

# **Migration, Child School Attainment and Educational Expenditure: Evidence from Pakistan**

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# Introduction

- Increased Migration over the time--In 2015, the total World migration was 232 million with an annual growth rate of 2.2 million (World Migration Report (WMR), 2015).
- Pakistan is no exception--Overall, during the period from 1971 to 2015, around 8.77 million Pakistanis moved abroad for employment purpose.
- A variety of socio-economic implications of migration both at the aggregate and at the household levels in the country of origin--One such important subject is how migration affects educational outcomes in the country of origin?
- We discuss this aspect in case of Pakistan--It would be interesting to study how such huge migration from Pakistan affects educational outcomes of the families left behind'
- Considerable research on the implications of Pakistan; however, the existing literature has three issues:
  - Most of the existing studies ignore the impact of the duration of migration
  - Problems of Endogeneity and Censoring of Data
  - Most of these studies focus on the aggregate level analysis while ignoring the region and gender specific impacts
- We focus on these issues and we incorporate two aspects of education, i.e. We analyze the impact of migration on Child School Attainment and Educational Expenditure--We use the data set of the Pakistan Panel Household Survey (PPHS), (2010)

# Theoretical Background

- There are several Channels through which migration can affect educational outcomes.
- **Remittances Effect**--Migration helps in relaxing the credit constraints of households which may enhance educational spending; and may, thereby, improve educational outcomes (Elbadawy and Roushdy, 2010; Mansuri, 2006 etc.).
- **Parental Supervision**--Migration of the parents or other elder members of the household inversely affect educational outcomes of the children due to the lack of supervision (Lucas, 2005; Miluka and Dabalen, 2008).
- **Incentives Effect**
  - Migration increases the probability of future migration and labor work for school going children (Miluka and Dabalen, 2008).
  - Migration may raise the opportunity cost of education due to lower expected future returns or higher expected returns in abroad in early age.
- **Labor Market Disruption**--When migration occurs on larger scale, it results in the shortage of labor supply and, the correspondingly, increase in the wage rate which enhances child labor (Mckenzie and Repoport, 2007)

# Data

- PPHS (2010)—It comprises 4142 households (2800 households from rural areas and 1342 from urban areas) from 216 Primary Sampling Units (PSUs) in 16 districts across the four provinces of Pakistan.
- Multidimensional Survey--having detailed information about individual level and household level characteristics; including household expenditure, assets, income sources, employment, demographic issues, health, education, migration, agriculture and natural disasters etc.
- Around 100 households, out of the total households in PPHS (2010), have at least one individual migrated outside the country, which translate into about 2.43 percent of the total households.
- 60% of the migrants are from rural areas--69.4 percent of the migrants are also fathers of the school-going children--The remittances-receiver households on average receive Rupees 11237.07 per month as remittances.
- Overall, thirty five percent of the households live in urban region. However, the percentage of migrant households in urban areas is 20 percent lower than that of the rural areas.
- Remittances Effect--Migrant Households spend more as compared to non-migrant households--the per capita educational expenditure in migrant households (Rupees 2481.87) as compared to those of the non-migrant households (Rupees 1625.44).
- We focus on children of age ranging from 5 years to 18 years– This translates into 6048 children--almost 87.4 percent of the children are currently attending school while 12.6 percent have attended school in the past. The average age of children is about 12 years.

