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AN IMPACT EVALUATION OF THE GIRLS' STIPEND PROGRAM IN PAKISTAN AND ITS SPILL-OVER EFFECTS

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DEDICATION

I dedicate this paper to my wife Nazma, my daughters Khawlah and Maryam

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1 INTRODUCTION

1.1 Research Background and Motivation for the study

Access to education is a key determinant for human resource development as embodied in the composite index of Human Development Index (HDI). The benefits of education range from being purely human to economic, political, social and cultural. At the human level, education contributes in enhancing self esteem and confidence leading towards empowerment. From the economic perspective, education enhances the future earning capacity and thus leading to economic growth as envisaged in the endogenous growth theories in which human capital plays a crucial role. From political perspective it can increase awareness about one's own rights and obligations to foster better political environment. Last but not least, education brings social and cultural change in the society which generates positive spill-over effects to every sphere of human life. Imparting education to the poor is, thus, a best tool to break the vicious circle of poverty in most of the developing countries.

However, due to direct and indirect cost of investing in education, people in poor countries who are short of resources, can not acquire education. While education provides opportunities for the underprivileged, people who cannot acquire it are made worse off by the literate and illiterate divide. Empirical evidence indicates that children from poorer families are on average almost three times more likely to be out of school versus those from richer families (UNESCO, 2005).

While developed countries of the world enjoy high literacy rates with quality of education, developing countries face the problem of low level education trap with the quality which can not cater for the needs of modern economic development. However some developing countries were able to break this vicious circle of low level education trap but still others are lagging behind. Pakistan falls in this later category (Figure 1.1).

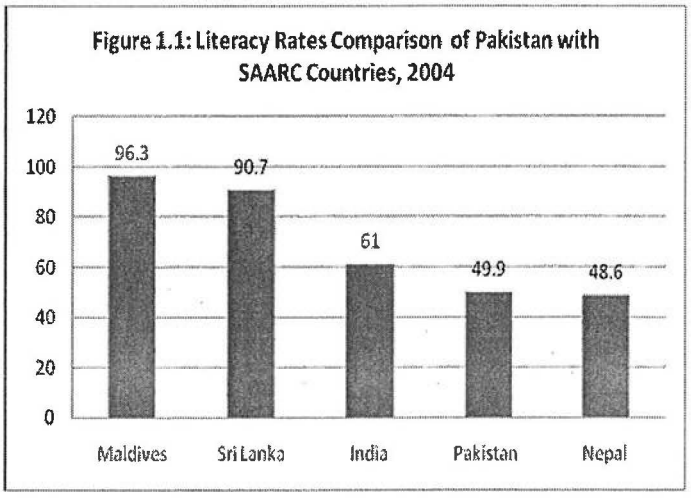

Figure 1.1: Literacy Rates Comparison of Pakistan with SAARC Countries, 2004

Pakistan like many other developing countries faces many challenges in improving its education performance indicators. The overall literacy rate in Pakistan stands at 54 percent in 2005-06 which is very low as compare to other countries. However, in recent years Pakistan made a modest progress and the literacy rate increase by 9 percentage points to the pre-reform period of

2000-01[1]. The target in terms of Millennium Development Goal (MDG) set for the 100 per cent primary enrolment by the year 2015 is still very far and still needs a lot of efforts from the government.

Besides overall lower enrolment rates, the rural-urban and male-female divide in enrolment is another weakness of the education system of Pakistan. For the year 2005-06, the rural literacy rate is 44 percent which is far below the 71 percent literacy rate for the urban population. Similarly data from the Pakistan Social and Living Standards Measurement Survey (PSLM) 2004-05 shows that the female literacy stood at 40 percent compared to 65 percent literacy rate for the male population. Moreover there are also large differences in the literacy rates among different provinces and even within provinces.

A high dropout rate at the primary, middle and secondary levels of education is another important issue faced by the education sector in Pakistan. For example in the year 2005-06, 39 percent of students dropped out before completing their primary level while another 20 percent left their education before completing their secondary level (Economic Survey, 2005-06). According to PSLM 2005-06, the Gross Enrolment Ratio (GER) for primary school was recorded at 87% as compared to the Net Enrolment Ratio (NER) of 52% per the same period. However there is an increase of 10 percentage points in the NER at primary level for the year 2005-06 over 2000-01 which is higher than the increase of only 2% in NER at the middle level over the same period. This small increase at the middle level education shows that the parents are willing to send their 5-9 year old children to school but the trend declines when the children reach the age bracket of 10-12 years. As shown by different studies, these structural changes in the enrolment and dropout ratios may be due to many factors. Firstly, as children (both male and female) grow older, they may help their parents at home or at fields to increase the household earnings. Secondly, as child enters the higher grades, expenses on education increase which poor parents can not afford. Thirdly, middle and secondary school may be situated in tehsil[2] and district centres which may be far away from the villages and thus leading to early drop outs. Finally, the drop out rates may be higher for girls than for boys as cultural barriers and social norms may prevent parents from sending their elder girls to middle and secondary schools.

In the background of the above-mentioned stylized facts and poverty reduction role of education, education has got the top priority from the present government. Education sector got 39.7 percent of total pro-poor budget expenditure[3]. There was a 26.2 percent growth in the expenditure on the education sector in the year 2005-06 over the last year. In 2006, total government expenditure on education was around 3.0 percent of GDP as compared to 1.96 percent in 2001. This increased expenditure was carried out through various reform programs in the provinces.

Punjab, the concern province of the current research, has better educational outcomes compared to other provinces of Pakistan; key educational indicators are still very low compared to other counties with Punjab's level of development. Almost 40% of the adult population is illiterate and less than half of the province's primary school age population is enrolled in school. The enrolment rate is

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[1] The data is based on PSLM survey of 2004-05

[2] Tehsil is an administrative unit in a districts

[3] Economic survey,2005-06, Government of Pakistan

particularly low in rural areas, especially for girls. For example the pre-reform enrolment rate in 2001-02 for girls of age 10 year and older was 36 percent as compared to 57% for the same age boys. Of those children who attend school, only 50% of the students who enrol in grade one actually complete four or more years of schooling. The population's low educational level poses significant constraints to the realization of sustained economic growth and poverty reduction in Punjab. The major issues affecting the performance of the education sector and service delivery have been: (i) insufficient resources allocated to education; (ii) systemic weakness in public sector service delivery, including over centralization and inadequate management; and (iii) the poor performance of the education system in terms of access, governance, and quality.

Recognizing the importance of education for economic growth and social harmony, the government of the province of Punjab decided to undertake far-reaching reforms in the education sector. The Punjab government launched a three year Punjab Education Sector Reform Program (PESRP) in 2003-04 with the assistance of the World Bank. These reforms were meant to enhance access and improve quality of education and improve gender parity in educational attainment in the province. Key pillars of the PESRP are: (i) public finance reforms to increase public spending for education (and other pro-poor services) and to ensure fiscal sustainability; (ii) reforms that strengthen devolution and improve the fiduciary environment and governance; and (iii) education sector reforms to improve quality, access, sector governance, and public/private partnerships.

According to the program document of the World Bank (April 28, 2006), total enrolment (pre-primary to grade 10 has increased from 8.8 million in 2003 to 10.6 million in 2005- a total of almost 20% increase since the start of the reform program. In October 2003, girls made up 43% of total public school enrolment, moving to about 45 % by May 2005. The same document further dwells on the key achievements due to the positive impact of girls' stipend program in public school in 15 low literacy districts. At the middle school level, girls' enrolment in the stipend districts has increased by about 37 % versus 19 % in non-stipend districts; at the primary level, girls' enrolments have increased by 33% in the stipend districts versus 20 % in the non-stipend districts. Moreover, there is also a greater increase for boys' enrolment in stipend districts versus non-stipend districts.

While the above performance indicators in the program document point towards an increase in enrolment and decrease in dropouts for girls, they do not identify the impact of the programme using a counterfactual framework. As we can observe from the data on other provinces, that there too the enrolment increased without any specific program in place. The purpose and motivation behind the current study is to identify the causal impact of the program utilizing different evaluation methods.

1.2 Previous Studies on the Impact Evaluation of the Program

There are currently two studies available on the impact evaluation of the PERSP program. One study conducted by the State Bank of Pakistan (SBP) in 2006 (SBP Quarterly Report, 2006), evaluating the overall impact of the program on primary enrolment rate while the other study is done by the World Bank in 2006 which evaluate the impact of the Girls Stipend component of the program on enrolment in the stipend districts.

The study done at the SBP evaluated the impact of the overall program on primary rate enrolment. The methodology used a difference-in-difference approach in which the authors compare the performance of the Punjab province (Program province) with other three provinces (Non-program provinces). They conclude that the program significantly improved the gross and net primary enrolment rates in Punjab compared to other provinces. According to their difference-in-difference indicator, Gross Primary Enrolment Rate (GPER) in Punjab in the post-reform period is higher by 5%, 11% and 22% as compared to the provinces of Sindh, Baluchistan and NWFP, respectively (. However their approach towards the finding of counterfactuals is problematic as they use other provinces as control groups where socio-economic and household characteristics are significantly different. The current research is different in the sense that it evaluates only the stipend component of the program at middle and secondary level of schooling.

The study conducted by the World Bank is on the impact evaluation of the Girls Stipend component of the program in the 15 program districts on enrolment. The study considers estimates obtained using various empirical approaches including double differencing and triple differencing in combination with regression-discontinuity design and controlling for other covariates. They found a 9% increase in girls enrolment as the impact of the program between 2003 and 2005. Moreover they find an average treatment effect on proportion of school attendance for 10-14 years old girls ranging from 10 to 13 percentage points.

The study of the World Bank conducted by Nazmul and Dilip (2006) find the direct impact of the program on girls' enrolment while ignoring the spill-over effects of the program on non-participants. The study did not evaluate the scaled-up program to 9-10 grade students which started in 2005. The current research

Chapter no 2

2 THE PROGRAM DESIGN

The current stipend program is a sub-component of the overall Punjab Education Sector Reform Program (PESRP) initiated by the Punjab province with the assistance of the World Bank. The estimated total cost of the project is US $ 900 million to be carried out in three different phases. In the first phase, three development policy credits of the total amount of US $ 300 million were disbursed by the World Bank to the Punjab Government in year 2004, 2005 and 2006. The latest (June, 2007) Fourth Punjab Education Sector Development Policy Credit is the first in a second series of three development policy credits to support the PESRP, which has entered in its second phase. The total amount disbursed till June, 2007 by the World Bank for the program is US $ 400 million[4].

