



# THE ROLE OF GENDER-TARGETED CASH TRANSFERS IN INCREASING SCHOOL ENROLLMENT IN PUNJAB, PAKISTAN

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## Abstract

**Purpose of the study:** This study is conducted to assess the success of the Female Stipend Program (FSP), started in the province Punjab, Pakistan under the Punjab Education Sector Reform Program in 2003.

**Methodology:** Panel data on household-level collected from years 2016 to 2018 is used for the analysis. The impact of cash transfers (directed towards female students in selected districts of the province) on female school enrollment in public (elementary and high) schools is measured. Enrollment growth in public schools is used as a dependent variable whereas female stipend, the number of schools, student to teacher ratio, the population of the districts, and basic facilities available in public schools are taken as independent variables. The results are obtained by employing Linear Mixed Multilevel Modeling.

**Main findings:** All the variables, except the population of districts, are having a highly significant impact on the enrollment rate in Punjab. Female school's stipend, number of schools in the district, and the accessibility to basic infrastructural facilities have an important impact on female enrollment rate while a high student to teacher ratio negatively contributes to female enrollment rate. Furthermore, districts, where a stipend program is implemented, have higher enrollments as compared to other districts in the province.

**Application of the study:** Outcomes of the study indicate that cash transfer programs directed towards female school enrollment are very fruitful in the case of Punjab. Therefore, such programs should be started in other provinces of the country as well.

**Novelty/ Originality of the study:** The present study contributes to the research gap by using the largest data set available for all 36 districts of the province. To further highlight major factors contributing to high female school enrollments, the study includes school infrastructure, the population of districts, student-teacher ratio, and availability of schools in the model.

**Keywords:** Cash Transfers, Female Schooling, School Stipend, Liner Mixed Multilevel Modeling, Punjab.

## INTRODUCTION

Conditional Cash Transfers (CCT) programs, directed towards underprivileged households, have become an unconventional policy mechanism throughout the world, for dealing with financial issues towards the attainment of the necessities of life (Afzal et al. 2019; Biggeri et al. 2018). As of 2017, 149 countries are offering cash transfers (World Bank, 2017)<sup>1</sup>. Various CCT programs are started in developing countries to tackle the issue of poverty (Bastagli et al., 2016; Ladhani & Sitter, 2020; Molyneux et al. 2016; Sajid & Khan, 2016). These programs include cash transfers to poor households conditional upon various income-generating and/or expenditure purposes (Duclos & Tiberti, 2016; Fiszbein & Schady, 2009; Notten & Guio, 2019; Slater, 2011). These programs include employment creation for adults who are deprived of necessities conditional upon their labor contributions towards any government institutions. These initiatives further deal in providing cash and food to poverty-ridden households, conditional upon sending their children to schools (Barnes et al. 2011; Dubois et al. 2003). Education and human capital investment have prime importance in Sustainable Development Goals because education plays a pivotal role in accomplishing sustainable economic growth with increased living standards of the people (Fergus, 2012; Osei-Assibey, 2013). Many developing countries have been providing poor families with cash transfers under CCT programs to increase school enrollments (Cotto, 2018; Fiszbein & Schady, 2009). In poor countries, where females are deprived of basic health and educational facilities, such cash transfers help in providing these necessities to the underprivileged. These cash transfer programs can be beneficial for children especially girls' education (Appleton et al. 2008; Aslam & Kingdon, 2008; Mohamed, 2013)

Concerning cash transfers for educational purposes, CCT programs can be initiated on the demand side and supply side. In case of a typical demand-side transfer, cash is allocated to the students subject to their school enrollment, attendance, and academic performance in the class. While on the supply side, cash transfers can be made to the private sector schools in rural areas, conditional upon the increase in secondary school enrollment. Furthermore, cash transfers can be

<sup>1</sup> <http://documents1.worldbank.org/curated/en/8111281494500586712/pdf/114866-WP-PUBLIC-10-5-2017-10-41-8-ClosingtheGapBrochure.pdf>

on a gender basis as well to reduce the discrimination that occurs inside the households regarding the investment in human capital ([Chaudhury & Parajuli, 2007](#)).

