	-0.110*** (0.0211)	-0.0277* (0.0155)	-0.00875 (0.0137)	0.0107 (0.0172)
Rich	-0.0107 (0.0201)	-0.0163 (0.0218)	-0.0783*** (0.0191)	-0.118*** (0.0236)	-0.0590*** (0.0157)	-0.0439*** (0.0194)	-0.0133 (0.0173)
Richest	-0.128*** (0.0414)	-0.118*** (0.0367)	-0.138*** (0.0316)	-0.157*** (0.0361)	-0.108*** (0.0256)	-0.0219 (0.0399)	-0.0253 (0.0271)
Pushkun	0.0374*** (0.0141)	-0.0146 (0.0153)	-0.0428*** (0.0149)	-0.0379*** (0.0144)	-0.00488 (0.0117)	-0.0203 (0.0141)	-0.0297** (0.0115)
Year of birth dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.135* (0.0751)	0.115 (0.101)	0.147** (0.0717)	0.129* (0.0781)	0.149*** (0.0560)	1.009*** (0.0656)	0.964*** (0.0662)
Observations	21,856	21,488	21,676	20,580	21,056	23,104	22,118
R-squared	0.058	0.025	0.029	0.038	0.034	0.141	0.058

Note: Outcomes are dummy variables that assume value 1 if the variable description is true and is 0 otherwise. Omitted category are individuals aged below 17 years or above 37 years.

Data source is AIDHS (2015). \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% level of significance respectively.

“Other Controls” include dummies for household wealth quintile; whether the household is in rural area.



Table 4.10: Men’s perception towards violence

Variables	(1) Goes without telling him?	(2) Neglects children	(3) Argue with husband	(4) Refuses to have sex with husband	(5) Burns food
Year Exposure to Taliban	0.0404*** (0.00824)	0.0187** (0.00810)	0.0220*** (0.00840)	0.00501 (0.00568)	0.00147 (0.00466)
Emigration rate	0.000424*** (7.30e-05)	0.000101 (7.81e-05)	0.000315*** (8.34e-05)	-2.01e-05 (7.00e-05)	0.000234*** (5.41e-05)
Year Exposure to Najibullah govt.	-0.107 (0.653)	-0.796** (0.366)	1.089* (0.605)	0.0323 (0.399)	-0.206 (0.188)
Year Exposure to Rabbani govt.	0.00995 (0.161)	0.189** (0.0787)	-0.282* (0.146)	-0.0119 (0.0972)	0.0492 (0.0418)
Household size	0.00310 (0.00210)	-0.000614 (0.00134)	-0.00447** (0.00202)	-0.00235* (0.00128)	-8.55e-05 (0.000930)
Rural	0.0223 (0.0466)	0.104*** (0.0274)	-0.0908** (0.0387)	0.0510** (0.0246)	0.0562** (0.0241)
Poor	-0.144*** (0.0249)	-0.104*** (0.0245)	-0.0787*** (0.0272)	-0.0427* (0.0227)	-0.00687 (0.0170)
Middle	-0.144*** (0.0245)	-0.0324 (0.0286)	-0.0938*** (0.0292)	-0.0993*** (0.0213)	-0.0327** (0.0159)
Rich	-0.195*** (0.0283)	-0.0894*** (0.0305)	-0.174*** (0.0302)	-0.166*** (0.0232)	-0.0601*** (0.0149)
Richest	-0.249*** (0.0557)	-0.160*** (0.0340)	-0.263*** (0.0440)	-0.214*** (0.0273)	-0.0389 (0.0338)
Pushtun	0.0623*** (0.0210)	0.0671*** (0.0174)	0.0521** (0.0221)	0.0419** (0.0169)	0.000752 (0.0123)
Year of birth dummies	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes
Constant	0.0301 (0.171)	-0.0998* (0.0587)	0.453*** (0.146)	0.182* (0.0994)	-0.0395 (0.0432)
Observations	7,643	7,643	7,643	7,643	7,643
R-squared	0.085	0.058	0.041	0.055	0.038

Note: Outcomes are dummy variables that assume value 1 if the variable description is true and is 0 otherwise. Omitted category are individuals aged below 17 years or above 37 years. Data source is AfDHS (2015). \*\*\*, \*\* and \* indicate statistical significance at the 1% , 5% and 10% level of significance respectively. “Other Controls” include dummies for household wealth quintile; whether the household is in rural area.

## 4.7 Conclusion

In this chapter we studied the impact of the social constraints on women education outcomes and women empowerment in Afghanistan. We have explained the effect of the behaviour of Taliban’s such as the imposition of ban on women education, and the subjugation of women by these groups. Our estimation results for the effect of the Taliban on women’s education show that exposure to social constraints and gender discriminatory behaviour reduces women’s education. Moreover, this chapter, tries to fill the gap in the literature on the debate of the economic theory of radical

religious clubs which anticipate that religious groups such as Taliban's who provide public goods may rationally choose a disruptive behaviour to minimise the outside option of members' defection (Berman and Laitin, 2008; Noury and Speciale, 2016). There will be likely long term consequences of the impact of social constraints on women. In this context, we explored the impact of social constraints on women empowerment. We found that women who were exposed to the Taliban rule are roughly more likely to own land, and more likely to work compared to women who were in the control group. Similarly, we find that women who were exposed to the Taliban rule are 4-percentage point less likely to have a say in how to spend husband income compared to women in the control group. Also, We find that women who were exposed to the Taliban rule are less likely to decide to seek health care by her own, and less likely to visit her family, and less likely to have a say in the household purchase.

Finally, regarding husband perception towards wife beating. We find that men who were exposed to the Taliban rule are more likely to justify wife-beating when she goes out without informing him compared to men who were in the control group. Similarly, men who were exposed to the Taliban rule are more likely to think that women beating is justified when she neglects children and if she argues with the husband.

Overall, in this chapter we showed that how social constraints shape gender attitude and lower educational achievements.

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# General Conclusion

Human capital yields both economic and non-economic benefits. It plays an important role in the growth and development of society and well being of its members. It is an important factor for lower-income countries to catch up with the developed countries. In this regard, to understand human capital in lower-income countries, especially two south Asian countries, this dissertation has examined four different issues related to human capital by using data from Afghanistan and Pakistan.

We will summarise our main results here, followed by the contribution and policy relevance of our study. Finally, we conclude the limitations of the study with future research suggestions.

## **Ethnic disparities in school enrolment : A case of Pakistan**

In the first chapter, we investigated the gaps in school enrolment across ethnic groups in Pakistan and the primary factors that account for these gaps. The result suggests that there are substantial ethnic disparities in school enrolment in Pakistan. Ethnic Pashtuns, Balochs, Sindhis, and Siraykis have a much lower enrolment rate, while Urdu speaking (Mohajirs) and Punjabis have comparatively higher enrolment rates. This helps us track a population cohort and control the important factors based on individual, family, village, and school characteristics. The impact of explanatory variables on child school enrolment varies depending on the ethnic groups. Additional results of the decomposition of enrolment gaps between ethnic minority and ethnic majority children suggest that the gaps are due to differences in parental education and socioeconomic status. However, region and parental education played a considerable role compared to other factors. Overall, the results suggest that ethnicity influences children's school enrolment, implying that there are historical, cultural, and other factors that hinder their right to education.

### **Gender gaps in school enrolment : A case of rural Pakistan**

In the second chapter, we investigated the gender gaps in school enrolment across ethnic groups in Pakistan and what primary factors account for these differences. The result suggests that there are substantial gender gaps in school enrolment in Pakistan. Girls from ethnic Pashtuns, Balochs, Sindhis, and Sirayki have a much lower enrolment rate, while Mohajirs and Punjabis girls have comparatively higher enrolment rates. Furthermore, the Fairlie decomposition technique lets us observe each of the observable factors responsible for the gender gaps in enrolment to decompose the ethnic education gaps to measure the degree to which each of these observable factors explains them. We also examined the gap due to individual child characteristics among ethnic groups. Our results suggest that ethnic Baloch and Pashtun girls are more likely to be out of school than Ethnic Punjabi girls, even after controlling for regional and family characteristics. There are similar disparities for ethnic Sindhi and Sirayki girls compared to ethnic Punjabi girls. The results suggest that ethnicity directly influences school enrolment for girls implying that there are historical, cultural, and other factors that block these girls from their right to have an education. Our analysis of the gender gap among ethnic groups suggest that the gender gap is less among ethnic Punjabi and Urdu speaking (Muhajir) children. The gender gap is profound among ethnic Pashtun, Balochi, Sindhi, and Sirayki children.