2.1 Overall program design

The Punjab education service delivery reform which this credit seeks to support has three main pillars: (a) public finance reforms that realign public spending towards education (and other pro-poor services) and ensure fiscal sustainability; (b) reforms that strengthen devolution and improve the fiduciary environment and governance; and (c) education sector reforms that improve quality, access, sector governance and public/private partnerships (The World Bank, 2004). Since Pakistan is a signatory to MDGs, it is obliged to the set targets of Goal 2 'Achieving Universal Primary Education' and Goal 3 'Promoting Gender Equality and Empowerment'. The objectives of the reform programs are to achieve these targets by the stipulated time. Brief descriptions of the specific measures in the above pillars are as follows;

Firstly, under public finance reforms the government is realigning public expenditures towards pro-poor services with a special focus on education. The provincial government will provide additional budget for district governments conditional on their own increase in expenditure on education and better educational performance indicators. It further includes ensuring of fiscal sustainability by freeing fiscal resources through better revenue collection and reduced non-developmental expenditures. Secondly, devolution will be strengthened through the support of fiscal decentralization by devolving decision making on resource allocations to the district level. Furthermore governance and fiduciary environment will be strengthened through reforms in financial management and procurement.

Lastly, to improve specific education sector performance, the government of the province is taking measures to strengthen education governance, increase the quality of educational services and improve the equity and access to education. Educational governance will be strengthened through the establishment of transparent criteria for teacher recruitment and deployment, effective use of School Councils (SCs)[5] to strengthen stakeholder participation in education and improvements in monitoring and evaluation of the programs in education sector.

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[4] The figures are based on the various project documents of the World Bank available at the project website: www.pesrp.edu.pk

[5] School Councils consists of parents, teachers, NGOs and other civil society activists.

Quality of educational services will be improved through provision of high quality relevant teacher trainings, provision of high quality textbooks and learning materials and establishment of an institution of Student Learning Assessments (SLA). Equity and access will be improved through (a) free textbooks for primary school students; (b) free tuition from grade 1 to grade 10; (c) stipends for female students in underprivileged districts; (d) greater access through partnerships with the private sector; and (e) increased financing for school improvements and provisions of missing facilities. These objectives will be achieved through working in partnership with district governments, NGOs and School Councils (SCs).

2.2 PESRP component of stipend to girls

Stipend to girls' student component of the overall (PESRP) program, the evaluation concern of the current research, was first introduced in the last quarter of 2003. In order to address the cultural and historical lag between enrolment and retention of education in female children, government of Punjab has initiated an incentive of providing stipends to girl students to motivate parents to send their daughters to schools. This program was targeted only to very low literacy level districts within Punjab province and needs special attention in the education sector reforms program. According to the population census of the 1998, fifteen out of 34 districts of the Punjab's province were selected as stipend districts on the basis of the average literacy rate of population of age of 10 years and older. The average cut-off literacy rate was set at 40%, according to which 15 districts were below the cut-off rate and were eligible for the stipend. Randomization of the stipend districts was not feasible because these districts were far behind in Gender Parity Index. Instead the targeted approach was adopted to fill the gender gap in literacy in the stipend districts.

The program is a Conditional Cash Transfer (CCT), according to which each girl receives a stipend conditional on her enrolment in grade 6-8 in a government girl's school and maintaining an average minimum class attendance of 80 percent. Eligible student receives Rs.200 per month (Rs 600 per quarter). This amount is essentially a pure income transfer to those households who are already sending their girls to school. However at the same time it is an incentive for those households who have out-of-school children. The fact that the program is targeted only to middle school education is due to the low enrolment level at this stage as compared to primary level. A lot of students drop out after completing the primary education. Due to positive results of the stipend distribution on enrolment and retention rate[6], it was decided to enhance the span through vertical expansion of stipends disbursement to grade 9 and 10 students in the last quarter of 2005. The stipend amount is transferred to household postal account through district education office. The stipend program did not target the boys and the private school, which highlight that the program is linked with other reforms in the public schools like improvement of infrastructure, hiring of new teachers and the improvement of the quality of schools. The program is also linked to the objective of increasing female education to fill the gap in future between the demand and supply of female teachers in the public school of the targeted districts. Table 2.1

[6] The claim has been documented in the project document of the program published in April 28, 2006. The document claim a 37% rise in girls' enrolment in 2005 in the stipend districts as compared to 2003.

shows the quarterly trend in the total number of students who receive the stipend. The total number of students shows an increasing trend as the program enters into the next quarter. The total year-wise allocation of funds increased from Rs. 350 million in FY[7] 2003-04 to Rs 900 million in FY 2006-07. Box 1 shows the broad guidelines and procedure for the distribution of the stipend money to the girls.

Table 2.1

Number of Students Covered by the Stipend Program in Punjab Province

Quarter	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Oct-Dec 2003	59,685	51,766	43,058			154,509
Jan-Mar 2004	64,860	57,445	48,316			170,621
Apr-Jun 2004	67,818	60,089	51,104			179,011
July-Sep 2004	80,777	62,387	54,655			197,819
Oct-Dec 2004	81,696	63,151	56,251			201,098
Jan-Mar 2005	85,966	63,986	53,911			203,863
Apr-Jun 2005	96,390	79,524	60,577			236,491
July-Sep 2005	99,428	79,197	60,897			239,522
Oct-Dec 2005	98,342	78,478	60,076	45,440	31,415	313,751
Jan-Mar 2006	96,558	76,804	58,572	44,557	28,522	305,013
Apr-Jun 2006	101,534	81,104	66,546	50,002	35,693	334,879
July-Sep 2006	91,706	87,399	71,391	54,959	38,756	344,211
Oct-Dec 2006	102,667	86,379	70,538	53,833	37,741	351,158
Jan-Mar 2007	100,643	85,717	70,152	51,699	34,291	342,502

Source: Punjab Education Management Information System (2003-2006)

[7] FY is Financial Year which starts on 1st July and ends at 30th June of the next calendar year

Box 1

Guidelines for Stipend distribution

- All girls students having 80% or above class attendance rate are eligible for the stipend in 15 low literacy districts.
- The computation of attendance is the responsibility of the concerned Headmistress of the school in which the recipient of stipend is studying.
- A list of eligible students with their attendance ratio is posted on the main notice board of the school to ensure transparency.
- The stipend is to be given at a rate of Rs. 200 per month on quarterly basis (Rs 600 per quarter).
- The Punjab government transfers stipend amount to account no 4 as per number of targeted population of students in a District.
- The Executive District Officer (EDO) maintains a separate postal saving account in the General Post Office at the District Headquarter for keeping stipend money.
- On receipt of stipend amount in account IV, Executive District Officer (E) withdraws this amount and gets it credited into postal saving account.
- The Headmistress computes the attendance percentage on quarterly basis and conveys names of eligible students on prescribed Proforma.
- The quarterly stipend is disbursed to the eligible girl students through money-order.
- Payment receipt slips duly acknowledged by recipients are also collected by EDO office.
- The EDO (Education) is duty bound to transmit the disbursement details along with the names of the recipients, their attendance percentage, money order receipt numbers etc in the prescribed format to the Program Monitoring & Implementation Unit (PMIU) of PESRP

Chapter no 3

3 RESEARCH HYPOTHESIS AND ANALYTICAL FRAMEWORK

This chapter will discuss the various hypotheses and outline the analytical framework of the current study. The chapter is organized as follows: Section 3.1 will discuss the hypotheses. Section 3.2 will present the analytical/theoretical framework of the study. Section 3.3 will discuss data sources and their limitations.

3.1 Research Hypothesis

The main research hypothesis is that the stipend program increases girls' enrolment in the program districts. An additional hypothesis is that the program has spill-over effects and leads to an increase in enrolment amongst non-participants (boys) in program districts.

3.2 Analytical/Theoretical Framework

New growth theories (endogenous growth theories) were developed in 1980s and 1990s as a response to the criticism of neo-classical growth model where long-run growth is exogenously determined by technical progress. Endogenous growth theorists tried to overcome this shortcoming by building macroeconomic models out of microeconomic foundations. New growth theorists emphasized the strong link of human capital to productivity and economic growth. They incorporate human capital in the production function and empirically showed that it is an increasing function of growth[8]. They view human capital as a strategic facilitating factor in higher growth. At the same time human capital investment serves the purpose of a catalyst in breaking the vicious circle of poverty.

3.2.1 Market Imperfections and Human Capital Investment

The following theoretical framework of human capital investment within a household is based on the model of Behrman and Knowles (1999) and Skoufias (2005). We will also use Skoufias and Parker (2001) and Skoufias (2005) theoretical framework for the analysis of the government intervention in improving human capital through Conditional Cash Transfers (CCTs). The mix of the above frameworks will enable us to analyze the current stipend program for girls in the low literacy districts.

In his formulation Skoufias (2005) assumes a unitary model where each household maximize a single welfare function subject to household resource constraints. Although the original model define the term human capital investment as investment of household in both education and health, but we will use it only for the investment in the child education. It is worth mentioning that in Pakistani context, some households may also perceive the work of a child (both girls and boys) in domestic activity as addition to the human capital of the child. Hazarika

[8] For some of the work on endogenous growth theories see the work of Arrow (1962), Romer (1986) and Lucas (1988).

and Bedi (2003) explain the insensitivity of intra-household child labour in Pakistan to changes in schooling cost to the perception of parents that skill accumulation at domestic work may also add to human capital. In the current model we will ignore this possibility to avoid complexity in our model. The model further assumes that households has full information and collapse all the decisions of the household regarding child education into one period. Later we will relax this assumption as poor economies like Pakistan are characterized by imperfect credit markets, liquidity constraints, and income and consumption risks.

Skoufias (2005) explains that, in a neo-classical formulation, households normally maximize a welfare function subject to some constraints[9]. He defined the welfare function as the decision between investing in child's education and current consumption of other goods and services. However to maximize this neo-classical welfare function each household faces some constraints.

The first constraints is the production of human capital which uses the input of child and parents time, and others goods and services from the market and some other exogenous variables. The more the time is given by the child and parents the more is the increase in the human capital of the child. Similarly the more goods and services (for example school uniform, books, and transport to the school) they purchase the more is the increment in human capital. The other exogenous variables are observable child characteristics (like ability, gender and age etc.), parental characteristics (education, perception about schooling etc) and community characteristics (like distance to school, information about human capital). It is quite possible that some of these exogenous components may be interacting in a very heterogeneous way, varying from household to household.