In Pakistan, the female population is 51% of the total population. Educating females is indispensable for human capital formation and fostering economic growth ([Elborgh-Woytek et al., 2013](#)). Furthermore, in developing countries including Pakistan, a male child is preferred over a female child for educational attainment, especially in rural areas ([Afzal et al., 2013](#)). Therefore, there is a need to narrow down this gender-based educational gap. For this purpose, the government of Punjab, Pakistan, under the “Punjab Education Sector Reforms Program (PESRP)” in the year 2003 launched the “Female Stipend Program (FSP)” financed by the World Bank. The program was aimed at increasing female school enrollment in the province. Under this program, families have been provided with PKR 600 (2016) per quarter for each girl studying in 6<sup>th</sup>-10<sup>th</sup> standard in poor districts of Punjab. The primary objective of the present study is to assess the effect of these cash transfers on female school enrollment in Punjab, Pakistan.

The literacy rate in Punjab is 64% in 2019 which has increased from 46.6% in 1998. (Economic Survey of Pakistan, 2019-20). However, gender-based educational disparity still exists in Punjab as well. Female school enrollment is 57% while that of the male is 73%.

Government of the Punjab, Pakistan, under the Punjab Education Sector Reforms Program (PESRP) in the year 2003 launched Female Stipend Program (FSP) financed by the World Bank. The program was aimed at increasing female school enrollment in the province. Under this program, families have been provided with PKR 600 (2016) per quarter for each girl studying in 6<sup>th</sup>-10<sup>th</sup> standard in poor districts of Punjab. Initially, in 2003, the program was started in 15 out of 36 districts of Punjab. The districts were selected by considering the literacy rate of the population equal to or greater than 10 years old. These 15 districts were below the threshold level of literacy rate i.e. 40 %.

According to the PESRP (2004), the stipend program proved fruitful as female enrollment in middle school rose from 43% in 2003 to 53 % in 2005. Female school enrollment was 45% (in 2003) which rose to 50% (in 2005) at primary level and middle level in public sector schools in Punjab. While dropout rates also decreased by 25% at the primary level and 20% at a middle level from 2000 to 2005. This progress in primary and middle school enrollment was also exhibited in Pakistan Living Standard Measurement (PSLM) survey (2004-05). State Bank of Pakistan (2006) conducted a counterfactual comparative analysis of the four provinces of Pakistan using a difference-in-difference estimator based approach on the progress shown in PSLM and concluded that the program was very successful in improving net and gross enrollment in government schools in Punjab.

The present study, to the best of the researcher’s knowledge, is the first attempt to assess the effect of female school stipends on government sector school enrollment for Pakistan by taking data for all the 36 districts of Punjab, Pakistan.

## LITERATURE REVIEW

There exists ample literature highlighting the important role of CCT programs in eradicating financial constraints that affect school enrollment and dropout decisions ([Adato et al., 2016](#); [Biggeri et al., 2018](#); [Davis et al., 2016](#); [Kilburn et al., 2020](#)). Bangladesh started a cash transfer program in 1993 under the guidelines of the International Development Association (IDA). In the context of Bangladesh, [Ahmed and Sharmeen \(2004\)](#) analyzed the effectiveness of CCT programs on school enrollments in rural areas. They studied the impact of stipend programs on literacy rates, school dropout rates, and school enrollment rates separately. Their findings indicated that the female literacy rate improved more quickly and significantly than males’. Similarly, female school attendance rose at a faster rate as compared to that of males. Moreover, it was observed that the gross and net enrollment rates exhibited a substantial rise in the case of girls than for boys in secondary education.

In a study using household-level data for different districts in the province of Khyber Pakhtunkhwa, Pakistan, [Ahmed and Zeshan \(2014\)](#) found out that educational stipends have a positive effect on female education. In another study on rural areas of Punjab Pakistan, [Masood \(2015\)](#) concluded that the girls who were given cash transfers preferred to continue their schooling.

Similarly, [De Brauw et al. \(2014\)](#) applied the propensity score weighting method to check how different CCT programs affected schooling outcomes in Brazil. They disaggregated the impact of sex, age, and location by collecting longitudinal household data on children aged 6 to 17 years. The results suggested an increase in girls’ participation by 8.2 % in schools in response to CCT programs. Moreover, [Kilburn et al. \(2020\)](#) conducted an empirical study on Malawi and found out a strong positive impact of cash transfers on increased enrollment rate and decreased dropout rate. Highlighting the importance of these cash transfer programs, [Kilburn et al. \(2017\)](#) and [Purba \(2018\)](#) suggested a continuity of such programs with greater efficiency as these programs help to increase student enrollment. Besides cash transfers, basic facilities and infrastructure in schools also play a vital role in attaining increased school enrollment. In a survey on physical infrastructure availability and its impact on school enrollment, [Saeed and Wain \(2011\)](#) highlighted that the presence of infrastructure facilities including safe drinking water, availability of electricity, and presence of boundary wall, toilets, necessary furniture, huge playgrounds, libraries, and dispensaries are the genuine requirements of the government schools. These facilities have a strong impact on school enrollment and children’s performance in schools. Furthermore, [Talukder \(2011\)](#) in Kenya, [Adukia \(2017\)](#) in India, and [Hayat \(2017\)](#) and [Hamza \(2016\)](#) in

Pakistan, studied the impact of investment on school infrastructure on school enrollment. They concluded that the presence of toilets in schools encouraged school enrollment especially for girls in rural regions.