### **School enrolment and learning of children with disabilities : A case of Pakistan**

In the third chapter, we examined the school enrolment and learning level for children with disabilities in Pakistan. Our finding suggests that children with severe disabilities face difficulties in school enrolment compared to children without disabilities. Also, there is a gender dimension; girls with disabilities are less likely to enrol compared to boys. Moreover, regardless of disability status, children living in poorer households are less likely to enrol compared to children from richer households.

Additionally, we find that children who were identified as living with any disability are more likely to enrol in public schools than in private schools. Children with severe/moderate disabilities are less likely to enrol in private schools. The results signify the parental tendency of sending their children with disabilities to low-cost public schools.

Similarly, our results for learning performance of children who were reported as having any difficulty had lower learning level in literacy and mathematics than children with no disabilities recorded. Girls are disadvantaged and have a lower level of English literacy compared to boys. This might be due to the restriction in attending private tuition or unavailability of qualified teachers for girls as the region faces strictly segregated schools for boys and girls. The results signify double discrimination for girls with disabilities in the region.

An important finding of our study is the learning of children with the category of self-care; their performance in literacy and mathematics is better than children with no disability recorded. However, overall, children with severe difficulties have lower learning levels in all categories.

### **Education and women empowerment disparities in Afghanistan**

In this chapter, we studied the impact of the social constraints on women's education, labour market outcomes, and women empowerment in Afghanistan. Our estimation results for the effect of the Taliban on women's education show that exposure to social constraints and gender-discriminatory behaviour reduces women's education.

There will likely be long term consequences of the impact of social constraints on women. In this context, we explored the impact of social constraints on women's empowerment. We found that women who were exposed to the Taliban rule are more likely to own land and more likely to work compared to women who were in the control group. Similarly, we find that women who were exposed to the Taliban rule are less likely to have a say in how to spend husband income compared to women in the control group. Also, We find that women who were exposed to the Taliban rule are less likely to decide to seek health care on their own, less likely to visit their family and friends, and less likely to have a say in the household purchase.

Finally, we find that men who were exposed to the Taliban rule are more likely to justify wife-beating when she goes out without informing him compared to men who were in the control group. Similarly, the results show that men who were exposed to the Taliban rule are more likely to think that a woman beating is justified when she neglects children, more likely to beat if she argues with the husband compared to men who were in the control group.

Overall, in this chapter, we showed that how social constraints shape gender attitude and results in lower educational achievements.

### **Contribution and policy relevance**

The empirical analyses conducted in the four chapters have made important contribution to literature in various aspects. For example, Chapter 1 analyses gaps in school enrolment in ethnic groups in Pakistan has never been studied before. In Chapter 2, we analyse gender gaps in school enrolment in ethnic groups in Pakistan. The research question in Chapter 2 has been approached from a different perspective. We look into the gender gaps in school enrolment in ethnic groups in Pakistan. In Chapter 3, we analyse the enrolment and learning gaps of children with disabilities in the post conflict context. Finally, in Chapter 4, we have analysed the impact of social constraints on

education and women empowerment in Afghanistan.

The four chapters have several implications in terms of public policy related to human capital, more precisely education and women empowerment in Afghanistan and Pakistan.

In Chapter 1, our contribution to the literature is evident as it is the first study that investigates ethnic disparities in school enrolment in Pakistan. This chapter identified the key factors of ethnic gaps in school enrolment. Our result suggests that parental education, household financial status, and the number of children in the household and village characteristics are responsible for school enrolment disparities. The result suggests that efforts in reducing enrolment gaps should vary according to the ethnic group; for example, interventions enhancing household income or reducing poverty would help increase school attendance, but it will fail to work for all ethnic groups. It might be more convincing to reach the illiterate household. Which we saw largely varies in different ethnic groups. Further, positive discriminatory policies should be introduced in the villages for ethnic groups with lower enrolment rates.

Chapter 2 adds to the literature by investigating the gender gaps in school enrolment in ethnic groups in Pakistan. The result suggests that there are substantial gender gaps in school enrolment in Pakistan. Girls from certain ethnic minorities have a much lower enrolment rate and large gender gaps in school enrolment. The findings have policy implications such that gender perspective is imperative to formulate and enforce a holistic, inclusive, and nondiscriminatory regime of policies. Gender sensitisation should be an integral part of all social development interventions, but special positive discriminatory policies should be introduced for ethnic groups with large gender gaps. Overall, the analysis suggest that ethnic-based policies aimed at encouraging school entrance could ensure progress towards gender equality and universal enrolment. Access to schools in the mountainous region might be difficult due to the rugged terrains, restricting students' accessibility, especially girls. Conditional cash transfer and offering transportation to students could be one solution to increase enrolment and reduce dropout rates in certain ethnic groups with large gender gaps in school enrolment. Ethnic-based policies aimed at encouraging school entrance could ensure progress towards achieving gender equality and universal enrolment.

Chapter 3 contributes to the existing literature by investigating the gaps in educational outcomes in children with disabilities in a post-conflict scenario. The findings suggest that children who were identified by their parents as having severe disabilities were disadvantaged to enrol in school, and they have a lower level of learning in literacy and mathematics compared with children recorded without any disability. The government should consider trained teachers and an inclusive education environment. Also, We find that children who were identified as living with any disability are more likely to enrol in public schools than in private schools. In this regard, the key policy

recommendation is that it could be extended to children with disabilities with the help of a public-private partnership.

Chapter 4 adds to the literature by looking into the impact of social constraints on education and women empowerment in Afghanistan. It is the first study that investigates the relationship between social constraints on women's empowerment in Afghanistan. The study has policy implications related to education, intimate partner violence, and other aspects of the well-being of women. The findings suggest that women's education and empowerment should be prioritised in the current peace talks between the Taliban and the government of Afghanistan.

Overall this study highlighted the urgent need for collection of ethnicity and disability related data from all provinces and administrative units of Pakistan and Afghanistan. This data collection must focus on timeliness, reliability and high quality data in order to track progress on the achievements of key Sustainable Development Goals set out by international agencies monitoring development.

## **Limitations and avenues for future research**

In this section, we acknowledge the limitation of the dissertation and propose recommendations for future research. In the first and second chapters, the study's analysis was for the major ethnic groups due to the very small sample size in the survey. The results should be interpreted with caution. This study is only for the major ethnic groups which are extracted from the data through their mother tongue in Pakistan. Our outcome variable, whether the child is enrolled in school or not, misses the progression and educational attainment of children important for assessing other educational outcomes. This we suggest for future research. The lack of information on household financial status led us to construct a wealth index by integrating the significant household indicators such as home ownership, type of houses, and the number of household appliances. However, we accept that this method is not interpretable as an original feature. Research on ethnicity in Pakistan requires additional sources of empirical data since the survey fails to add information on ethnicity. The limitation of the study suggests that further studies along this line would be valuable. with the available survey, this is the best we could have done.

In Chapter 3, the data used in the analysis is from the ASER survey. The sample is not nationally representative. The findings in this chapter should be interpreted with caution. It would be useful to have further research on children with disabilities by using national representative data. Moreover, the ASER data on assessing learning outcomes for children is criticised for its quality in linking it to assessing students' ability and making judgements concerning a broader definition of meaningful learning. Nevertheless, this is the only available data on out of school children and educational



outcomes in the Pakistani context. Moreover, we do not have any information regarding the parental decision in the data. It will be interesting to have further research to determine the access of children with disabilities into public and private schools.

Madrassas education is one of the largest in the region. They are free of cost and offer children accommodation and food. Our results show that parents prefer to send children with disabilities to madrassas instead of schools. However, it would be interesting to know more about children with disabilities enrolled in Madrassas.

Chapter 4 uses a difference-in-difference model to investigate the impact of Taliban rule on education and women empowerment. In order for this method to be valid, that is the identification of a causal effect. It implies that first, in the absence of the Taliban rule, women in the regions who were ruled by the Taliban would have experienced the same evolution in outcome variables compared to the women in the regions who were not controlled by Taliban trends in the regions would have been the same; and second, there was no other policy change during the same time. However, biases are analysed through Placebo tests and controlling for district fixed effects. However, this is not fully convincing. Hence we can not fully claim that the results are without unbiased causal effects.