The second constraint is the future income of the adult child which depends on the stock of human capital accumulated through parental investments. This can be disentangled into two components; one part is the market return to the genetic endowment of the child and the second part is the market rental rate on accumulated human capital.

The last is the budget constraint which caters for the possibility that children can contribute to family income when not engaged in human capital accumulation and this forgone income is a cost to the household. The more the market wage rate for the child labour, the more is the forgone income and the more is the opportunity cost.

To maximize the welfare function subject to the above three conditions, parents will choose that level of future income (which of course includes the income earned by the child when he become an adult) and current consumption for which the Marginal Rate of Substitution (MRS) between these two equates to the marginal cost or "shadow price" of current investment in human capital of the child. In addition to this, households will also allocate child's time, parental time and market resources so as to equalize the marginal costs with each activity and resource.

The above neo-classical formulation works only if the all the market are perfectly competitive and there are no externalities. Given perfect markets and complete information, the decision on consumption on other goods and investment in human capital are separable from each other (Jacoby and Skoufias, 1997). However if there are market imperfections then this condition will be violated. For example the

[9] See Skoufias (2005; p. 14-21) for a more detailed model with equations.

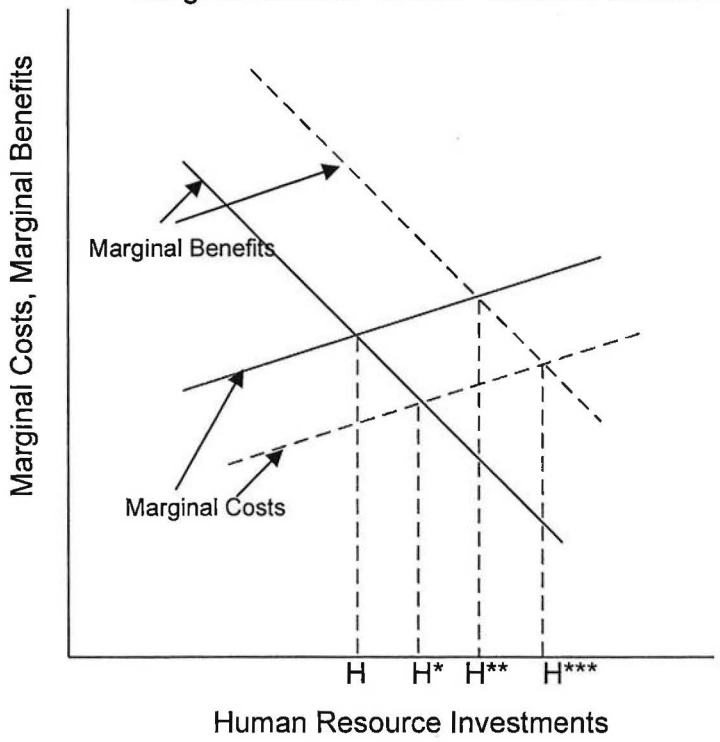
financial markets in developing countries are incomplete due to externalities. Incomplete financial markets will prevent consumption and income smoothening in the presence of risk (Morduch, 1995). Information regarding the future return from human capital investment is biased in favour of urban rich population. This will prevent poor rural households to have an optimal level of human capital investment in their child. Behrman and Knowles (1999) argues that in the presence of imperfect markets, household income normally proxying for the correlated unobserved determinants of child schooling such as innate ability, preferences, family connections, price variations in schooling inputs. This will cause a strong association between household income and investment in schooling.

According to Jacoby and Skoufias (1997), when consumption is not insurable ex ante due to incomplete financial markets, the separation between human capital investment and consumption decisions break down. He further argues that in the time of negative income shocks, the school attendance of the child will drop. This is due to the reason that unanticipated income shock will lead to the revision in the inter-temporal marginal rate of substitution between current consumption and human capital investment. In short, if markets are imperfect and there exists some externalities then the model equilibrium will be attained at a very low level of human capital investment. The following figure adopted from Behrman and Knowles (1999) with some modifications by the writer illustrates some of the points graphically.

In Figure 3.1, horizontal axes shows the investment in human capital of a child by parents while the vertical axes shows the private Marginal Benefits (MB) and Marginal Costs (MC) associated with human capital investment. In the presence of complete markets and full information, all households will face similar MC and MB curves irrespective of the level of income. The equilibrium will be achieved at the optimum level of human capital investment (at *H*). Now let us illustrates what would have happened if the markets are not perfect. Let assume that two household face two different MB curves depending on their information regarding the return of education in future. The dashed MB curve is for the household which have complete information while the solid MB curve is for the household which have incomplete information regarding the returns to human capital investment. The household with complete information will be on equilibrium at human capital investment of H** which is higher then H for the household with incomplete information. The dashed MB line can also be perceived as the line for the high income household. High income households, for example, can better cope with market imperfections then the lower income household.

Consider another case where two households may face different MC curves. Marginal Cost for the poor household may be higher due to the high opportunity cost of forgone child income if the child is engaged in intra or extra-household work. These and other similar market imperfections necessitate government intervention as education is considered as a public good.

Figure 3.1 Private Marginal Benefits and Private Marginal Costs of Human Resource Investments



3.2.2 Conditional Cash Transfers as a solution to Market Imperfections

Conditional Cash Transfer (CCTs) became most popular in recent years as a policy tool to combat poverty in Latin American countries and so in other developing countries. CCTs replaced the Social Investment Funds (SIFs) due to its targeting the deprived households more directly[10]. Conditional Cash Transfer programs provide money to the targeted households conditional on sending their children to schools. The current stipend program provides money to the girl students conditional on the attendance of 80% of the total classes at minimum. Standard neo-classical economic theory suggests that individuals are better off if they were provided with unconditional cash transfer because the conditions will affect their preferences. However, as illustrated above, imperfect markets in the developing countries may necessitate the conditionality with anti-poverty programs. Even International Monetary Fund (IMF), the champion of neo-classical economics, gives loan to the developing countries with conditions. In the presence of market failures and other externalities, the conditionality of the cash transfer schemes can be considered as an effective means of improving efficiency (Skoufias, 2005). The social gains from conditional cash transfer may be more then enough to offset the losses due to interference with free choice.

[10] See Britto F. T (2004) for an interesting comparison of SIFs and CCTs in Latin American countries.

For example an unconditional cash transfer will increase the income of the household while the marginal cost (which depends on child wage and time) will be unchanged. This will increase only the current consumption of the household and investing in education will be unchanged. Now consider if the cash transfer is conditional on 80% attendance at school, then the cash transfer will induce them to substitute work for schooling. This substitution will result in the lowering of the marginal cost and will substitute the wage lost in the process. The following Figure 3.2 taken from Skoufias (2005) with some modifications by the writer will best illustrate this point.

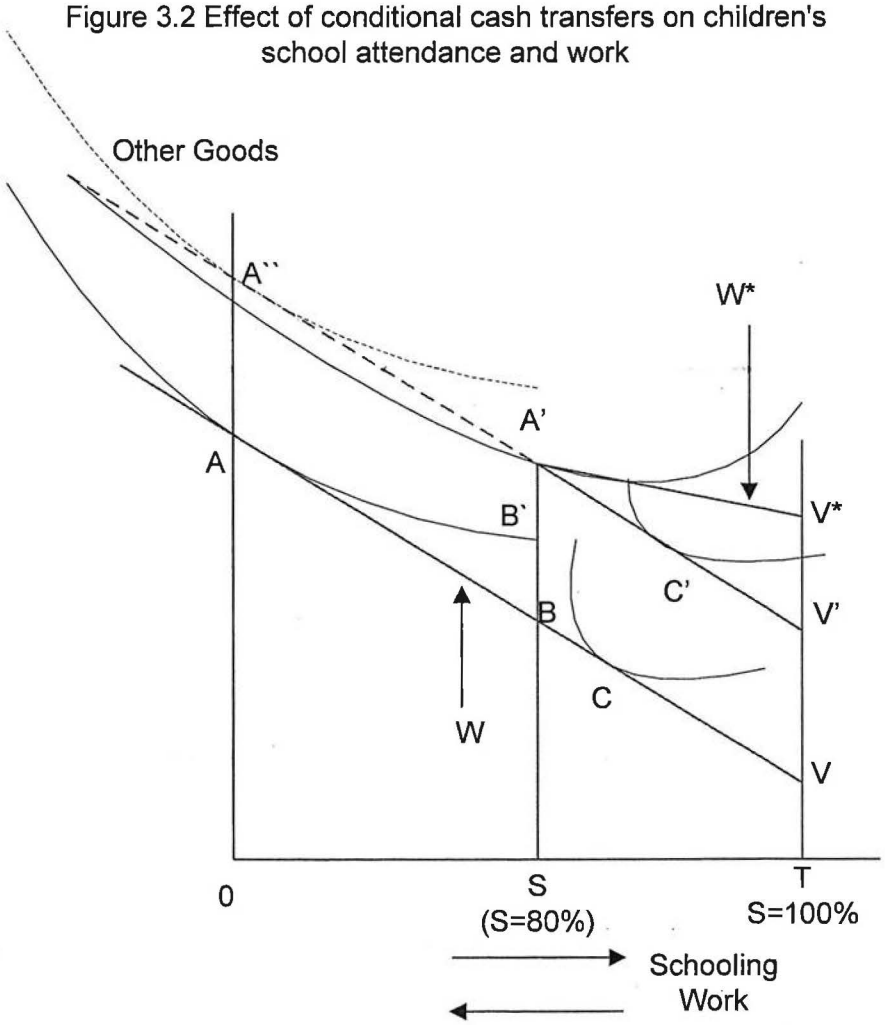
The horizontal axis measures the time (non-leisure time) a child either devote to schooling or work while the vertical axis measures the quantity of other goods available to the household. $S_{80\%}$ is the minimum attendance rate required for the eligibility of the program while point T is the 100% attendance rate at school. The height *OA* shows the amount of other goods and services available to the household when the child spent his total non-leisure time in working while *TV* is the amount if he goes to school (obviously $OA>TV$). The slope of *AVT* is the market wage rate of child labour (Marginal Cost *MC*) which is the opportunity cost of schooling to the household. Let suppose two households with different indifference curves depicting their preferences for child schooling or work. The slope of these indifference curves is the marginal rate of substitution of child work for schooling. The first household is on equilibrium at point *C* where the child attendance at school is more than the minimum requirement of the program. The second household is at equilibrium at point *A* where the child is not attending school and spent all his time in working.