In light of the existing empirical literature, it is observed that very few studies are available that assess how cash transfers influence school enrollment in Pakistan. Moreover, there is not a single study on Pakistan (to the best of researchers' knowledge) that has used district-level data in this context. The present research has tried to overcome this gap in the literature by using aggregated data on 36 districts of Punjab to determine the effect of the female stipend initiative on net school enrollment in 6<sup>th</sup> to 10<sup>th</sup> standard.

## METHODOLOGY

The present study has taken all districts of Punjab, Pakistan as the unit of analysis. Aggregated data on enrollments by grade for all 36 districts have been taken for the years 2016 to 2018 from the Program Monitoring & Implementation Unit (PMIU).

All the 36 districts of Punjab are divided into two categories i.e. stipend and non-stipend districts. Out of these 36 districts, 16 districts are those districts in which girls are getting a stipend hence categorized as stipend districts, while other 20 districts, who are not receiving stipend at all, are categorized as non-stipend districts. Following PERSP methodology, the districts having literacy rates equal to or greater than 40 % are taken in the present study. The impact of school stipends can be measured by taking the average growth of enrollments in stipend districts relative to the non-stipend districts. The effect of female stipend programs can be interpreted as when districts offered stipends to schools for females; did these districts record an additional increase in female school enrollments in grade 6<sup>th</sup> to 10<sup>th</sup> relative to non-stipend districts?

### Data Description

The data is collected for each district separately and is categorized at two levels. At the first level, districts are categorized as stipend recipient districts and non-stipend recipient districts. Then at the second level, schools of each district (either stipend or non-stipend) are classified as schools for males and schools for females. As we already know that only schools for females, in stipend eligible districts, are eligible for a stipend. One comparison group for schools for females in stipend districts is schools for females in non-stipend districts. Another comparison group is boy-schools in stipend districts because boys do not get any cash transfers irrespective of where their school is located.

**Table 1:** Description of variables

Variables	Years			Mean
	2016	2017	2018	
Total enrollment in schools(class 6-10)	3454326	3662158	3846444	3654309
Boys	1645602	1766314	1849376	1753764
Girls	1808724	1895844	1997068	1900545
No. of Schools	52052	52394	52470	52305.33
Student-teacher ratio	32.77	30.43	32.12	31.7733
Population(in million)	101.128	102.748	110.013	104.6297
Basic facilities in schools:				
Toilets	51840	52205	47648	50564.33
Drinking water	51984	52191	47541	50572
Boundary wall	50997	51501	46560	49686
Electricity	48739	50757	47110	48868.67

**Source:** Authors' calculations by using Stata

Following [Dubois et al. \(2012\)](#), growth in school enrollment of 6<sup>th</sup> to 10<sup>th</sup> standard for every district is taken as a dependent variable. The availability of basic facilities, population, the total number of middle and higher public schools in the districts, and student-to-teacher ratio are used as independent variables.

Using Principal Component Analysis (PCA), an index is constructed which measures the presence of basic facilities in the school. This index has four components namely the presence of electricity, availability of toilets, provision of sanitation facilities, and the existence of boundary walls. Many researchers have determined that these facilities play an important role in increasing school enrollment rates ([Adukia, 2017](#); [Hamza, 2016](#); [Saeed & Wain, 2011](#)).

As the stipend program is directed towards female students and female schools only, therefore, an interaction term is generated after the interaction of two dummies. The first dummy of the interaction term is generated as "district type" i.e. either it is stipend recipient district or non-stipend district. Value 1 is given to the stipend district and 0 is given to the non-stipend district. Likewise, the second dummy of the interaction term is generated as "school type" i.e. either it is a school for males or a school for females. Value 1 is given if the school is for females and value 0 is given if the school is

for males. So there are four cases for the interaction terms, but the case 1, 1 i.e. when the district is stipend and schools are for the female is of our interest (Treated).