# Summary Statistics

**Table 1: Descriptive Statistics**

Variable	Total		Migrant		Non-migrant	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<i>Migration (1=if Migrant)</i>	0.0243	0.154				
<i>Migrant Duration (Years)</i>			6.45	7.67		
<i>Per capita Households' Educational Expenditure</i>	1647.38	4891.91	2481.87	4065.71	1625.44	4910.1
<i>Per capita Households' Expenditure</i>	944.18	1292.76	1266.41	1164.98	935.71	1295.1
<i>Household Head Education Attainment</i>	1.30	1.59	1.64	1.53	1.29	1.5
<i>Gender of Household Head (1=if Male)</i>	0.988	0.106	1	0	.988	0.106
<i>Father Education Attainment</i>	1.56	1.64	1.79	1.57	1.56	1.64
<i>Mother Education Attainment</i>	0.46	1.08	0.81	1.20	0.45	1.08
<i>Family size</i>	8.87	4.04	8.53	3.36	8.88	4.04
<i>Region (1=if Urban)</i>	0.347	0.476	0.414	0.497	0.345	0.476
<i>Punjab</i>	0.436	0.496	0.827	0.381	0.426	0.496
<i>Sindh</i>	0.276	0.447	0.172	0.381	0.279	0.447
<i>Khyber Pakhtunkhwa</i>	0.194	0.395	0	0	0.199	0.395
<i>Baluchistan</i>	0.092	0.290	0	0	0.095	0.290
<i>Child Gender (1=if Male)</i>	0.58	0.494	0.58	0.495	0.58	0.494
<i>Child Age</i>	11.86	3.81	11.59	4.05	11.87	3.81
<i>School Attainment of Children age (5-18)*</i>	2.36	1.90	2.57	2.02	2.36	1.90
<i>School Attainment of Male age (5-18)</i>	2.38	1.89	2.73	2.08	2.37	1.89
<i>School Attainment of Female age (5-18)</i>	2.35	1.92	2.35	1.92	2.35	1.92

# Methods

- Child Grade Attainment Model

- $Edu_{ih} = \beta_0 + \beta_1 Mig_{ih} + \beta_2 Mig\_Duration_{ih} + \beta_3 Ind_{ih} + \beta_4 Hh_h + \beta_5 Reg_h + u_{ih}$
- $Mig_{ih}$  is a dummy variable (Static Effect)--( $Mig\_Duration_{ih}$ ) is No. of years (Dynamic Effect).
- $Ind_{ih}$  is the vector of individual-child related characteristics, i.e. gender, age and age square;
- $Hh_h$  is the vector of variables which incorporates households' level characteristics, i.e. age, gender and education level of household head; size of household and total monthly expenditure of household etc.
- $Reg_h$ , is a vector of regional dummy which capture rural-urban and province-wise differences.
- In order to control for the issues of endogeneity and censoring of the data, we apply IV-Censored Ordered Probit model--Two Stages Model (in the first stage the dependent variable is Migration while in the second stage the dependent variables is years of school attended--In the first stage, we regress migration on instrumental and control variables. In the second stage, the fitted values from the first stage is used in the Censored Ordered Probit model.
- Educational attainment ( $Edu_{ih}$ ) which is a discrete variable of ordered choices. The school attainment is categorized in seven different groups; no education, below primary, primary completed, below middle, middle completed, below secondary, secondary completed and above.

# Methods Cont.

- The Household Expenditure Model
  - $Eduexp_h = \beta_0 + \beta_1 Mig_h + \beta_2 Mig\_Duration_h + \beta_3 Hh_h + \beta_4 Reg_h + \varepsilon_h$
  - We have many households that have zero educational expenditure—OLS and Tobit cannot be used.
  - Double Hurdle model—It separate two different types of households' decisions, i.e. whether to spend (participation) and how much to spend (outcome)--In the first case, educational expenditure is a binary variable --In the second case, educational expenditure is an observed variable showing the amount that households expend on education.
- We use migrant network in interaction with the number of adult male members at the household as an instrument for migration--Migrant network is defined as the proportion of households having at least one adult migrant to the total number of households at village--migrant network provides information about both the conditions in the host country and the costs related to migration--we establish our instrument to vary at the household level by making an interaction of migrant network with the number of male adults at the household level.

# Empirical Results: First Stage Results

## First Stage Regression for IV-Censored Ordered Probit Model (Dependent Variable: Migration)

Variable	(Overall)	(Male)	(Female)	(Urban)	(Rural)
<i>Migrant Netwrk_Adult</i>	2.704** (1.245)	2.974 (1.888)	2.325* (1.359)	2.181 (1.888)	3.565* (1.837)
<i>Migrant_duration</i>	9.204*** (1.555)	8.773*** (1.556)	7.432*** (1.586)	8.803*** (2.127)	9.357*** (1.725)

Control Variables: Gender\_Child, Age\_Child, Age<sup>2</sup>\_Child, Age\_Head, Edu\_Head, Gender\_Head, Size\_FHH\_Expenditure, Region, Punjab, Sindh and Khyber Pakhtunkhwa.