Now let suppose that the program of conditional cash transfer starts with the condition of minimum school attendance of 80% at school. The amount of cash transfer is the vertical distance of *VV`*. The budget constraint of the household is now *TVV`A`BA* which is a discontinuous line caused by the conditional cash transfer of stipend to child if he turns up 80% of the time in school. Now for the first household, who already send their child to school even in the absence of the program, this may be a pure income transfer and their equilibrium will shift to point *C`* which is higher then before the program equilibrium. This will result in an increase in the consumption of other goods and services by the household and may induce attendance to rise a little further. Now consider the second household whose initial equilibrium was at point *A*. This household needs only the cash amount of *BB`* (which is less then total of $A`B`=VV`$) to send their child to school (with attendance of 80%) while remaining on the same indifference curve (point *B`*). If the transfer was a pure cash transfer then the equilibrium for this household may be some where near point *A`* due to the market imperfections and externalities. But with 80% minimum school attendance as a condition, the equilibrium is at point *A`*. But the equilibrium at point *A`* is not a tangency point. By linearizing the budget constraint, we will draw a line tangent to the indifference curve at point *A`* while the shadow wage rate is now *W**. The slope the new budget line is less steeper then the original one which means ($W^*<W$) lowering the marginal cost may induce some substitution of work with schooling. The income effect caused the equilibrium to shift at point *A``* but due to the conditionality condition the equilibrium shifted to *A`*.

Hence CCTs typically serve to intervene in the imperfect markets where it tries to change the preferences of the households in favour of investing in human capital. An important point to be noted here is that any cash transfer less than *BB`* will not induce households to change their preferences. This is important in the current stipend program as the program distribute a fixed amount of cash for all

grades (6-10). The stipend may be sufficient for the parents of grade 6 students to change their preferences but may be insufficient for parents of higher grades students as the marginal cost in term of wages associated with higher grade children may be higher. Moreover, if the cash transfer is more then *BB`*, then it may induce intra-household transfer of resources to other children in the family.

Figure 3.2 Effect of conditional cash transfers on children's school attendance and work



3.3 Data Source

The school level census data used in this research is taken from the Punjab Education Management Information System (EMIS) for the period 2003-2006. Before the start of the program, a baseline survey was conducted in 2003 on enrolment in the province with some questions on the quality of schools. EMIS data contains total number of enrolment for girls and boys for both stipend and control districts at school level.

Table 3.1 describes the trend in some school quality variables for both the girls and boys' schools in the stipend and non-stipend districts. The trend shows improvement in school quality for both the stipend and non-stipend districts. Later in our regression estimation we did not use these quality variables as controls. The plausible reason is that these variables show the same trend for both the stipend and

non-stipend districts. Our simple difference-in-difference estimator net out these fixed difference.

Table 3.1

Trends in School Quality Variables for the Stipend and Non-stipend Districts

School Quality Variables	Girls Schools				Boys Schools			
	2003		2006		2003		2006	
	Control	Stipend	Control	Stipend	Control	Stipend	Control	Stipend
Water (yes=1, No=0)	0.95	0.93	0.96	0.94	0.96	0.97	0.96	0.97
Electricity (yes=1, No=0)	0.81	0.74	0.92	0.86	0.85	0.80	0.95	0.89
Toilet (yes=1, No=0)	0.78	0.78	0.91	0.92	0.49	0.54	0.77	0.79
Boundary Wall (yes=1, No=0)	0.84	0.85	0.94	0.93	0.56	0.43	0.75	0.68
Gate (yes=1, No=0)	0.91	0.89	0.95	0.93	0.81	0.74	0.88	0.83
Library (yes=1, No=0)	0.34	0.40	0.59	0.58	0.55	0.67	0.78	0.80
Playground (yes=1, No=0)	0.47	0.56	0.58	0.62	0.63	0.69	0.66	0.72
Rural Location (R=1, U=0)	0.78	0.84	0.78	0.83	0.81	0.87	0.79	0.86

Chapter no 4

4 RESEARCH METHODOLOGY

The objective of the current research is to identify the causal impact of the stipend program on girls' enrolment in the stipend districts. An attempt will also be made to look into some of the spill-over effects of the program to non-participants. The empirical strategy in this paper is based on comparisons between stipend recipients and non-recipients. In the current data set, the impact of the program can be analyzed to look into the changes in the average enrolment per school which can be solely attributed to the program. Our methodology will enable us to identify the direct impact of the program and identify some of the spill-over effects of the program.

There are two main difficulties in measuring the causal impact of the program. The first is the existence of so-called contemporaneous events. There might be many factors that also influence the participants' outcome. The impact evaluation needs to net out effect of all contemporaneous factors from the effect of the program.

The second is the participation endogeneity (selection bias). According to Heckman (2001) the selection bias arises when the participation in the program is not done by using random sampling. The selection of participants in the current program is not random but based on the criteria that a particular district is below the 40% literacy cut-off line. All girls enrolled in the middle grade (6-8) school in the program districts are entitled to the stipend conditional on 80% school attendance, a case of strict geographical targeting. The reason for this initiative in these low literacy districts is the prevalence of gender bias against girls' education. This gender bias is the result of lower income which normally hurts girls' education in these districts. Simple comparisons of outcomes between the treated (stipend districts) and non-treated (non-stipend districts) will not yield correct results. The participants and non-participants can respond in very different ways to program interventions. Unless we can control for differences in characteristics between the treatment and non-treatment groups, the estimate of impacts will be incorrect.

The key solution to the above problem is to find an appropriate counterfactual, that is, what would have happened to the enrolment rates in the stipend districts if the program was not initiated. We can not observe both the outcomes for the same individuals so the problem is one of missing data. There are different ways to create suitable counterfactuals which will allow estimation of the impact of the program. These methods are discussed briefly in the following lines.

4.1 Assessing the direct impact of the program

To assess the impact of the program on girls' enrolment in the stipend districts, two approaches will be utilized. The first is the difference-in-difference (DD) approach and the second is a combination of DD approach with Regression Discontinuity design (RDD).

4.1.1 Difference-in-difference estimator

This approach is used in the non-experimental design literature which exploits a pre-intervention baseline survey information and at least one post-intervention follow-up survey. According to Angrist and Krueger (1999), difference-in-difference strategies are simple panel data methods applied to set of group means in cases when certain groups are exposed to the causing variable of interest and others are not. This approach is well suited to estimating the effect of sharp changes in the economic environment or changes in the government policy. The basic idea is to compare the samples of participants and non-participants before and after the intervention. One calculates the difference between the after and before values of the mean outcomes for each of the treated and control group (Ravallion, 1999). Finally, the difference between the two mean differences is the true impact estimate which will get rid of the endogenous placement of the program (selection bias). This double differencing net out any pre-program variations and enable us to calculate the true impact of the program[11].

The key identification assumption in DD estimator is that the treatment and control group would have the same trend if the program would have not occurred. Another strong assumption using DD approach is of no externalities of the program on non-participants. If there exist externalities then the DD estimator may result in biased estimator.

To check the first identifying assumption we will use Angrist and Krueger (1999) methodology which he proposes by comparing trends in outcomes before or after the event of interest. We will try to check this assumption by showing the trends in average enrolment per school after the program has been started later in 2003[12]. The existence of externalities will be checked through comparing non-participants (boys' enrolment) in the stipend districts with that of non-stipend districts.

In stipend to the girls program, we can utilize two different counterfactual to calculate the double difference estimator. One is to observe the mean outcome (enrolment) for girls in the non-stipend districts with similar characteristics (control group) and compare it with the mean enrolment in the stipend districts. Second is the use of boys' enrolment in the stipend districts as control to estimate the direct impact of the program on girls' enrolment in the stipend districts. A more formal presentation of difference-in-difference approach can be summarized in the following table borrowed with some modifications from Nazmul and Dilip, (2006).

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[11] See Ravallian (2005) for a more formal presentation of difference-in-difference methodology.

TABLE 4.1
Outcome Variable: Average Enrolment Per School

Comparison Groups	Stipend Districts	Non-Stipend Districts
Girl Schools	Treated	Control Group A
Boys School	Control Group B	Control Group C

TABLE 4.2

Outcome Variable: Average Enrolment per School

Period\Stipend	Stipend Districts	Non-Stipend Districts
Pre-program period (b)	Ys,b	Yc, b
Post-program Period (a)	Ys,a	Yc,a

Table 4.1 shows that the girls schools in the program districts is the treatment group for our evaluation while the other three groups can be used as potential control groups. To find the direct impact of the program, we will first use control group A, girls' enrolment in the non-stipend districts, in our difference-in-difference estimator. Then we will use control group B, boys' enrolment in the stipend districts, as they also did not receive the stipend while coming from the same family background. These two estimates will give us the direct impact of the program. If there exist any spill-over effects of the program on boys' enrolment due to within household transfer of money to the boys, then both estimators will underestimate the true impact of the program. This bias will be captured when we compare boys' enrolment in the program and non-program districts. Using table 4.2, the following difference-in-difference estimator (equation 1) will be estimated using non-parametric approach while utilizing different counterfactuals.

$$(Y_{s,a} - Y_{s,b}) - (Y_{c,a} - Y_{c,b}) \ldots\ldots\ldots\ldots\ldots (1)$$

This will capture the growth rate of enrolment in the stipend districts between pre-and post program periods given the proper control group in the non-stipend districts.

For a two or more period panel data, the above non-parametric estimates can be estimated by the following regression equation which will enable us to get the usual significance level for our estimates.

$$\Delta Y_i = \beta + \alpha S_i + \delta T_i + \lambda\, S_i * T_i + e_{it} \ldots\ldots\ldots\ldots\ldots (2)$$

Where ΔY_i shows the growth rate in enrolment in school i, S shows the schools which receive the stipend, the time period dummy is denoted by T, and the interaction term will capture the differential changes in enrolment over time attributed to the program impact. Unfortunately, we don't have detailed household survey data to control for other exogenous explanatory variables.

4.1.2 Regression Discontinuity Design

Another way to get rid of the selection bias in a non-random program design is the method of using regression discontinuity design which makes use of the program design itself. This method exploits features of the program design for identification. Discontinuities generated by program eligibility criteria can help identify impacts in a neighbourhood of the cut-off points for eligibility. Under certain conditions one can infer impacts from the differences in the mean outcomes between units on either side of a cut-off point determining program eligibility (Ravallion 2005). In the present program of stipend to female students, the cut-off literacy rate is 40% below which the districts are eligible for the program. This is a case of sharp RD design because the probability of selection into the program changes from 0 to 1 discontinuously as one crosses the cut-off point. To see more formally that how this method identifies the true impact let S_i denote the school literacy rate observed for school i and let s denote the cut-off school literacy rate for eligibility, such that $T_i = 1$ for $S_i \leq s$ $T_i = 0$ otherwise.