**Table 2:** Interaction term

	Male	Female
<b>Stipend</b>	1,0 (Control 2)	1,1 (Treated)
<b>Non-Stipend</b>	0,0 (Control 3)	0,1 (Control 1)

### Data Analysis

#### Mixed Effect Linear Regression Model:

The following model is constructed to capture the effect of the stipend program on female school enrollment.

$$Y_{ijk} = a_0 + a_1 x_{1ijk} + a_2 x_{2ijk} + a_3 x_{3ijk} + a_4 x_{4ijk} + a_5 x_{5ijk} + a_6 x_{6ijk} + \mu^2$$

This model is estimated using Linear Mixed Models (LMM). LMM allows for fixed effects as well as and random effects in the model. LLM is specifically used when inter-independence is observed in the data, as one arising from a hierarchical structure. For example, the data is having an interaction term that is categorized at two levels or stages. At the 1<sup>st</sup> stage, we have categorized it according to “district type” i.e. divided into stipend and non-stipend group. And then at the second stage, it is divided based on “school type” i.e. school for males and school for females. So, as a result, it would be possible to assess that when in stipend eligible districts female students were offered stipends, did these districts experienced an additional rise in enrollments in grade 6th to 10th relative to schools for female in non-stipend districts and relative to schools for male in both stipend and non-stipend districts?

### RESULTS AND INTERPRETATIONS

A random effect for “district type” and “school category” is added in the model to capture the presence of variation as a result of individual differences i.e. variation in data due to the difference in districts (stipend or non- stipend) and the difference in schools (female or male). So, it would affect the results in two ways. The first, would be a fixed effect, which would depict the impact of explanatory variables on the dependent variable and the second one would be a random effect which would just depict the variation of the dependent variable from the average mean or the fixed effect.

#### Fixed Effect

**Table 3:** Fixed Effect Estimates

Variables	Co-efficient	p-value	Relationship
Female School Stipend (interaction term)	0.2659409	0.00	positive and significant
Number of Schools	0.0002821	0.08	positive and significant
Students to Teacher Ratio	-0.0382991	0.00	negative and significant
Basic Facilities	0.0910846	0.02	positive and significant
Population	-0.000016	0.16	negative and insignificant
Constant	8.971275	0.00	Significant

**Source:** Authors’ calculations by using STATA.

Female School Stipend variable is added as an interaction term and can have an impact on dependent variable i.e. enrollment, only if it contains value 1 i.e. when school is for female and situated in stipend district (Female stipend school). The results above show that this variable is significantly and positively influencing enrollment rate as the probability value is less than 0.05. It means that if the school is a female school and located in a stipend district then the school enrollment rate is 26 % greater as compared to the other two comparison groups.

According to the results, numbers of schools also have a positive impact on school enrollment. School enrollment increases by 0.02% with every new school opened in the district. The population of the districts doesn’t affect enrollment significantly.

<sup>2</sup>Where;  $Y_{ijk}$  = Annual enrollment for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{1ijk}$  = Stipend Dummy for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{2ijk}$  = Gender Dummy for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{3ijk}$  = Gender and Stipend Dummy (interaction term) for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{4ijk}$  = Number of Schools for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{5ijk}$  = Student to Teacher ratio for gender “I” of district “j” of stipend/non-stipend group “k”.  $x_{6ijk}$  = Basic Facilities for gender “I” of district “j” of stipend/non-stipend group “k”.  $a$  = slope coefficient..  $\mu$  = error term

The availability of basic infrastructures like toilet facilities, proper sanitation systems, safe drinking water, and the presence of boundary walls in public schools are significant contributors to increasing female school enrollment. So, it is interpreted as, if other factors do not change, a one-unit increase in the availability of basic facilities in public schools would cause a 9 % increase in enrollment rate.

A student-to-teacher ratio is showing a significant negative impact on enrollment growth. Keeping other variables constant if there occurs a unit increase in this ratio, then there would be a decrease in enrollment by 3.8%.

### Random Effect

**Table 4:** Random Effect Estimates

Random Effect Parameters	Estimates
District Type (Dummy: 1= Stipend, 0= Non-Stipend )	0.369
School Category (Dummy: 1= Female School, 0= Male School)	0.090

**Source:** Authors' calculations by using STATA

The variation rate for dummy variable named “District Type i.e. district is either stipend or non-stipend” is 0.369 units, which shows that enrollment rate for districts would be almost 37% more for stipend districts than a non-stipend district.

The variation rate for dummy variable named “School Category i.e. school is either Female or male” is 0.090 units, shows that increase in enrollment rate of public schools would be 9% more for female schools as compared to male schools.