These non-exhaustive propositions, with the back-drop of recent events in Afghanistan and Pakistan, are indubitably a promising area for future research.

\*\*\*

# **Appendix A**

## **Appendix for Chapter 1**

Table A.1: Population by mother tongue

Administrative unit	Urdu	Punjabi	Sindhi	Pushto	Balochi	Sirayki	Others
Pakistan	7.57	44.15	14.1	15.42	3.57	10.53	4.66
Rural	1.48	42.51	16.46	18.06	3.99	12.97	4.53
Urban	20.22	47.56	9.2	9.94	2.69	5.46	4.93
NWFP	0.78	0.97	0.04	73.9	0.01	3.86	20.43
Rural	0.24	0.24	0.02	73.98	0.01	3.99	21.52
Urban	3.47	4.58	0.01	73.55	0.03	3.15	15.11
FATA	0.18	0.23	0.01	99.1	0.04	-	0.45
Rural	0.18	0.18	0.01	99.15	0.04	-	0.43
Urban	0.18	1.85	*	97	*	-	0.96
Punjab	4.51	75.23	0.13	1.16	0.66	17.36	0.95
Rural	1.99	73.63	0.15	0.87	0.9	21.44	1.02
Urban	10.05	78.75	0.09	1.81	0.14	8.38	0.78
Sindh	21.05	6.99	59.73	4.19	2.11	1	4.93
Rural	1.62	2.68	92.02	0.61	1.5	0.32	1.25
Urban	41.48	11.52	25.79	7.96	2.74	1.71	8.8
Baluchistan	0.97	2.52	5.58	29.64	54.76	2.42	4.11
Rural	0.21	0.43	5.27	32.16	57.55	1.87	2.51
Urban	3.42	9.16	6.57	21.61	45.84	4.16	9.24
Islamabad	10.11	71.66	0.56	9.52	0.06	1.11	6.98
Rural	2.33	83.74	0.08	7.62	0.02	0.3	5.91
Urban	14.18	65.36	0.81	10.51	0.08	1.53	7.53

Note: \* refers to very small population. NWFP province was renamed Khyber-Pakhtunkhwa in 2010

Table A.2: Probit Model (marginal effects) results for enrolment

	(1) Baseline	(3) Baseline+Household characteristics	(4) Baseline + Household characteristics+ Family characteristics
<b>Ethnic Groups ( Reference Cat. Punjabi)</b>			
Pushto	-0.0221 (0.0174)	-0.00710 (0.0168)	-0.000515 (0.0194)
Balochi	-0.0458** (0.0182)	-0.0331* (0.0175)	0.00436 (0.0231)
Sindhi	-0.0307* (0.0160)	-0.0190 (0.0152)	0.00356 (0.0198)
Sirayki	-0.0385*** (0.0144)	-0.0231* (0.0134)	-0.0285* (0.0158)
Urdu	0.0118 (0.0146)	-0.00141 (0.0157)	0.00576 (0.0168)
Other	-0.0286** (0.0111)	-0.0192* (0.0105)	-0.00301 (0.0152)
<b>Individual Characteristics</b>			
child age	0.114*** (0.00239)	0.116*** (0.00250)	0.121*** (0.00319)
child age2	-0.00572*** (0.000109)	-0.00576*** (0.000113)	-0.00600*** (0.000144)
gender	-0.125*** (0.00290)	-0.117*** (0.00290)	-0.120*** (0.00372)
<b>Household Characteristics</b>			
total children		-0.0124*** (0.000942)	-0.0125*** (0.00120)
mother age		-0.000677 (0.000449)	-0.00108* (0.000560)
father age		-0.000615 (0.000405)	-0.000250 (0.000487)
mother gone school		0.0515*** (0.00442)	0.0553*** (0.00459)
father gone school		0.0530*** (0.00323)	0.0453*** (0.00373)
<b>Family wealth ( Ref. category Richest)</b>			
poorest		-0.0839*** (0.00506)	-0.0762*** (0.00578)
poor		-0.0486***	-0.0374***

		(0.00415)	(0.00492)
richer		-0.0260***	-0.0239***
		(0.00354)	(0.00430)
<b>Village Characteristics</b>			
Availability of health facility			0.00231
			(0.00593)
Availability of Paved roads			0.0134**
			(0.00628)
Availability of Bank			0.0140
			(0.0101)
Availability of post office			0.00316
			(0.00740)
Availability of computer center			0.00849
			(0.00973)
Availability of public school			0.0699***
			(0.0187)
Availability of Private School			0.00698
			(0.00690)
<b>Fixed Effects</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Observations	243,856	215,473	128,598

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A.3: Marginal effects from Probit estimation of school enrolment of all ethnic groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Punjabi	Pashtun	Balochi	Sindhi	Sirayki	Urdu	Other
<b>VARIABLES</b>								
<b>Individual Characteristics</b>								
child age	0.121*** (0.00184)	0.0629*** (0.00396)	0.122*** (0.00369)	0.216*** (0.00542)	0.152*** (0.00609)	0.0932*** (0.00743)	0.0593*** (0.00904)	0.0900*** (0.00322)
child age2	-0.00600*** (8.82e-05)	-0.00364*** (0.000185)	-0.00587*** (0.000180)	-0.0102*** (0.000262)	-0.00755*** (0.000296)	-0.00522*** (0.000352)	-0.00315*** (0.000429)	-0.00432*** (0.000154)
Female	-0.125*** (0.00209)	-0.0307*** (0.00415)	-0.204*** (0.00449)	-0.191*** (0.00637)	-0.182*** (0.00685)	-0.108*** (0.00816)	-0.0195*** (0.00971)	-0.0624*** (0.00353)
<b>Family Characteristics</b>								
total children	-0.0125*** (0.000667)	-0.0130*** (0.00130)	-0.00513*** (0.00141)	-0.0194*** (0.00219)	-0.0193*** (0.00214)	-0.0122*** (0.00257)	-0.00907*** (0.00339)	-0.00939*** (0.00120)
mother age	-0.00111*** (0.000316)	-0.000916 (0.000647)	-0.00245*** (0.000795)	-0.000255 (0.000928)	0.000187 (0.00102)	-0.000864 (0.00121)	-0.000443 (0.00135)	9.04e-06 (0.000528)
father age	-0.000222 (0.000280)	0.000179 (0.000565)	0.00116 (0.000729)	-0.00296*** (0.000819)	-0.00147* (0.000875)	-0.000290 (0.00107)	-0.00174 (0.00117)	-0.000665 (0.000460)
Family Wealth ( Ref.Richest)								
poorest	-0.0757*** (0.00331)	-0.0875*** (0.00791)	-0.0564*** (0.00696)	-0.0443*** (0.0103)	-0.123*** (0.0108)	-0.0955*** (0.0126)	-0.0909*** (0.0181)	-0.0780*** (0.00609)
poor	-0.0372*** (0.00313)	-0.0482*** (0.00619)	-0.0293*** (0.00659)	0.00858 (0.00965)	-0.0668*** (0.0109)	-0.0691*** (0.0117)	-0.0478*** (0.0171)	-0.0399*** (0.00576)
richer	-0.0239*** (0.00289)	-0.0235*** (0.00500)	-0.0152** (0.00647)	0.00310 (0.00978)	-0.0226** (0.0105)	-0.0361*** (0.0104)	-0.0602*** (0.0127)	-0.0327*** (0.00511)
<b>Parents Education</b>								
Mother gone school	0.0555*** (0.00290)	0.0594*** (0.00490)	0.0190*** (0.00622)	0.0318*** (0.0122)	0.0773*** (0.0100)	0.0700*** (0.0106)	0.0360*** (0.0119)	0.0353*** (0.00481)
Father gone school	0.0455*** (0.00230)	0.0328*** (0.00464)	0.0583*** (0.00483)	0.0212*** (0.00755)	0.0641*** (0.00733)	0.0805*** (0.00854)	0.0454*** (0.0110)	0.0223*** (0.00403)
<b>Village Characteristics</b>								
Availability of health facility	0.00231 (0.00260)	-0.00933* (0.00497)	-0.0129** (0.00535)	0.0358*** (0.00945)	0.0547*** (0.00979)	-0.0224** (0.00982)	0.0630*** (0.0192)	-0.00220 (0.00472)
Availability of paved roads	0.0130*** (0.00256)	0.0398*** (0.00622)	0.0155*** (0.00505)	-0.00907 (0.00822)	-0.0254*** (0.00878)	0.0491*** (0.0107)	0.0287 (0.0231)	0.00337 (0.00444)
Availability of bank	0.0142*** (0.00476)	-0.0187** (0.00740)	0.0301*** (0.0100)	0.102*** (0.0226)	-0.0824*** (0.0231)	-0.0103 (0.0176)	-0.00188 (0.0262)	0.0301*** (0.00802)
Availability of post office	0.00279 (0.00339)	0.0152** (0.00607)	-0.00636 (0.00763)	-0.00586 (0.0119)	0.00815 (0.0143)	0.0766*** (0.0136)	0.0647*** (0.0224)	-0.0183*** (0.00549)
Availability of computer center	0.00969** (0.00449)	0.0104 (0.00702)	0.0153 (0.0101)	0.00794 (0.0201)	0.0707*** (0.0212)	-0.00467 (0.0151)	0.00386 (0.0219)	-0.00257 (0.00789)
Availability of Public school	0.0713*** (0.00632)	0.00826 (0.0148)	0.0360*** (0.0129)	0.133*** (0.0185)	0.324*** (0.0255)	-0.0495 (0.0332)	-0.548 (16.99)	0.0201 (0.0126)
Availability of Private school	0.00715** (0.00294)	0.0124** (0.00519)	0.0147** (0.00593)	0.0207 (0.0155)	-0.00752 (0.0103)	-0.0175* (0.00969)	-0.0346 (0.0219)	0.0243*** (0.00560)
Fixed effects	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Observations	128,598	21,689	31,831	18,442	15,847	10,027	3,662	26,383