The impact estimator is then given by the following;

$$E(Y^T \mid S = s - \varepsilon) - E(Y^C \mid S = s + \varepsilon) \quad \text{.....(3)}$$

Where ε is some arbitrarily small value greater then zero.

In the current stipend program we will compare those stipend districts which have literacy rate of between 36 and 40 with those non-stipend districts which have literacy rate of between 40 and 44. Though this truncated sample will mean the local effect on the selected districts, but we can say that these districts in the neighbourhood of 40% literacy rate may have similar individual and household characteristics. It will control for large pre-program differences.

Moreover, as the base line data is also available then we can combine difference-in-difference approach with regression discontinuity design to difference out any pre-program variations. The earlier specification can be modified to capture the panel structure of the data through the following equation;

$$E(\Delta Y_{it}^{\ T} \mid S = s - \varepsilon) - E(\Delta Y_{it}^{\ C} \mid S = s + \varepsilon) \quad \text{.....(4)}$$

This will help in cleaning out any pre-intervention differences in outcomes of the either side of the discontinuity. This is the case of combining the RD design with the double difference method.

To test that to what extent RD design reduce the selection bias, Buddlemeyer and Skoufias (2003) use the cut-offs in PROGRESA's eligibility rules to measure impacts and found that the results are robust to those obtained by exploiting the program's randomized design.

4.2 Why Spill-over effects?

While designing the evaluation framework for assessing the direct impact of the program earlier in this chapter, we assume that we can observe the enrolment outcome for the students in the stipend and non-stipend districts. We also implicitly assume that both the control groups are not affected by the stipend program. The enrolment outcome for girls in the non-stipend districts should be independent to the enrolment outcome of girls in the program districts. This is the case of a clear geographical targeting where we can isolate the program and non-program regions. In the non-program districts we can observe the comparison group that can be in no

way affected by the program. However there can be still some externalities (both positive and negative) of the program within the same geographical region where the program is initiated. Ravallion (2005) argues that the assumption of no externalities is problematic for certain anti-poverty programs. The current stipend program in Punjab, although, has very well-defined participants and non-participants but the gains from the stipend to the girls in the treated districts may spill-over to the non-participants within the same districts. Similarly, the losses in respect of low education quality due to congestion in the schools may have negative spill-over effects. Ignoring these spill-over effects while evaluating the program outcome may lead to serious biasness in our results. However some well-design and well-targeted anti-poverty programs may have no spill-over effects on non-participants[13].

Although we don't have data on how the stipend amount is spent, the current data set at school level enable us to look into some of the spill-over effects of the program to the non-participants. These spill-over effects can either be generated, among others, through transfer of stipend money to expenditure on boys' education or on girls' education of higher grade. Simple comparison of boys' enrolment in the stipend districts with non-stipend districts before and after the program will give us the difference-in-difference estimator. If we found a significant estimate then this may be treated as evidence of spill-over effects of the program on boys in the same districts. A priori we expect that this may be the case in Punjab as low income parents may have a tendency to transfer household resources to boys. As the overall program also distributes free text books and there is no tuition fee from grade 1 to grade 10, most parents will be better-off with the stipend money. They will not only send their daughters to the schools for education but also for the stipend money. Moreover, as the government school class duration is on the average 5 hours a day and 4 months of holidays on the average in a year, the stipend money will stimulate parents to send their children to school. As most of the girls are engaged in the domestic work therefore the utility from going to school is more then the cost of delaying the domestic work.

Another possible spill-over effect may be its effect on higher grade girls' enrolment in the stipend districts even without the stipend for these grades in the initial two years. A simple estimation of difference-in-difference effect by comparing girls' enrolment of higher grade (9-10) in the stipend and non-stipend districts will give us the magnitude of the spill-over effect. A priori, we would expect this to be positive and significant. One possible reason is the higher new enrolment as stipend to 6-8 grade girls may increase the base for the intake in higher grades. Now more girls are completing 8th grade then before due to the middle grade stipend program. There may also be some intra-household transfer of stipend money from middle grade girls to their higher grade sisters to cover their transportation cost as most of the high grade schools are located in the village headquarters. It should be noted here that these spill-over effects will be obtained by difference-in-difference estimator.

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[13] Behrman et al (2005), For example, found no strong spill-over effects of the Mexico's PROGRESA to the children who do not directly participate in the program but resides in the treatment communities.

Other spill-over effects may also be important but we can not estimate it with our current data set. For example higher enrolment may lead to congestion problem in the school if the number of school is the same during the program period. But as our data indicates that the number of schools is also increasing due to the overall program intervention, this may not be a serious issue in the present case. Higher enrolment and retention ratio of girls in the high school may also cause delaying marriages which may lead to the lower population growth for this cohort.

Chapter no 5

5 EVALUATING THE PROGRAM IMPACT: RESULTS

This chapter discusses results obtained through utilizing different evaluation techniques to assess the impact of the stipend on girls' enrolment in the stipend eligible districts. It will also dwell on some of the indirect impacts of the program (spill-over effects), if any. The chapter is organized as follows.

In section 5.1, we will discuss the direct impact of the program on girls' enrolment in the stipend districts for each grade. First, we will discuss results of difference-in-difference estimator obtained through non-parametric approach for the full sample. This estimator will be obtained by treating girls in the stipend districts as treatment group and girls in the non-stipend districts as the control group. We will also use boys' enrolment in the stipend districts as control group as boys too are non-recipient of the stipend in the program districts. Second, we will discuss non-parametric results which were obtained by combining difference-in-difference estimator with regression discontinuity design. This means that we will compare those stipend and non-stipend districts which are in the neighbourhood of the literacy rate of 40%. As discussed in the methodology chapter in detail, these truncated sample results will serve as a sensitivity check of our earlier results on the full sample. Third, we will obtain and discuss the above difference-in-difference estimator parametrically with usual standard error and t-statistics. This will enable us to check the significance or otherwise of our estimators.

In section 5.2, we will discuss some of the spill-over effects of the girls' stipend program on boys' enrolment in the stipend districts (non-recipients of stipend in the stipend districts) and on girls of higher grades (non-recipients of stipend in 2004 & 2005) in the stipend districts. First, as earlier in section 5.1 we discuss results of difference-in-difference estimator by comparing mean enrolment of girls and boys in the stipend districts. This differential impact will give us the direct impact of the program on girls' enrolment as compared to boys' enrolment in the stipend districts. However this direct impact may be downward biased due to intra-household transfer of stipend money from girls to boys. To capture this bias in our estimator, we will move to our second difference-in-difference estimator by comparing mean enrolment of boys in the stipend districts with those of non-stipend districts. Second, we will also check if there is any spill-over effect of stipend to middle school (grade 6-8) girls on high school (grade 9-10) girls' enrolment as stipend to high school girls was started later in the year 2005.

5.1 Direct Impact of the Stipend Program on Girls' Enrolment

The school level census data enables us to identify the direct impact of the stipend program on girls' enrolment at school level for each grade. We have four time period panel data at school level from 2003 till 2006 which surveyed the same schools (public schools) all over the province. The base line survey is conducted

before the start of the program[14] on 30th of September, 2003 followed by three post-program surveys conducted each year in the month of September/October.

5.1.1 Difference-in-Difference Estimator on Full Sample

As discussed in the methodology section, we used girls' enrolment in the non-stipend districts as control to estimate the Average Treatment Effect (ATE) of the stipend program on the girls' school enrolment. This will enable us to compare the girls in the stipend and non-stipend districts. This comparison seems to be rather crude, but looking to the government school going children, their individual and household characteristics do not vary so much. Richer families will send their children to private schools due to the better quality of education, in both stipend and non-stipend districts. Parents' educational background and income level are also likely to be similar for both the regions. Later in our discussion of the results from regression discontinuity design in this chapter, we will also check the sensitivity of these results. On a priori ground, if there exist any positive impact of the program on the girls' enrolment then this difference-in-difference estimator should be positive and significant.

Table 5.1 reports the Average Treatment Effect (ATE) of the stipend on 6-8 grade enrolment by taking girls' enrolment in the non-stipend districts as control. In 2004, the first year of the program, our DD estimator shows a modest average increase of 7.16 students per school for middle school (6-8 grades) enrolment. The impact is larger (3.77 students per school) for grade 7 followed by grade 8 (2.36 students per school) and grade 6 (1.03 students per school). Given the base period level of girls' enrolment in the middle grades in the stipend districts this is an improvement of 8 percent in 2004 over 2003. However in the year 2005 and 2006 the impact estimate is quite substantial. In 2005, the total impact of stipend on middle grade enrolment using DD estimator shows an increase of 13.01 (14.7% of 2003) students per school. Almost all the grades contributed equally to this improvement. Similarly for the year 2006, the impact is an increase of 15.09 (17.3%) students per school over the base year. These periods also witness an increase in the number of schools (see Annexure; table 2) both in the stipend and non-stipend districts as part of the overall PERSP program. If we look at the marginal impact of the stipend on girls' enrolment in each year then 2004 impact is higher as compared to 2005 and 2006.

As the stipend program is scaled-up to high school level (9-10 grades) in the last quarter of 2005, we can also evaluate its impact on girls' enrolment in 2006 considering 2005 as base year. Table 5.2 reports the ATE of the stipend on 9-10 grade enrolment by taking girls' enrolment in the non-stipend districts as control. The estimate shows a modest impact of 8.31 students per school for the high grade enrolment. However, the average enrolments per school in 2006 are lower than 2005 for both the stipend and non-stipend districts (1st diff). But the drop in the girls' average enrolment in the non-stipend districts is sharper than the drop of girls' average enrolment in the stipend districts.

Actually the girls' total enrolment depicts an increasing trend within both the stipend and non-stipend districts as on year-on-year basis. Similarly, the total

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[14] The stipend component of the overall PERSP program started in October, 2003 and the stipend amount were handed over to children in December on end-quarter basis

number of schools also grew for the same period as the overall PESRP give financial support to districts and School Councils (SCs). This resulted in the lowering of average enrolment per school for both the stipend and non-stipend districts in the post program period. Table 5.3 explains that the differences in percentage increase of total enrolment are sharper than those of schools increase, and hence we get a positive impact in difference-in-difference estimator. However, one point to be kept in mind at this stage is that the spill-over effects of 6-8 grade stipend program on high grade enrolment (9-10 grade) in the initial two years is more than that of the impact of high grade stipend itself. We will try to explain this point later in the chapter when we mention the spill-over effects of the middle grade stipend program.