## First Stage Results for Double-Hurdle Model (Dependent Variable: Migration)

Variable	Overall	Urban	Rural
<i>MigNetwrk_Adult</i>	2.251 (2.119)	0.672 (2.180)	2.794 (3.347)
<i>Migrant_duration</i>	7.982*** (1.530)	7.326*** (1.810)	7.728*** (1.724)

Control Variables: Gender\_Head, Age\_Head, Age<sup>2</sup>\_Child, Edu\_Head, MaritalStaus\_Head, Log(HH\_Expenditure), Size\_Family, Region, Punjab, Sindh and Khyber Pakhtunkhwa

# Emirical Results—Edcuational Attainment Model

IV-Censored Ordered Probit Model by (All Sample, Gender, Region) (Dependent Variable: Years of School Attended)

Variables	(Model_1)	(Overall)	(Male)	(Female)	(Urban)	(Rural)
<i>Migration</i>		0.149*** (0.0470)	0.0886* (0.0500)	0.250*** <b>(0.0911)</b>	0.138* (0.0770)	0.133** (0.0568)
<i>Migrant_duration</i>		-1.357*** (0.435)	-0.747* (0.441)	-1.861*** (0.680)	-1.187* (0.677)	-1.226** (0.535)
<i>Age_Child</i>		0.407*** (0.0491)	0.364*** (0.0605)	0.482*** (0.0794)	0.762*** (0.109)	0.183*** (0.0662)
<i>Age2_Child</i>		0.00313 (0.00195)	0.00395* (0.00237)	0.00173 (0.00332)	-0.0104** (0.00468)	0.0122*** (0.00291)
<i>Edu_Head</i>		0.0870*** (0.0158)	0.107*** (0.0160)	0.0603** (0.0278)	0.119*** (0.0179)	0.0592** (0.0295)
<i>Size_Family</i>		0.0236** (0.0120)	0.00325 (0.00747)	0.0389 (0.0244)	0.0128 (0.00918)	0.0312 (0.0216)
<i>HH_Exp</i>		-0.155 (0.183)	-0.122 (0.185)	0.000000138 (0.00000399)	0.00000705*** (0.00000264)	-0.00000273 (0.00000251)
<i>Region</i>		0.261*** (0.0610)	0.239*** (0.0661)	0.273*** (0.0876)		
<i>Punjab</i>		0.175 (0.115)	0.343*** (0.103)	0.104 (0.139)	0.252 (0.182)	0.357*** (0.0911)
<i>Sindh</i>		0.0178 (0.116)	0.132 (0.105)	0.0506 (0.144)	0.470** (0.217)	-0.000230 (0.114)
<i>Khyber Pakhtunkhwa</i>		0.856*** (0.156)	0.762*** (0.139)	1.000*** (0.221)	0.489** (0.196)	1.023*** (0.184)
<i>No. Adults</i>	0.0132 (.0205)					
<b>Other Non-Significant Control Variables</b>	<b>Gender_Child, Age_Head, Gender_Head</b>					
<i>Wald chi2</i>	1236.6	1238.8	882.1	703.0	737.8	730.8
<i>p</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>N</i>	6048	6048	3500	2548	2204	3844

# Empirical Results—Educational Expenditure Model

Double-Hurdle Model (Dependent Variables: Decision to Spend on Education and Households' Educational Expenditure)