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A.4: Sensitivity test marginal effects from probit estimation of school enrolment the effect of father's education

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Punjabi	Pashun	Balochi	Sindhi	Strayki	Urdu	Other
Individual Characteristics								
chilage	0.121*** (0.00180)	0.0623*** (0.00386)	0.124*** (0.00359)	0.213*** (0.00530)	0.147*** (0.00593)	0.0918*** (0.00732)	0.0618*** (0.00881)	0.0910*** (0.00318)
chilage2	-0.00600*** (8.62e-05)	-0.00366*** (0.000181)	-0.00602*** (0.000174)	-0.0101*** (0.000257)	-0.00727*** (0.000287)	-0.00517*** (0.000347)	-0.00331*** (0.000418)	-0.00438*** (0.000152)
Female	-0.128*** (0.00204)	-0.0294*** (0.00405)	-0.207*** (0.00438)	-0.195*** (0.00622)	-0.183*** (0.00665)	-0.111*** (0.00804)	-0.0277*** (0.00958)	-0.0667*** (0.00351)
Family Characteristics								
totalchildren	-0.0132*** (0.000649)	-0.0141*** (0.00128)	-0.00619*** (0.00137)	-0.0186*** (0.00213)	-0.0192*** (0.00206)	-0.0143*** (0.00250)	-0.00874*** (0.00334)	-0.0105*** (0.00118)
motherage	-0.00102*** (0.000308)	-0.00131*** (0.000629)	-0.00210*** (0.000767)	-0.000350 (0.000912)	-7.80e-05 (0.000974)	-0.000730 (0.00119)	-0.000872 (0.00132)	0.000293 (0.000525)
fatherage	-0.000378 (0.000273)	0.000295 (0.000549)	0.000961 (0.000705)	-0.00310*** (0.000805)	-0.00134 (0.000832)	-0.000473 (0.00106)	-0.00146 (0.00117)	0.00112** (0.000456)
poorest	-0.0845*** (0.00322)	-0.0996*** (0.00769)	-0.0630*** (0.00672)	-0.0490*** (0.00998)	-0.133*** (0.0104)	-0.103*** (0.0123)	-0.0952*** (0.0181)	-0.0855*** (0.00664)
poor	-0.0430*** (0.00304)	-0.0519*** (0.00604)	-0.0358*** (0.00639)	0.00777 (0.00933)	-0.0675*** (0.0106)	-0.0761*** (0.0115)	-0.0549*** (0.0167)	-0.0476*** (0.00567)
richer	-0.0285*** (0.00282)	-0.0265*** (0.00487)	-0.0218*** (0.00628)	-0.00163 (0.00949)	-0.0290*** (0.0102)	-0.0402*** (0.0102)	-0.0594*** (0.0124)	-0.0342*** (0.00510)
Parent Education								
fathergoeschool	0.0613*** (0.00212)	0.0554*** (0.00422)	0.0620*** (0.00443)	0.0285*** (0.00693)	0.0888*** (0.00680)	0.101*** (0.00793)	0.0522*** (0.0104)	0.0337*** (0.00379)
Village Characteristics								
Availability of health facility	0.00338 (0.00254)	-0.00227 (0.00483)	-0.0115** (0.00525)	0.0341*** (0.00926)	0.0568*** (0.00951)	-0.0199** (0.00965)	0.0648*** (0.0194)	-0.00679 (0.00466)
Availability of Paved roads	0.0137*** (0.00249)	0.0404*** (0.00608)	0.0192*** (0.00493)	-0.000359 (0.00788)	-0.0320*** (0.00837)	0.0441*** (0.0106)	0.0329 (0.0232)	0.00285 (0.00448)
Availability of bank	0.0167*** (0.00466)	-0.0169*** (0.00728)	0.0309*** (0.00963)	0.103*** (0.0220)	-0.0878*** (0.0229)	0.00117 (0.0171)	0.00211 (0.0264)	0.0324*** (0.00806)
Availability of post office	0.00431 (0.00333)	0.0182*** (0.00596)	-0.00816 (0.00749)	-0.000721 (0.0116)	0.0123 (0.0142)	0.0789*** (0.0134)	0.0718*** (0.0227)	-0.0207*** (0.00552)
is	0.00950** (0.00437)	0.00943 (0.00681)	0.0180* (0.00977)	0.00262 (0.0199)	0.0620*** (0.0209)	-0.0158 (0.0145)	-0.000759 (0.0222)	0.00178 (0.00772)
Availability of Public school	0.0694*** (0.00604)	0.00605 (0.0149)	0.0280** (0.0126)	0.146*** (0.0231)	0.285*** (0.0283)	-0.0416 (0.0283)	-0.573 (16.50)	0.0204* (0.0123)
Availability of Private school	0.0115*** (0.00286)	0.0137*** (0.00503)	0.0170*** (0.00581)	0.0189 (0.0151)	0.000285 (0.0100)	-0.0145 (0.00954)	-0.0414* (0.0218)	0.0387*** (0.00543)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	136,782	23,243	34,010	19,418	16,973	10,370	3,96828,129	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A.5: Sensitivity test marginal effects from probit estimation of school enrolment the effect of mother's education