We can also use boys' enrolment in the stipend districts as control group to find the impact of the program on the girls' enrolment in the stipend districts. As boys in the stipend districts did not receive stipend while coming from the same family, this estimates will also identify the impact of the program. A priori we can say that this estimator should be smaller in magnitude than the earlier control group. One possible reason is the intra-household transfer of the stipend amount. If a girl receive stipend amount which is more than enough to cover her travelling cost etc, then it is possible that her parents shift the stipend money to boys' schooling. Later in this chapter, we will analyze the bias due to intra-household transfer of stipend money to the boys in the section on spill-over effects of the program.

Table 5.4 reports results of difference-in-difference estimator for middle grade girls' enrolment using boys' enrolment in the stipend districts as control group. The last column shows the total impact on middle grade girls' enrolment to that of boys. This estimator shows a significant but lower impact as compared to treating girls in the non-stipend districts as control group. This indicates the spill-over effect of the program to boys in the stipend districts.

TABLE 5.1

Impact estimates (Grade 6-8) using difference-in-difference (Full Sample)

(Treatment= Stipend Girls, Control= Non-stipend Girls)

	GRADE 6 Average Enrolments			GRADE 7 Average Enrolments			GRADE 8 Average Enrolments			**Total Impact (6-8)**
	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	
2003	33.57	51.70		29.41	48.45		24.91	43.00		
2004	40.81	57.91		30.97	46.24		26.18	41.91		
2005	46.44	60.06		36.67	51.25		28.23	42.28		
2006	41.09	55.36		35.04	47.53		28.25	41.66		
1st Diff (2004)	7.24	6.21	1.03	1.56	-2.21	3.77	1.27	-1.09	2.36	**7.16**
1st Diff (2005)	12.87	8.36	4.51	7.26	2.80	4.46	3.32	-0.72	4.04	**13.01**
1st Diff (2006)	7.52	3.66	3.86	5.63	-0.92	6.55	3.34	-1.34	4.68	**15.09**

TABLE 5.2

Impact estimates (Grade 9-10) using difference-in-difference (Full Sample)

(Treatment= Stipend Girls, Control= Non-stipend Girls)

	GRADE 9 Average Enrolments			GRADE 10 Average Enrolments			**Total Impact (9-10)**
	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	
2005	103.08	115.62		76.86	91.71		
2006	102.27	111.06		73.62	83.91		
1st Diff	-0.81	-4.56	3.75	-3.24	-7.8	4.56	**8.31**

TABLE 5.3

Trends in total enrolment & number of schools (Full Sample)

(For Girls in Stipend & Non-stipend Districts)

Year	Total Enrolments & Schools	Grade 9		Grade 10	
		Stipend	Non-stipend	Stipend	Non-stipend
2005	Total Enrolment	53397	139673	39814	110785
	(Total Number of Schools)	(518)	(1208)	(518)	(1208)
2006	Total Enrolment	62589	148487	44761	111774
	(Total Number of Schools)	(612)	(1337)	(608)	(1332)
% Change in Total Enrolment (year -on -year)		17.2	6.3	12.4	0.9
% change in Number of Schools (year –on- year		18.1	10.7	17.4	10.3

TABLE 5.4

Impact estimates (Grade 6-8) using difference-in-difference (Full Sample)

(Treatment= Stipend Girls, Control= Stipend Boys)

	GRADE 6			GRADE 7			GRADE 8			**Total Impact (6-8)**
	Girls (Stipend)	Boys (stipend)	Diff-in-Diff	Girls (Stipend)	Boys (stipend)	Diff-in-Diff	Girls (Stipend)	Boys (stipend)	Diff-in-Diff	
2003	33.57	56.07		29.41	47.29		24.91	40.58		
2004	40.81	59.48		30.97	47.72		26.18	40.74		
2005	46.44	66.92		36.67	52.26		28.23	42.29		
2006	41.09	59.26		35.04	49.6		28.25	40.27		
1st Diff (2004)	7.24	3.41	3.83	1.56	0.43	1.13	1.27	0.16	1.11	**6.07**
1st Diff (2005)	12.87	10.85	2.02	7.26	4.97	2.29	3.32	1.71	1.61	**5.92**
1st Diff (2006)	7.52	3.19	4.33	5.63	2.31	3.32	3.34	-0.31	3.65	**11.30**

5.1.2 *Difference-in-Difference Estimator with Regression Discontinuity Design*

As discussed in the methodology section in detail, regression discontinuity design can help in obtaining robust estimates by getting rid of selection bias. It utilizes the discontinuity in the program design to make comparison in the close neighbourhood of program eligibility criteria. We truncate our full sample of districts and compare those stipend and non-stipend districts which are in the neighbourhood of the literacy rate of 40%. More specifically, we compare the mean enrolment rates for the stipend district which have literacy rate of between 36% and 40% (6 Districts) with the mean enrolment rate of the non-stipend districts which have literacy rate of between 40% and 44% (6 Districts). Given the same literacy background; we assume that individual and household characteristics in these districts are more similar than those of the full sample. Although this may be a local effect, but we can still check the sensitivity of our earlier results.

Table 5.5 reports the DD impact estimates of the stipend program on 6-8 grade girls' enrolment on the truncated sample of 12 districts equally distributed between stipend and non-stipend districts. These estimates show a relatively higher impact of the stipend program as compared to our estimates on the full sample. Girls' enrolment per school in the stipend districts increase over the base year by 8.28, 15.36 and 23.57 students in 2004, 2005 and 2006, respectively. The point to be noted here is that these impact estimates are larger than those of the full sample which shows that the full sample DD estimator is underestimating the impact of the stipend on girls' enrolment. Given similar literacy background, the stipend program may have resulted in higher average enrolment per school.

Table 5.6 also reports the DD impact estimates on the truncated sample of the high grade stipend program on 9-10 grade girls' enrolment. This estimator shows an increase of 17.54 students per school which is more than double as the full sample indicates.

TABLE 5.5

Impact estimates (Grade 6-8) using difference-in-difference (Truncated Sample)
(Treatment= Stipend Girls, Control= Non-stipend Girls)

	GRADE 6 Average Enrolment			GRADE 7 Average Enrolment			GRADE 8 Average Enrolment			**Total Impact (6-8)**
	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	
2003	33.23	46.63		29.20	43.32		24.03	38.03		
2004	41.31	52.70		30.74	41.49		25.55	36.65		
2005	47.14	55.64		37.20	45.46		27.93	37.33		
2006	44.18	49.58		37.42	42.92		30.10	37.15		
1st Diff (2004)	8.08	6.07	2.01	1.54	-1.83	3.37	1.52	-1.38	2.90	**8.28**
1st Diff (2005)	13.91	9.01	4.90	8.00	2.14	5.86	3.90	-0.70	4.60	**15.36**
1st Diff (2006)	10.95	2.95	8.00	8.22	-0.40	8.62	6.07	-0.88	6.95	**23.57**

TABLE 5.6

Impact estimates (Grade 9-10) using difference-in-difference (Truncated Sample)
(Treatment= Stipend Girls, Control= Non-stipend Girls)

	GRADE 9 Average Enrolment			GRADE 10 Average Enrolment			Total Impact (9-10)
	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	
2005	105.43	134.75		77.71	104.9		
2006	109.17	130.78		79.03	96.39		
1st Difference	3.74	-3.97	7.71	1.32	-8.51	9.83	**17.54**

5.1.3 Parametric Estimation of DD Estimator

Table 5.7 reports results obtained through parametric approach of the impact of the stipend program on girls enrolment treating girls' enrolment in the non-stipend districts as control. The DD coefficient is obtained by interacting stipend with period dummies. These are the similar results to those obtained earlier by non-parametric approach except for the standard errors and t-statistics. These results shows that the impact of the stipend in 2005 and 2006 is significant for all different grades while it is significant for grade 7 & 8 in 2004. The results also show that girls' enrolment in the stipend districts is much lower than that of non-stipend districts. Similarly, Table 5.8 reproduces the results parametrically which were earlier calculated using non-parametric approach. The estimates combine the DD with RDD and were obtained by interacting stipend with period dummies.

TABLE 5.7

Parametric estimation of DD impact estimators (full Sample)
(Treatment=Stipend Girls, Control=Non-stipend Girls)

Variables	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
Stipend	-18.11 *	-19.01 *	-18.09 *	-34.29 *	-27.41 *
2004	6.14 *	-2.24	-1.16	-0.11	13.5 *
2005	8.34 *	2.81 ***	-0.71	9.65 ***	6.57
2006	3.66 **	-0.89	-1.35	5.12	-1.17
stipend*2004	1.09	3.81 **	2.43	16.47 **	6.64
stipend*2005	4.54 ***	4.46 **	4.04 **	21.63 *	12.52 ***
stipend*2006	3.87 ***	6.53 *	4.7 **	25.4 *	17.04 **
Constant	51.67 *	48.41 *	43 *	105.91 *	85.06 *

*, **, *** shows significance at 1%, 5% and 10% respectively

TABLE 5.8
Parametric estimation of DD impact estimators with RDD (Truncated Sample)
(Treatment=Stipend Girls, Control=Non-stipend Girls)

Variables	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
Stipend	-13.36 *	-14.1 *	-13.98 *	-42.92 *	-31.72 *
2004	5.99 ***	-1.9	-1.46	-0.54	20.17
2005	9.05 *	2.17	-0.69	14.84	10.51
2006	2.99	-0.36	-0.88	10.86	2.01
stipend*2004	2.08	3.47	2.98	12.63	-4.16
stipend*2005	4.87	5.86	4.61	13.6	4.54
stipend*2006	7.96 **	8.62 **	6.96 ***	21.31	14.36
Constant	46.58 *	43.27 *	37.99 *	105.91 *	94.39 *

*, **, *** shows significance at 1%, 5% and 10% respectively

5.2 Spill-over Effects of the Stipend Program

So far we have discussed the direct impact of the stipend program on the girls' enrolment in the stipend districts. We found a positive and significant impact on girls' enrolment of the stipend program. However, the current data set also enable us to see some of the spill-over effects of the program. As discussed in the methodology section, the stipend to girls may also encourage some intra-household transfer of stipend money to boys or to some other household consumption expenditure. By comparing boys' enrolment in the stipend districts with non-stipend districts will give us an indication of the presence or otherwise of the spill-over effects of the program. Moreover the middle grade stipend program may also encourage enrolment at high grade as more students may be leaving the middle school to enter the high school. Ignoring these effects may be underestimating the total impact of the program.