### DISCUSSION

The study reports a strong positive influence of female school stipend programs on female school enrollment. [Chaudhury and Parajuli \(2007\)](#), [Alam et al. \(2011\)](#), and [Ahmed and Zeshan \(2014\)](#), also found a similar relationship between school stipend and student enrollment especially in the case of female school enrollment. Cash transfers help to ease off the financial burden on the parents and they find it easier to send their kids especially girls to school.

In the case of the impact of the population of the districts on school enrollment, the analysis remained inconclusive. Since population changes are very gradual and the population of the districts did not change significantly during the period considered for the study. There exist many studies including [Simon and Pilarski \(1979\)](#) [Simon and Pilarski \(1979\)](#), [Schultz \(1985\)](#), [Mingat and Tan \(1996\)](#) and, [Wilson et al. \(2011\)](#) which found no significant impact on population growth on education attainment.

According to the findings, the availability of basic facilities like toilet facility, sanitation system, drinking water, and presence of boundary wall in public schools are significantly raising enrollment rates in public schools. [O'Neill and Oates \(2001\)](#), [Siddiqui and Iram \(2007\)](#), [Narayanan \(2013\)](#), and [Akomolafe and Adesua \(2016\)](#) found the availability of basic facilities makes the learning environment more conducive which improves behavior, school attendance, and academic performance of the students.

The presence of schools in the district helps to increase female school enrollment. In developing countries, several factors influence girls' education. [Burney and Irfan \(1995\)](#) and [Deolalikar \(1993\)](#) found that one of the major factors determining female schooling is the presence of schools in nearby areas. For female students, parents usually do not allow their daughters to travel to far-off areas to get an education. Furthermore, the unavailability of schools in the nearby area increases the cost of schooling which decreases school enrollment.

In the present analysis student-teacher ratio is negatively and significantly related to school enrollment. The student-teacher ratio is an important indicator of the resources available at school. A low student-teacher ratio indicates that children can get better attention in the class. This has a better impact on children's academic achievement ([Ajani & Akinyele, 2014](#); [Koc & Celik, 2015](#); [Raychaudhuri et al. 2010](#)). According to Organization for Economic Co-operation and Development (2019), the student-teacher ratio is an important determinant of parent's decisions regarding school selection and enrollment. Parents usually prefer schools having a lower student-teacher ratio.

### CONCLUSION

This research is designed to measure the effect of the FSP started under PESRP in the year 2003, on the growth of school enrollment in public schools in districts of Punjab Pakistan. The number of schools, student to teacher ratio, population, and availability of basic facilities are independent variables in the model. Using data for years 2016-18, results of the econometric model suggest that all the factors, except the population of districts, are having a highly significant impact on the enrollment rate in Punjab. Using Multilevel Mixed Effect Model, the variance in enrollment growth between stipend and non-stipend districts, and between male and female schools is also estimated. It is established that female school enrollment is higher in the districts where stipends are given to students as compared to the districts where no such stipend program is implemented. It is further found that enrollment in public schools for females has shown a greater increase as compared to public schools for males.

## POLICY RECOMMENDATIONS

A district-level analysis conducted in this study indicates that the FSP is very fruitful in increasing female school enrollment in Punjab. Therefore, there is a need to spread this program to other districts where stipend program is not implemented.

As the study has determined that basic facilities play a vital role in achieving higher female school enrollment rates, so there is a need to ensure the presence of such infrastructure in public schools. Facilities like electricity, toilets, sanitation, and boundary wall must be provided in public schools to increase female school enrollment.

Moreover, the number of schools should be increased to meet the educational needs of the female students. The student-to-teacher ratio must be managed and more teachers should be recruited to increase female school enrollment in Punjab.

## LIMITATIONS AND STUDY FORWARD

Females face a gender gap in school enrollment in Pakistan. Girls lag behind boys in primary and secondary school enrolments in rural as well as urban areas across the country. This situation hinders the process of human capital formation necessary for economic growth. There is a dire need to narrow down this pervasive gender gap in the education sector and promote female educational attainment so that females being a larger section of the population could play their respective role in achieving macroeconomic prosperity. Different policies are undertaken so far in the country to combat this issue. At the provincial level, Punjab has initiated a conditional cash transfer program in the year 2003 to assist female students in educational attainment at primary and secondary school levels. This study empirically tested the efficacy of female stipend programs in 36 districts of Punjab Pakistan and concluded that these programs proved highly beneficial in increasing female school enrollment in the province. The study suggests that more districts and schools should be covered under such stipend programs to ensure further increase in girls' school enrollment. Furthermore, such programs should be started in the remaining provinces of the country as well.

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