VARIABLES	(1) All	(2) Punjabi	(3) Pashun	(4) Balochi	(5) Sindhi	(6) Sirayki	(7) Urdu	(8) Other
Individual Characteristics								
childage	0.121*** (0.00183)	0.0631*** (0.00394)	0.122*** (0.00369)	0.216*** (0.00539)	0.152*** (0.00610)	0.0937*** (0.00743)	0.0603*** (0.00904)	0.0902*** (0.00320)
childage2	-0.00601*** (8.80e-05)	-0.00365*** (0.000185)	-0.00586*** (0.000179)	-0.0107*** (0.000261)	-0.00753*** (0.000296)	-0.00523*** (0.000353)	-0.00320*** (0.000429)	-0.00433*** (0.000153)
Female	-0.125*** (0.00208)	-0.0311*** (0.00414)	-0.205*** (0.00449)	-0.192*** (0.00634)	-0.184*** (0.00684)	-0.104*** (0.00814)	-0.0178* (0.00968)	-0.0625*** (0.00352)
Family Characteristics								
totalchildren	-0.0122*** (0.000665)	-0.0131*** (0.00129)	-0.00473*** (0.00140)	-0.0187*** (0.00217)	-0.0186*** (0.00213)	-0.0122*** (0.00256)	-0.00899*** (0.00337)	-0.00928*** (0.00119)
motherage	-0.00111*** (0.000315)	-0.000895 (0.000640)	-0.00253*** (0.000792)	-3.60e-05 (0.000922)	3.45e-05 (0.00102)	-0.000991 (0.00120)	-0.000697 (0.00135)	1.81e-05 (0.000526)
fatherage	-0.000505* (0.000278)	7.81e-05 (0.000556)	0.000680 (0.000725)	-0.00330*** (0.000811)	-0.00169* (0.000876)	-0.000606 (0.00106)	-0.00161 (0.00116)	-0.000822* (0.000456)
poorest	-0.0857*** (0.00326)	-0.0945*** (0.00777)	-0.0670*** (0.00690)	-0.0480*** (0.0102)	-0.140*** (0.0106)	-0.113*** (0.0124)	-0.105*** (0.0175)	-0.0825*** (0.00602)
poor	-0.0441*** (0.00311)	-0.0534*** (0.00613)	-0.0369*** (0.00656)	0.00505 (0.00958)	-0.0785*** (0.0109)	-0.0820*** (0.0117)	-0.0567*** (0.0168)	-0.0432*** (0.00571)
richer	-0.0267*** (0.00289)	-0.0266*** (0.00497)	-0.0177*** (0.00646)	0.00266 (0.00973)	-0.0274*** (0.0105)	-0.0429*** (0.0104)	-0.0659*** (0.0127)	-0.0335*** (0.00510)
Parent Education Mother only								
Mothergoneschool	0.0746*** (0.00272)	0.0717*** (0.00453)	0.0436*** (0.00588)	0.0428*** (0.0114)	0.102*** (0.00958)	0.103*** (0.0100)	0.0484*** (0.0115)	0.0453*** (0.00451)
Village Characteristics								
Availability of health facility	0.00354 (0.00259)	-0.00783 (0.00493)	-0.0127** (0.00534)	0.0387*** (0.00941)	0.0572*** (0.00977)	-0.0171* (0.00979)	0.0542*** (0.0191)	-0.00330 (0.00471)
Availability of Paved roads	0.0129*** (0.00255)	0.0414*** (0.00619)	0.0144*** (0.00505)	-0.00876 (0.00817)	-0.0264*** (0.00875)	0.0515*** (0.0107)	0.0302 (0.0231)	0.00351 (0.00443)
Availability of bank	0.0128*** (0.00475)	-0.0206*** (0.00737)	0.0294*** (0.0100)	0.0955*** (0.0222)	-0.0884*** (0.0232)	-0.0155 (0.0176)	0.0102 (0.0260)	0.0300*** (0.00799)
Availability of post office	0.00549 (0.00338)	0.0184*** (0.00604)	-0.00268 (0.00761)	-0.00366 (0.0118)	0.0158 (0.0143)	0.0826*** (0.0136)	0.0593*** (0.0222)	-0.0178*** (0.00549)
Availability of computer centre	0.00835* (0.00448)	0.00893 (0.00699)	0.0131 (0.0101)	0.0119 (0.0199)	0.0670*** (0.0212)	-0.0118 (0.0149)	0.000340 (0.0221)	-0.00326 (0.00786)
Availability of public school	0.0692*** (0.00631)	0.00746 (0.0148)	0.0242* (0.0128)	0.131*** (0.0184)	0.327*** (0.0256)	-0.0568* (0.0328)	-0.559 (17.12)	0.0226* (0.0126)
Availability of private school	0.00856*** (0.00293)	0.0139*** (0.00516)	0.0173*** (0.00592)	0.0165 (0.0154)	-0.00341 (0.0103)	-0.0176* (0.00969)	-0.0216 (0.0211)	0.0264*** (0.00556)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	129,954	21,958	32,089	18,643	16,009	10,186	3,697	26,652

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Table A.6: Decomposition of ethnic differences in school enrolment separating parents' education.

VARIABLES	Ps vs Pu	Ps vs Pu	Bas vs Pu	Bas vs Pu	Si vs Pu	Si vs Pu	Si vs Pu	Si vs Pu	Urdu vs Pu	Urdu vs Pu	Other vs Pu	Other vs Pu
	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father
Ethnic Difference <sup>1</sup>	0.882-0.791	0.880-0.786	0.882-0.684	0.880-0.686	0.882-0.723	0.880-0.724	0.882-0.778	0.880-0.779	0.882-0.897	0.880-0.894	0.882-0.890	0.880-0.885
Gender	-0.0126*** (0.000732)	-0.0140*** (0.000799)	-0.00356*** (0.000331)	-0.00487*** (0.000341)	-0.00296*** (0.000397)	-0.00276*** (0.000341)	-0.00136*** (0.000222)	-0.00169*** (0.000219)	-0.000656*** (0.000154)	-0.000741*** (0.000159)	-0.00143*** (0.000186)	-0.00165*** (0.000189)
Total Children	0.00785*** (0.000690)	0.00838*** (0.000688)	0.00701*** (0.000610)	0.00674*** (0.000582)	0.00659*** (0.000654)	0.00711*** (0.000618)	0.00353*** (0.000353)	0.00352*** (0.000319)	-0.00144*** (0.000194)	-0.00227*** (0.000246)	-0.00105*** (0.000132)	-0.00123*** (0.000137)
Mother's age	0.00146*** (0.000474)	0.00183*** (0.000530)	0.000379 (0.000423)	0.000287 (0.000409)	-0.000232 (0.000237)	-0.000189 (0.000255)	-0.000688* (0.000389)	-0.000849** (0.000377)	-0.00194*** (0.000670)	-0.00173*** (0.000636)	-0.000106 (0.000232)	-0.000138 (0.000224)
Father's age	8.19e-05 (0.000205)	-4.08e-05 (0.000195)	-2.37e-07 (0.000239)	9.97e-06 (0.000228)	-0.000293 (0.000234)	-0.000147 (0.000198)	-0.000293 (0.000286)	-0.000261 (0.000269)	-0.000398 (0.000354)	-0.000766* (0.000414)	4.95e-06 (0.000151)	1.70e-05 (0.000134)
Wealth Index	0.0249*** (0.00204)	0.0225*** (0.00207)	0.0309*** (0.00233)	0.0323*** (0.00230)	0.0353*** (0.00315)	0.0323*** (0.00320)	0.0159*** (0.00104)	0.0151*** (0.000988)	0.000297 (0.000274)	0.000690** (0.000272)	0.0176*** (0.000745)	0.0141*** (0.000780)
Parents attended school	0.0265*** (0.00301)	0.0153*** (0.00134)	0.0309*** (0.00254)	0.0210*** (0.00181)	0.0244*** (0.00280)	0.0127*** (0.00144)	0.0198*** (0.000922)	0.0123*** (0.000670)	-0.00938*** (0.000555)	-0.00624*** (0.000454)	0.00604*** (0.000359)	0.00202*** (0.000187)
Health facility availability	-0.00144*** (0.000371)	-0.00114*** (0.000345)	-0.00145*** (0.000349)	-0.00146*** (0.000341)	0.000408 (0.000304)	0.000686** (0.000294)	-0.00115*** (0.000338)	-0.000904*** (0.000286)	0.00138*** (0.000497)	0.00138*** (0.000485)	0.000617*** (0.000162)	0.000692*** (0.000179)
Road Network	0.00442*** (0.00128)	0.00561*** (0.00124)	0.0127*** (0.00193)	0.0125*** (0.00189)	0.000898 (0.000880)	0.000392 (0.000839)	0.00353*** (0.000593)	0.00311*** (0.000565)	0.00241*** (0.000577)	0.00324*** (0.000597)	0.00542*** (0.000940)	0.00509*** (0.000889)
Bank availability	-0.000927 (0.000802)	-0.000166 (0.000119)	0.00224** (0.00111)	0.00289*** (0.00104)	-0.00358*** (0.00121)	-0.00271*** (0.00110)	-0.00193*** (0.000545)	-0.00112** (0.000451)	0.000503 (0.00105)	0.000503 (0.000981)	0.000350** (0.000167)	0.000475** (0.000194)
Post office availability	0.00228*** (0.000460)	0.00186*** (0.000442)	0.00133 (0.00103)	0.00188* (0.000985)	0.00375*** (0.00101)	0.00313*** (0.000940)	0.00132*** (0.000312)	0.000828*** (0.000280)	-0.00224*** (0.000619)	-0.00232*** (0.000605)	9.55e-05 (0.000118)	0.000113 (0.000129)
Computer centre available	0.00171*** (0.000751)	0.00186*** (0.000698)	0.00174 (0.00122)	0.00143 (0.00117)	0.00184* (0.00103)	0.00177* (0.000941)	0.00112* (0.000601)	0.000947* (0.000542)	-0.000737 (0.000874)	-0.000737 (0.000767)	-0.000147 (0.000327)	4.96e-05 (0.000326)
Public School	0.000136** (5.74e-05)	0.000114* (6.09e-05)	0.000820*** (0.000192)	0.000820*** (0.000192)	-5.28e-05 (7.01e-05)	0.000208*** (5.51e-05)	1.84e-05 (3.54e-05)	-2.41e-05 (0.000112)	-0.000292 (0.000213)	-0.000374** (0.000185)	0.000164 (0.000116)	0.000188 (0.000155)
Private School	0.0163*** (0.00178)	0.0153*** (0.00171)	0.00941*** (0.00357)	0.0129*** (0.00342)	0.00596*** (0.00249)	0.00584*** (0.00234)	0.000840 (0.000840)	0.00275*** (0.000806)	-0.000707*** (0.000194)	-0.000216** (0.000107)	0.00203*** (0.000213)	0.00229*** (0.000216)
Region	0.0743* (0.0411)	0.0563 (0.0389)	0.0120 (0.0205)	0.00731 (0.0197)	-0.0402* (0.0242)	-0.0403* (0.0223)	0.00308 (0.00206)	0.00566* (0.00198)	0.000237 (0.00336)	0.000266 (0.00339)	-0.0310*** (0.00584)	-0.0301*** (0.00551)
Observations	54,268	57,474	40,705	42,765	38,071	40,320	32,248	33,717	26,178	27,716	48,808	51,564