5.2.1 Spill-over effects on boys' enrolment in the stipend districts.

Table 5.9 reports the difference-in-difference estimator comparing boys' enrolment in the stipend districts and non-stipend districts. Table 5.10 reproduce the results of Table 5.9 parametrically with significance levels. The impact is positive and significant for all grades only for 2006 while for grade 6 it is significant in 2005 also. This shows that as the program covers more periods, the spill-over effects become more prominent. Given positive impact on boys' enrolment in the stipend districts in 2006, the program total impact is much higher then the direct impact of the program on girls' enrolment. Earlier when we calculated the direct impact of the program on girls' enrolment in the stipend districts we use two counterfactuals. We got higher impact estimates when we used girls' enrolment in the non-stipend districts as control, as compared to using boys' enrolment in the stipend districts. But as boys in the stipend districts are also non-recipient of the program, if there had no spill-over effects, both impact estimates should be more or less similar. This shows that in the presence of intra-household transfers, ignoring the spill-over effects of the program may underestimate the true impact of the program.

TABLE 5.9

Impact estimates (Grade 6-8) using difference-in-difference (Full Sample)

(Treatment=Stipend Boys, Control=Non-Stipend Boys)

	GRADE 6 Average Enrolment			GRADE 7 Average Enrolment			GRADE 8 Average Enrolment			Total Impact (6-8)
	Boys (stipend)	Boys (Non-stipend)	Diff-in-Diff	Boys (stipend)	Boys (Non-stipend)	Diff-in-Diff	Boys (stipend)	Boys (Non-stipend)	Diff-in-Diff	
2003	56.07	74.23		47.29	64.73		40.58	60.23		
2004	59.48	73.75		47.72	64.86		40.74	58.63		
2005	66.92	80.21		52.26	68.30		42.29	61.22		
2006	59.26	72.59		49.60	61.88		40.27	55.00		
1st Diff (2004)	3.41	-0.48	3.89	0.43	0.13	0.30	0.16	-1.60	1.76	**5.95**
1st Diff (2005)	10.85	5.98	4.87	4.97	3.57	1.40	1.71	0.99	0.72	**6.99**
1st Diff (2006)	3.19	-1.64	4.83	2.31	-2.85	5.16	-0.31	-5.23	4.92	**14.91**

Table 5.10

Parametric estimation of DD impact estimators

(Treatment=Stipend Stipend, Control=Non-stipend Boys)

Variables	Grade 6	Grade 7	Grade 8
Stipend	-18.2 *	-17.49 *	-19.66 *
2004	-0.35	0.25	-1.46
2005	6.02 *	3.57 **	1.01
2006	-1.66	-2.9 ***	-5.22 *
stipend*2004	3.76	0.18	1.61
stipend*2005	4.8 **	1.37	0.68
stipend*2006	4.82 **	5.18 **	4.89 **
Constant	74.3 *	64.81 *	60.27 *

*, **, *** shows significance at 1%, 5% and 10% respectively

5.2.2 Spill-over effects on girls' enrolment at high grade in the stipend districts.

Table 5.11 reports the impact estimates for grade 9-10 girls' enrolment by taking girls' enrolment in the non-stipend districts as control group for the full and truncated sample respectively[15]. The results indicate a relatively larger increase in the absolute school average enrolments as compared to the increase in 6-8 Grade enrolment. For example looking at the average impact over Grade 9 enrolment, the increase is 22.30, 34.48 and 42.79 students per school for the years 2004, 2005, and 2006 respectively. The parametric part of this table reported earlier (Table 5.7,

[15] For the parametric estimation of theses results please go back to Table 5.7

grade 9-10) shows that the estimates are significant for both the grades in 2005 and 2006 while also significant for grade 9 in 2004. Our concern here is only 2004 and 2005 because the stipend for high grade girls was started in the end of 2005.

Given the fact the stipend program for Grade 9-10 girls students begins in the last quarter of 2005, what are the reasons for higher growth in enrolment in the initial two years? Moreover the impact is larger for Grade 9 as compared to Grade 10. One of the possible reasons is that the stipend in Grade 6-8, starting in end-2003, encourages enrolment in these Grades which further leads to higher enrolment in grade 9 and 10, even in the absence of stipend in the initial years. For example the rise in grade 7-8 enrolment in 2004 and 2005 would have more likely resulted in more number of these children to go into the higher grades.

The current stipend program is regressive in nature due to the reason that it distribute equal amount of stipend money to each girl irrespective of grade level. But as we discussed in our analytical framework, the opportunity cost of schooling is high for grown up children. To change household preferences regarding schooling, the current stipend amount may be insufficient to induce parents to send their grown up children to school.

TABLE 5.11

Impact estimates (Grade 9-10) using difference-in-difference (Full Sample)
(Treatment=Stipend Girls, Control=Non-stipend Girls)

	GRADE 9 Average Enrolment			GRADE 10 Average Enrolment			**Total Impact (9-10)**
	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	Girls (Stipend)	Girls (Non-stipend)	Diff-in-Diff	
2003	71.62	105.99		57.64	85.14		
2004	87.99	106.32		77.79	99.03		
2005	103.08	115.62		76.86	91.71		
2006	102.27	111.06		73.62	83.91		
1st Diff (2004)	16.37	0.33	16.04	20.15	13.89	6.26	**22.30**
1st Diff (2005)	31.46	9.63	21.83	19.22	6.57	12.65	**34.48**
1st Diff (2006)	30.65	5.07	25.58	15.98	-1.23	17.21	**42.79**

Chapter no 6

6 CONCLUSION AND POLICY RECOMMENDATIONS

The province of Punjab in Pakistan initiated Punjab Education Sector Reform Program (PESRP) in 2003 with the assistance of World Bank to boost enrolment at school level from grade 1 to grade 10.The overall program has three main pillars which include; a) public finance reforms to realign expenditures at the provincial and districts level towards education and other pro-poor expenditures; b) devolution and public sector reforms; and c) education sector reforms to improve quality, access and governance of the education system. One of the innovative component within the education sector reforms is to distribute stipend money (Rs 200 per month per child) among the middle grade (6-8) girl students in low literacy districts of the province to bridge the historical gender gap in these districts. The stipend is a Conditional Cash Transfer (CCT) which gives money to girls given that the girl attends 80% of the classes. The program was scaled up later in 2005 to include the 9-10 grade girl students to check the drop out rate in grade 8. The current research made an attempt to find the causal impact of the program on enrolment for the girls in the stipend districts.

The research is based on the theoretical framework of Skoufias (2005) and Behrman and Knowles (1999). They argue that human capital investment is often constrained by household resources, market imperfections and other externalities. The preferences of the households are also biased in favour of boys as girls education is considered as *luxury*. The current intervention tries to offset the effects of these imperfections to achieve a higher level of human investment in girls' education. The cash transfer conditional on 80% attendance rate change the preferences of the households in favour of investing in the education of the child.

The research uses school level panel data set from 2003 till 2006 to evaluate the impact of the program using Difference-in-Difference (DD) approach and Regression Discontinuity Design (RDD). The average treatment effect using DD estimator shows that the girls' enrolment in the stipend districts has increased substantially in the post program period using our preferred control group of girls' enrolment in the non-stipend districts. The increase in 6-8 grade girls' enrolment per school is 7.16, 13.01, and 15.09 students in 2004, 2005, and 2006, respectively, as compared to the base year of 2003. In percentage terms, for example, the increase in girls' enrolment in 2006 is 17.3% as compared to 2003. We also evaluate the impact of 9-10 grade stipend program on enrolment in the same districts as the program scaled up in 2005. The estimate shows an increase of 8.31 students per school in 2006, on average, as compared to the base year of 2005.

We also obtain the results using DD in combination with RDD to check what is happening in the neighbourhood of the cut-off literacy rate of 40%, the program eligibility criteria. The method truncates the full sample and compares those stipend and non-stipend districts which have the same literacy background. As expected the estimates are larger and significant than those calculated on the full sample. The increase in 6-8 grade girls' enrolment per school is 8.28, 15.36, and 23.57 students in 2004, 2005, and 2006, respectively, as compared to the base year of 2003.

We also check for some of the spill-over effects of the program to the non-participants in the stipend districts. The stipend to girls may also encourage parents in Pakistan to shift resources to boys as they view boys' education can give them higher returns as compared to girls. To check for these spill-over effects, we

compare boys' enrolment in the stipend and non-stipend districts. We found significant spill over effects of an increase of 5.95, 6.99 and 14.91 students per school in average enrolment of boys in the stipend districts as compared to those of non-stipend districts. We also found some dynamic spill-over effects on grade 9-10 enrolment when the base of grade 6-8 students increased due to the stipend. Surprisingly, these effects show a more substantial positive impact of the program on high school enrolment due to the stipend distribution in the middle grade.

Combining evidence from the direct and indirect impacts of the stipend, enrolment has increased substantially in the middle and high grade for both girls and boys in the program districts. Owing to the positive results in Punjab, other provinces in Pakistan also embark on similar programs to boost girls' education in order to bridge the gender gap in education.

REFERENCES

ANGRIST, J. D. & KRUEGER, B. A. (1999) Empirical Strategies in Labor Economics. *in: O. Ashenfelter and D. Cards (eds) Handbook of Labor Economics,* Vol 3A, pp. 1278-1339 (chapter 23).

BEHRMAN, J. R. & KNOWLES, J. C. (1999) Household Income and Child Schooling in Vietnam. *the World Bank Economic Review,* Vol No. 13, Issue No. 2, pp: 211-56.

BRITTO, T. F. D. (2004) Conditional Cash Transfers: Why Have They Become so Prominent in Recent Poverty Reduction Strategies in Latin America. *Institute of Social Studies* Working Paper Series No. 390.

BUDDLEMEYER, H. & SKOUFIAS, E. (2003) An Evaluation on the Performance of Regression Discontinuety design on PROGRESA. *Institute for Study of Labour,* Discussion Paper No. 827.

FEDERAL BUREAU OF STATISTICS, GOVERNMENT OF PAKISTAN (2005) Pakistan Social and Living Standards Measurement Survey 2004-05 & 2005-06

HAZIRKA, G. & BEDI, A. S. (2003) Schooling Costs and Child Work in Rural Pakistan. *The Journal of Development Studies,* Vol. 39, pp. 29-64.