Variables	Overall		Urban		Rural	
	<i>Decision to Spend on Education</i>	<i>Log Educational Expenditure</i>	<i>Decision to Spend on Education</i>	<i>Log Educational Expenditure</i>	<i>Decision to Spend on Education</i>	<i>Log Educational Expenditure</i>
<i>Migration</i>	-0.224* (0.115)	0.110 (0.116)	-2.512*** (0.675)	-0.0930 (0.121)	0.171 (0.159)	0.163 (0.142)
<i>Migrant_durtion</i>	1.832** (0.923)	-0.838 (0.924)	23.19*** (5.170)	0.733 (0.888)	-1.310 (1.218)	-1.231 (1.096)
<i>Gender_Head</i>	1.715** (0.696)	-0.708** (0.334)	16.31*** (2.762)	-0.152 (0.473)	1.250 (1.059)	-0.976** (0.486)
<i>Age_Head</i>	-0.0872*** (0.0292)	0.0680*** (0.0240)	-0.665*** (0.147)	0.00347 (0.00469)	0.00290 (0.0343)	0.0907*** (0.0278)
<i>Age2_Head</i>	0.000789*** (0.000293)	-0.000565** (0.000262)	0.00621*** (0.00139)		-0.000172 (0.000368)	-0.000782** (0.000322)
<i>Marital_Head</i>	0.380 (0.258)	-0.127 (0.219)	-8.365*** (1.260)	-0.417 (0.286)	0.195 (0.299)	-0.0856 (0.269)
<i>Education_Head</i>	0.176*** (0.0386)	0.197*** (0.0311)	0.283*** (0.0616)	0.213*** (0.0326)	0.0708 (0.0679)	0.165*** (0.0618)
<i>Ln(HH_Expnd</i>	-0.0246 (0.0511)	0.106*** (0.0408)	-0.561*** (0.214)	0.113 (0.0694)	0.0345 (0.0895)	0.129 (0.0804)
<i>Size_Family</i>	0.0276 (0.0176)	0.0376** (0.0149)	0.308*** (0.0871)	0.00457 (0.0198)	0.0708*** (0.0249)	0.0562*** (0.0216)
<i>Region</i>	0.302*** (0.107)	0.501*** (0.0721)				
<i>Punjab</i>	0.0949 (0.167)	-0.423*** (0.124)	0.524 (0.455)	-0.307* (0.162)	0.205 (0.217)	-0.287 (0.206)
<i>Sindh</i>	-0.389** (0.173)	-0.956*** (0.134)	-3.605*** (0.999)	-0.861*** (0.213)	-0.198 (0.257)	-0.969*** (0.245)
<i>KP</i>	0.451* (0.257)	-0.0413 (0.190)	-0.148 (0.448)	-0.355* (0.202)	1.199*** (0.423)	0.182 (0.364)
<i>Constant</i>		7.055*** (0.663)		8.005*** (0.751)		6.586*** (0.720)
<i>Wald chi2</i>	44.28		28.13		33.87	
<i>p</i>	0.0000276		0.00530		0.000706	
<i>N</i>	2264	2264	786	786	1478	1478

# Conclusion

- Motivation from the previous literature that emphasizes on the implications of migration for educational outcomes--Migration affects educational outcomes through three channels: lack of the parental supervision; labor market disruption; and the inflow of remittances.
- Our results show three main findings:
  - Migration improves child grade attainment across both the rural and urban regions—The duration of migration has harmful effects on child school attainment—It implies that migration has beneficial effects on school attainment in static sense--In dynamic sense, it has devastating impact on educational outcomes--The impacts of parental supervision, labor market disruption, and incentives dominate as compared to the remittances effect.
  - Second, the grade attainment of females is more pronounced as compared to males for both migration and the duration of migration--It is justified by the fact that, in Pakistani society, in particular in the rural areas, girls rarely come out of their homes in the absence of their parents or any other adult member of the household. This suggests that parental absence for long duration seriously threaten the educational outcomes of girls in Pakistan.
  - The duration of migration shows that migrant households are spending more on child education as compared to non-migrant households in overall sample and in urban areas. This result shows the presence of remittances effect.
- Policy Recommendations
  - We need to work on the parental supervision and local labor-market disruptions in order to improve the child schooling attainment
  - Security for Girls in the absence of their parents
  - For local labor-market disruption, we need to pursue effective policies for the protection of child-labor and reducing the opportunity costs of education.
- Certainly, more studies are needed to exactly identify the channels through which the effects of migration translate into educational outcomes.