Standard errors in parentheses  
 P= Punjabi, P= Pushto, B= Baloch, Si=Sindh, S= Sryaki

<sup>1</sup> (Punjabi-Ethnic-minority)

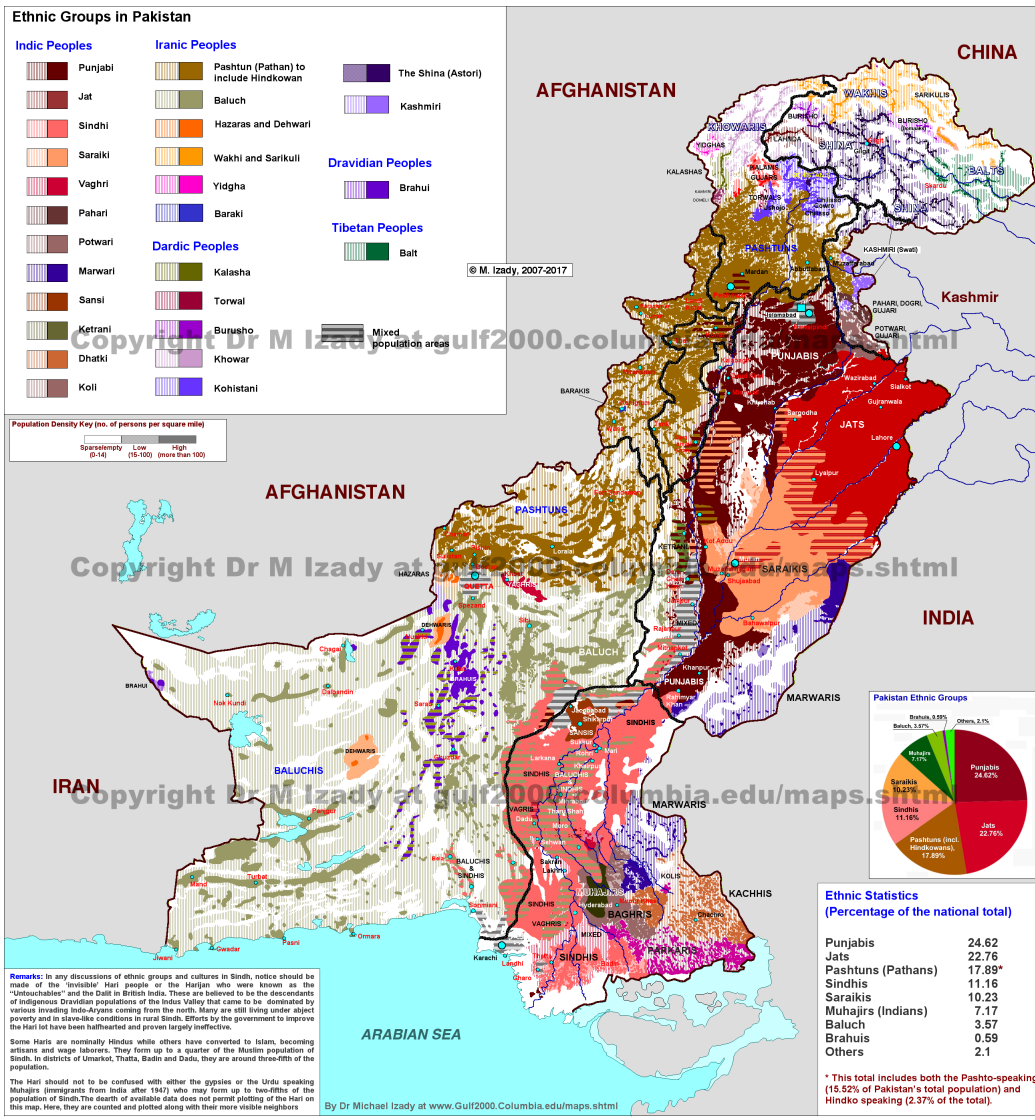


Figure A.1: Ethnic groups in Pakistan  
 Source: <https://gulf2000.columbia.edu/images/maps/Pak>

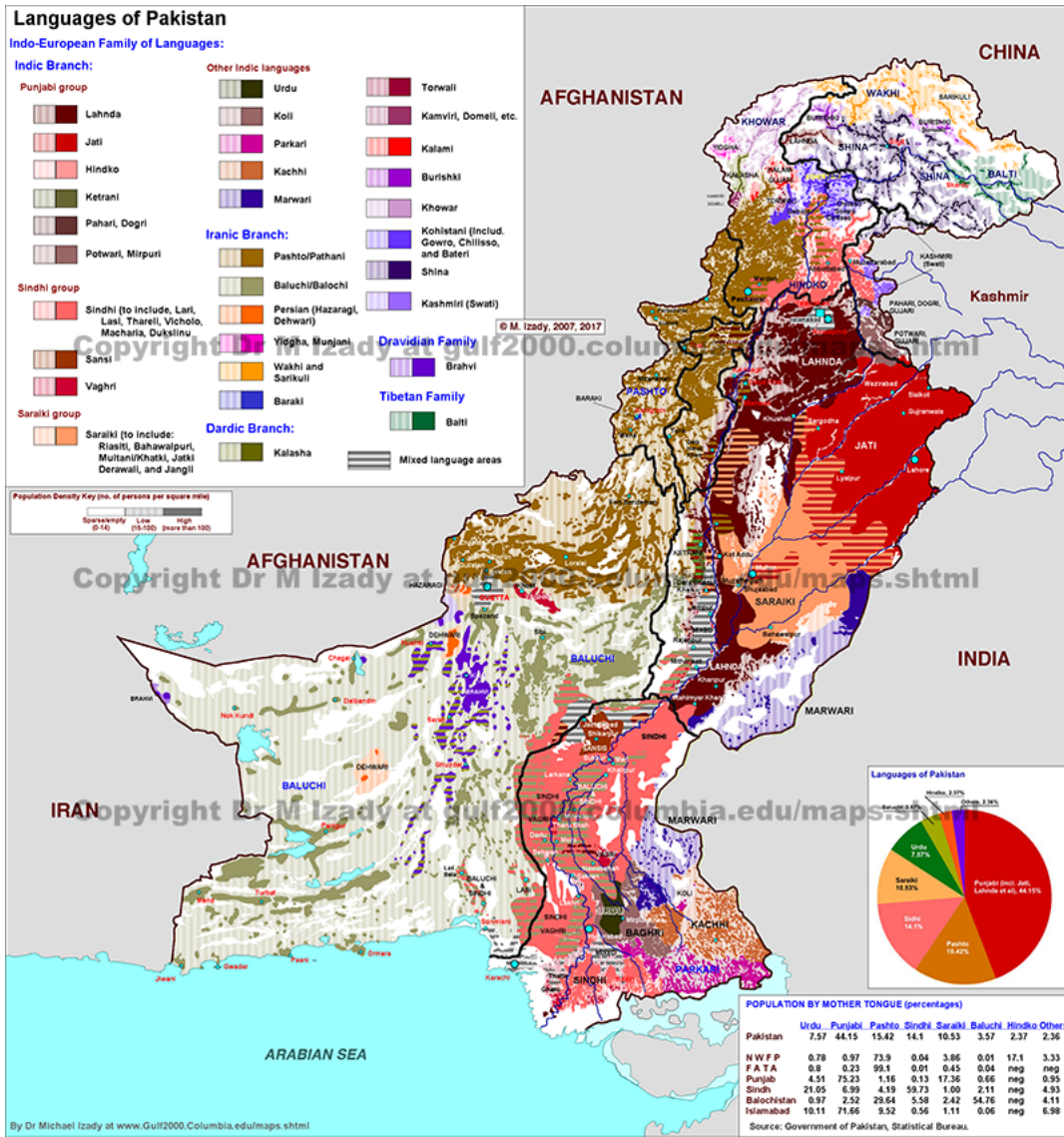


Figure A.2: Languages in Pakistan  
Source: <https://gulf2000.columbia.edu/images/maps/Pak>

# Appendix B

## Appendix for Chapter 2

Table B.1: Marginal effects gender gap

	Model 1		Model 2		Model 3	
	Boys	Girls	Boys	Girls	Boys	Girls
Individual Characteristics						
Childage	0.180*** (0.00146)	0.201*** (0.00165)	0.181*** (0.00145)	0.200*** (0.00164)	0.180*** (0.00145)	0.200*** (0.00163)
Childage2	- 0.00838*** (8.21e-05)	- 0.00950*** (9.51e-05)	- 0.00840*** (8.21e-05)	- 0.00948*** (9.48e-05)	- 0.00840*** (8.19e-05)	- 0.00948*** (9.42e-05)
Ethnicity (Ref. Cate. Punjabi)						
Pushto	-0.0444*** (0.00474)	-0.104*** (0.00589)	-0.0414*** (0.00488)	-0.0965*** (0.00609)	-0.0127 (0.0137)	-0.0534*** (0.0167)
Balochi	-0.0927*** (0.00680)	-0.197*** (0.00881)	-0.0836*** (0.00748)	-0.163*** (0.00945)	0.00486 (0.0158)	-0.0557*** (0.0208)
Sindhi	-0.0183*** (0.00513)	-0.0688*** (0.00620)	-0.00977* (0.00529)	-0.0573*** (0.00641)	-0.0199 (0.0215)	-0.0463* (0.0246)
Sirayki	-0.0167** (0.00674)	-0.0520*** (0.00823)	-0.0109 (0.00669)	-0.0434*** (0.00820)	-0.0108 (0.00692)	-0.0438*** (0.00841)

Table B.1: Marginal effects gender gap

	Model 1		Model 2		Model 3	
	Boys	Girls	Boys	Girls	Boys	Girls
Urdu	-0.00155 (0.00902)	-0.0146 (0.00985)	-0.00769 (0.00946)	-0.0195* (0.0103)	-0.00970 (0.0119)	-0.0321** (0.0128)
Other	0.0163*** (0.00439)	0.0128*** (0.00491)	0.0128*** (0.00477)	0.00932* (0.00539)	0.0120 (0.0123)	-0.0134 (0.0144)
<b>Family Characteristics</b>						
Total children under 17	-5.08e-05 (0.000476)	-0.00138** (0.000582)	0.000113 (0.000477)	-0.00118** (0.000580)	0.000281 (0.000477)	-0.000980* (0.000580)
Mother age	-0.000251 (0.000406)	0.00156*** (0.000491)	-0.000338 (0.000406)	0.00135*** (0.000489)	-0.000342 (0.000404)	0.00132*** (0.000486)
Father age	- 0.00528*** (0.00115)	- 0.00673*** (0.00132)	- 0.00561*** (0.00115)	- 0.00689*** (0.00132)	- 0.00489*** (0.00115)	- 0.00610*** (0.00132)
<b>Family Wealth (Ref. Cate. Richest)</b>						
Poorest	-0.0396*** (0.00574)	-0.0359*** (0.00695)	-0.0406*** (0.00575)	-0.0367*** (0.00697)	-0.0394*** (0.00573)	-0.0361*** (0.00696)
Poor	-0.0202*** (0.00423)	-0.0179*** (0.00499)	-0.0202*** (0.00422)	-0.0179*** (0.00497)	-0.0207*** (0.00425)	-0.0177*** (0.00498)
Richer	-0.0128*** (0.00375)	-0.0132*** (0.00442)	-0.0131*** (0.00375)	-0.0138*** (0.00440)	-0.0115*** (0.00376)	-0.0118*** (0.00441)
<b>Mother Education; Ref. Cate. No Qualification</b>						
School	0.0321* (0.0165)	0.0682*** (0.0204)	0.0280* (0.0163)	0.0670*** (0.0203)	0.0301* (0.0160)	0.0691*** (0.0201)
Post School	0.0580*** (0.0173)	0.101*** (0.0212)	0.0532*** (0.0171)	0.0973*** (0.0211)	0.0539*** (0.0168)	0.0979*** (0.0209)
Bachelor's	0.0619*** (0.0177)	0.106*** (0.0216)	0.0572*** (0.0175)	0.103*** (0.0216)	0.0586*** (0.0172)	0.104*** (0.0213)
Postgraduate	0.0614*** (0.0187)	0.109*** (0.0229)	0.0573*** (0.0186)	0.103*** (0.0230)	0.0576*** (0.0183)	0.103*** (0.0227)
<b>Father Education; Ref. Cate. No Qualification</b>						
School	0.122*** (0.0223)	0.130*** (0.0256)	0.127*** (0.0225)	0.130*** (0.0255)	0.127*** (0.0220)	0.128*** (0.0251)
Post School	0.135*** (0.0226)	0.142*** (0.0259)	0.139*** (0.0228)	0.141*** (0.0259)	0.137*** (0.0223)	0.136*** (0.0254)
Bachelor's	0.139***	0.138***	0.143***	0.136***	0.142***	0.132***

Table B.1: Marginal effects gender gap

	Model 1		Model 2		Model 3	
	Boys	Girls	Boys	Girls	Boys	Girls
	(0.0228)	(0.0262)	(0.0230)	(0.0261)	(0.0225)	(0.0257)
Postgraduate	0.144***	0.139***	0.148***	0.136***	0.144***	0.132***
	(0.0231)	(0.0267)	(0.0234)	(0.0267)	(0.0229)	(0.0263)
<b>Village Characteristics</b>						
Post office available			0.0202***	0.0285***	0.0169***	0.0285***
			(0.00493)	(0.00599)	(0.00501)	(0.00607)
Bank available			0.000805	0.0188***	-0.00321	0.0154**
			(0.00596)	(0.00704)	(0.00599)	(0.00705)
PCO available			-0.0149***	-0.0540***	-0.0111**	-0.0488***
			(0.00476)	(0.00557)	(0.00480)	(0.00563)
Computer center available			0.0141***	0.0404***	0.0179***	0.0468***
			(0.00514)	(0.00640)	(0.00528)	(0.00646)
Health facilities available			-0.0250***	-0.0186***	-0.0209***	-0.0134***
			(0.00420)	(0.00498)	(0.00427)	(0.00505)
Road network available			0.00329	0.0117**	0.00197	0.00918*
			(0.00436)	(0.00524)	(0.00436)	(0.00528)
Govt. school available			0.0125**	-0.00353	0.0222***	0.00467
			(0.00485)	(0.00591)	(0.00490)	(0.00594)
Private school available			0.0122***	0.0222***	0.00499	0.0140***
			(0.00461)	(0.00522)	(0.00473)	(0.00531)
<b>Region; Ref. Cate. Punjab</b>						
Sindh					0.0160	-0.00223
					(0.0192)	(0.0242)
Balochistan					-0.101***	-0.109***
					(0.0180)	(0.0226)
Khyber Pakhtunkhwa					-0.0166	-0.0321*
					(0.0130)	(0.0165)
Gilgit Baltistan					-0.00228	0.0200
					(0.0133)	(0.0154)
Kashmir					0.00526	0.0359**
					(0.0121)	(0.0141)
Islamabad - ICT					-0.0197	0.00866
					(0.0275)	(0.0317)
FATA					-0.0453***	-0.0564***
					(0.0163)	(0.0206)

Table B.1: Marginal effects gender gap

	<b>Model 1</b>		<b>Model 2</b>		<b>Model 3</b>	
	Boys	Girls	Boys	Girls	Boys	Girls
Observations	39,247	32,453	39,247	32,453	39,247	32,453

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# **Appendix C**

## **Appendix for Chapter 3**



Table C.1: Descriptive statistics

Numeracy	Beginner/Nothing		Recognition of 1-9		Recognition of 10-99		Recognition of 100-200		Subtraction		Division		Total	
	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct	Freq.	Pct
Any difficulty	268	3.9	124	3.9	212	4.6	286	4.6	422	4.8	661	3.8	1973	4.2
Mild difficulty	159	2.3	94	3	128	2.8	220	3.6	358	4.1	520	3	1479	3.1
Mod/Severe	128	1.8	42	1.3	90	1.9	86	1.4	88	1	179	1	613	1.3
Reading Pashto	Beginner/Nothing		Letter		Words		Sentences		Story					
Any difficulty	290	3.8	252	4.3	375	4.5	324	5	578	4.3			1819	4.3
Mild difficulty	175	2.3	190	3.2	294	3.5	264	4	439	3.2			1362	3.2
Moderate/Severe	135	1.8	78	1.3	112	1.3	78	1.2	167	1.2			570	1.4
Reading English	Beginner/Nothing		Capital Letters		Small Letters		Words		Sentences					
Any difficulty	646	4	216	5.1	259	4.3	475	4.9	463	3.9			2059	4.3
Mild difficulty	469	2.9	124	2.9	206	3.4	395	4.1	361	3.1			1555	3.2
Moderate/Severe	224	1.4	106	2.5	67	1.1	109	1.1	128	1.1			634	1.3

Source: Author. using the ASER Pakistan database.

Table C.2: Descriptive Statistics by Gender

	<b>Total</b>		<b>Mild Disability</b>		<b>Moderate/Sever Disability</b>	
	Male					
Type of Difficulty	Freq.	Pct	Freq.	Pct	Freq.	Pct
Any Difficulty	1013	4	1178	3.3	499	1.4
Seeing	455	1.3	355	1	100	0.3
Hearing	313	0.9	217	0.6	96	0.3
Walking	350	1	224	0.6	126	0.4
Self-care	394	1.1	268	0.7	126	0.4
Being Understood	405	1.1	285	0.8	120	0.3
Remembering	595	1.7	511	1.4	84	0.2
<b>Total Sample</b>	<b>61,209</b>					
	Female					
Any Difficulty	1580	4.4	741	2.9	338	1.3
Seeing	259	1	212	0.8	47	0.2
Hearing	194	0.8	120	0.5	74	0.3
Walking	248	1	157	0.6	91	0.4
Self-care	277	1.1	184	0.7	93	0.4
Being Understood	266	1.1	199	0.8	67	0.3
Remembering	352	1.4	282	1.1	70	0.3
<b>Total Sample</b>	<b>61,209</b>					

Source: Author, using the ASER Pakistan database.

Table C.3: Sensitivity Tests

	Public School		Private School		Madrasa	
	(1)	(2)	(3)	(4)	(5)	(6)
Enrollment						
Any Difficulty	0.928*		1.010		0.923	
	(0.0422)		(0.0646)		(0.0675)	
Mild Difficulty		1.024		0.953		1.050
		(0.0368)		(0.0463)		(0.0560)
Severe/Moderate Difficulty		0.962		0.932		1.002
		(0.0323)		(0.0412)		(0.0439)
Child age	1.244***	1.244***	1.209***	1.209***	1.124***	1.124***
	(0.00184)	(0.00184)	(0.00261)	(0.00261)	(0.00337)	(0.00337)
Child age (square)	0.990***	0.990***	0.992***	0.992***	0.996***	0.996***
	(8.76e-05)	(8.77e-05)	(0.000127)	(0.000127)	(0.000156)	(0.000156)
Girl	0.872***	0.872***	0.890***	0.890***	0.923***	0.923***
	(0.00282)	(0.00282)	(0.00365)	(0.00365)	(0.00409)	(0.00409)
Total children	0.995***	0.995***	0.986***	0.986***	1.001	1.001
	(0.00121)	(0.00121)	(0.00152)	(0.00152)	(0.00145)	(0.00145)
Poorest	0.986**	0.987**	0.927***	0.927***	0.993	0.994
	(0.00582)	(0.00583)	(0.00683)	(0.00683)	(0.00865)	(0.00865)
Poor	1.000	1.000	0.939***	0.939***	0.993	0.993
	(0.00516)	(0.00517)	(0.00592)	(0.00593)	(0.00806)	(0.00806)
Richer	1.015***	1.016***	0.989	0.989	0.999	0.999
	(0.00583)	(0.00584)	(0.00696)	(0.00696)	(0.00976)	(0.00976)
Mother Gone School	1.018***	1.018***	1.044***	1.044***	0.961***	0.961***
	(0.00442)	(0.00442)	(0.00583)	(0.00583)	(0.00745)	(0.00745)
Father Gone School	1.034***	1.034***	1.057***	1.057***	1.028***	1.028***
	(0.00419)	(0.00419)	(0.00565)	(0.00565)	(0.00592)	(0.00592)
District FE	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Observations	53,549	53,549	45,478	45,478	26,389	26,389

Robust standard errors in parentheses \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Note: Disability interaction with family characteristics are included but not presented here

# **Appendix D**

## **Appendix for Chapter 4**

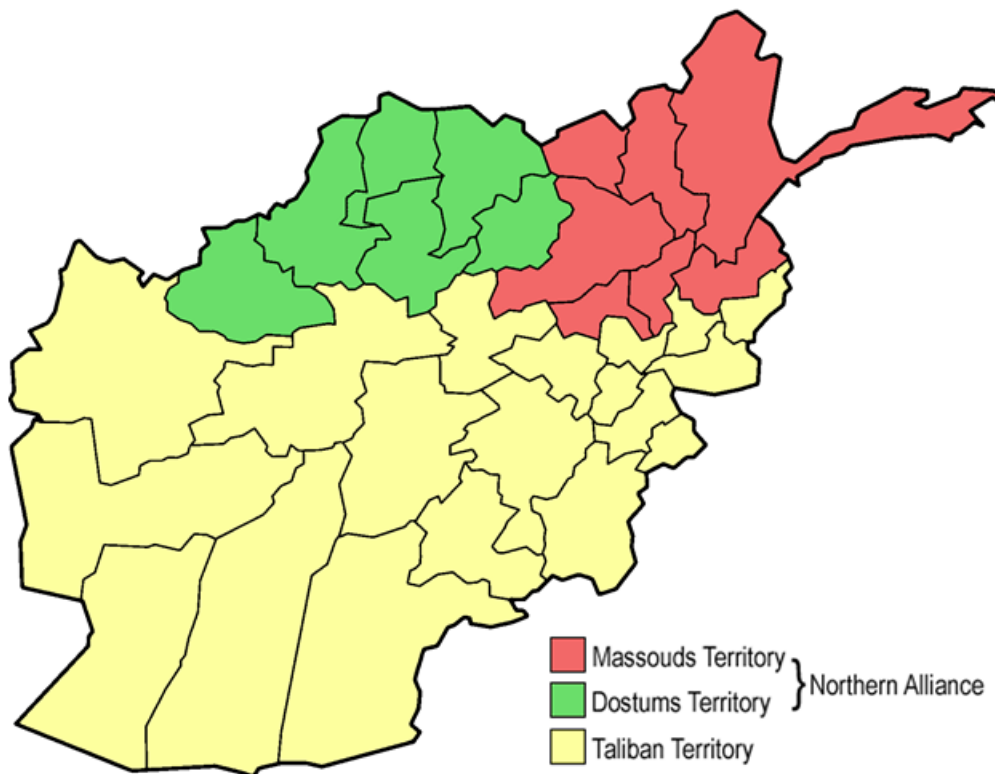


Figure D.1: Map of treatment and control provinces

Source: CNN Afghanistan Map in 1996 ; used under public domain license from Wikipedia.org Islamic Emirates of Afghanistan: Map of the situation in Afghanistan in late 1996.

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