HECKMAN, J. J. (2001) Micro Data, Heterogeneity, and the Evaluation of Public Policy: Nobel Lecture. *Journal of Political Economy,* Vol 109, Issue no 4.

JACOBY, H. G. & SKOUFIAS, E. (1997) Risk, Financial Markets, and Human Capital in a Developing Country. *The Review of Economic Studies,* Vol. 64, Issue No. 3, pp. 311-335.

JERE, B. R., PIYALI, S. & PETRA, T. (2005) Progressing through PROGRESA: An Impact Assessment of a School Subsidy Experiment in Rural Mexico. *Economic Development and Cultural Change.*

MINISTRY OF FINANCE, GOVERNMENT OF PAKISTAN (2006) Economic Survey of Pakistan, various issues.

MORDUCH, J. (1995) Income Smoothing and Consumption Smoothing. *Journal of Economic Perspective,* Vol. 9, Issue No. 3, pp.103-114.

NAZMUL, C. & DILIP, P. (2006) Conditional Cash Transfers and Female Schooling: The Impact of the Female Stipend Program on Public School Enrolments in Punjab, Pakistan. *World Bank Policy Research Working Paper 4102,* Impact Evaluation Series No. 9. Washington D.C: World Bank

RAVALLIAN, M. (1999) The Mystery of Vanishing Benefits: Ms Speedy Analyst's Introduction to Evaluation. *Policy Research Working Paper No. 2153.* Washington D.C: World Bank

RAVALLIAN, M. (2005) Evaluating Anti-Poverty Programs. *Handbook of Agricultural Economics,* Vol. 4. Robert E. Evenson and T. Paul Schultz. North-Holland.

SKOUFIAS, E. (2005) PROGRESA and Its Impact on the Welfare of Rural Households in Mexico. *International Food Policy Research Institute, Washington DC,* Research Report No 139.

SKOUFIAS, E. & PARKER, S. W. (2001) Conditional Cash Transfers and Their Impact on Child Work and Schooling: Evidence from the PROGRESA Program in Mexico. *Economia.*

STATE BANK OF PAKISTAN (2006), Special Section: Impact Analysis of Punjab Education Sector Reforms in *First Quarterly Report for FY 06, The State of Pakistan Economy.*

UNESCO (2005) Children Out of School: Measuring Exclusion from Primary Education. *UNESCO Institute of Statistics, Montreal.*

WORLD BANK (2004, 2005, 2006), Projects Documents, downloaded from the following website on 1st October, 2007, *www.pesrp.edu.pk*

ANNEXURE

TABLE 1

Enrolment Trends by Grade/Class, Sex and Stipend Eligibility of Districts (Full Sample)

Grade/Class	Districts	Girls				Boys			
		2003	2004	2005	2006	2003	2004	2005	2006
Grade 6	Stipend	70803	89015	105385	110546	135908	148458	171109	175871
	Non-stipend	181166	212936	227041	232728	252443	261149	285074	293985
Grade 7	Stipend	61972	67550	83206	94142	114623	119020	133566	147109
	Non-Stipend	169780	170022	193725	199805	220149	229681	242742	250482
Grade 8	Stipend	52391	57097	64053	75881	98323	101618	108091	119349
	Non-Stipend	152491	154094	159825	175076	204892	207626	217588	222554
Grade 9	Stipend	37746	46458	53397	62589	82165	86048	100210	110585
	Non-Stipend	123480	127155	139673	148487	182518	158530	195504	208454
Grade 10	Stipend	30321	41072	39814	44761	58514	68861	61862	76378
	Non-Stipend	99188	118441	110785	111774	129840	141271	113976	138155

Source: Punjab Education Management Information System (EMIS) 2003, 2004, 2005, 2006

Table 2

Trends in Total Number of Schools by Grade, Sex and Stipend Eligibility of Districts

Grades	Districts	Girls				Boys			
		2003	2004	2005	2006	2003	2004	2005	2006
Grade 6	Stipend	2109	2181	2269	2690	2424	2496	2557	2968
	Control	3504	3677	3780	4204	3401	3541	3554	4050
Grade 7	Stipend	2107	2181	2269	2687	2424	2494	2556	2966
	Control	3504	3677	3780	4204	3401	3541	3554	4048
Grade 8	Stipend	2103	2181	2269	2686	2423	2494	2556	2964
	Control	3546	3677	3780	4202	3402	3541	3554	4046
Grade 9	Stipend	527	528	518	612	1193	1196	1180	1264
	Control	1165	1196	1208	1337	1914	1947	1936	2041
Grade 10	Stipend	526	528	518	608	1193	1196	1180	1265
	Control	1165	1196	1208	1332	1916	1947	1936	2034

Source: Punjab EMIS 2003 till 2006

Table 3 Ranking of Punjab Districts by Literacy Ratio for Population of 10 Years and Above					
Rank 1998	Districts	Literacy Ratio		Change in 2005 over 2003	
		1998	2005	Absolute	Percent
1	Rawalpindi	70.5	75	4.5	6.4
2	Lahore	64.7	73	8.3	12.8
3	Jhelum	63.9	69	5.1	8.0
4	Gujrat	62.2	67	4.8	7.7
5	Sialkot	58.9	64	5.1	8.7
6	Chakwal	56.7	73	16.3	28.7
7	Gujranwala	56.6	69	12.4	21.9
8	Narowal	52.7	56	3.3	6.3
9	Faisalabad	51.9	58	6.1	11.8
10	T.T.Singh	50.5	59	8.5	16.8
11	Attock	49.3	61	11.7	23.7
12	Mandi Bahauddin	47.4	56	8.6	18.1
13	Sargodha	46.3	54	7.7	16.6
14	Sahiwal	43.9	53	9.1	20.7
15	Sheikhupura	43.8	57	13.2	30.1
16	Multan	43.4	48	4.6	10.6
17	Mianwali	42.8	53	10.2	23.8
18	Hafizabad	40.7	50	9.3	22.9
19	Khushab	40.5	51	10.5	25.9
20	Khanewal	39.9	50	10.1	25.3
21	Leyyah	38.7	52	13.3	34.4
22	Okara	37.8	42	4.2	11.1
23	Jhang	37.1	43	5.9	15.9
24	Vehari	36.8	45	8.2	22.3
25	Kasur	36.2	49	12.8	35.4
26	Bahawalnagar	35.1	45	9.9	28.2
27	Bahawalpur	35	40	5.0	14.3
28	Pakpattan	34.7	44	9.3	26.8
29	Bhakkar	34.2	47	12.8	37.4
30	Rahim Yar Khan	33.1	40	6.9	20.8
31	D.G.Khan	30.6	41	10.4	34.0
32	Lodhran	29.9	34	4.1	13.7
33	Muzaffargarh	28.5	36	7.5	26.3
34	Rajanpur	20.7	40	19.3	93.2

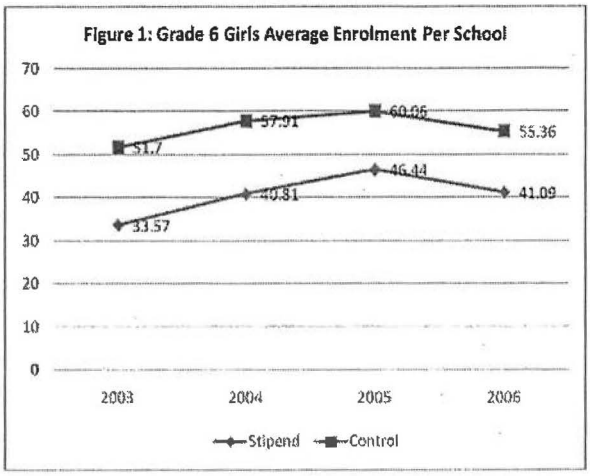
Figure 1: Grade 6 Girls Average Enrolment Per School
70
60
50
40
30
20
10
0
51.7
57.91
60.06
55.36
33.57
40.81
46.44
41.09
2003
2004
2005
2006
Stipend
Control

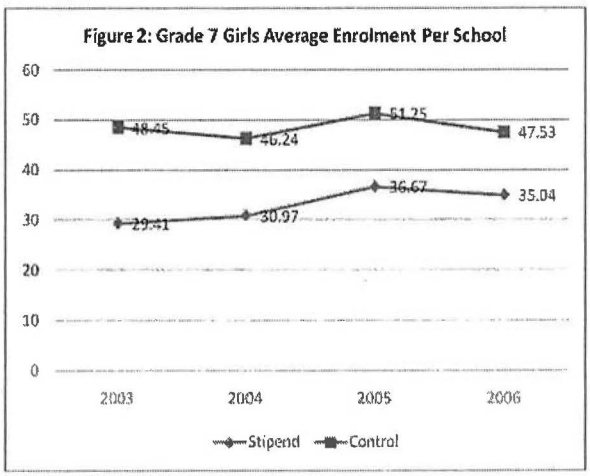
Figure 2: Grade 7 Girls Average Enrolment Per School
60
50
40
30
20
10
0
48.45
46.24
51.25
47.53
29.41
30.97
36.67
35.04
2003
2004
2005
2006
Stipend
Control

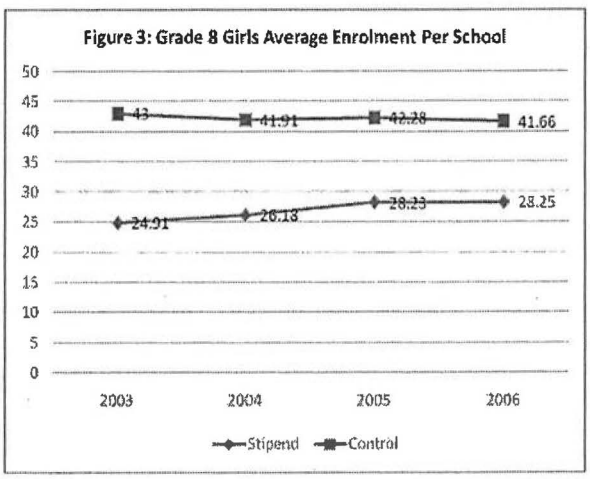
Figure 3: Grade 8 Girls Average Enrolment Per School
50
45
40
35
30
25
20
15
10
5
0
43
41.91
42.28
41.66
24.91
26.18
28.23
28.25
2003
2004
2005
2006
Stipend
Control

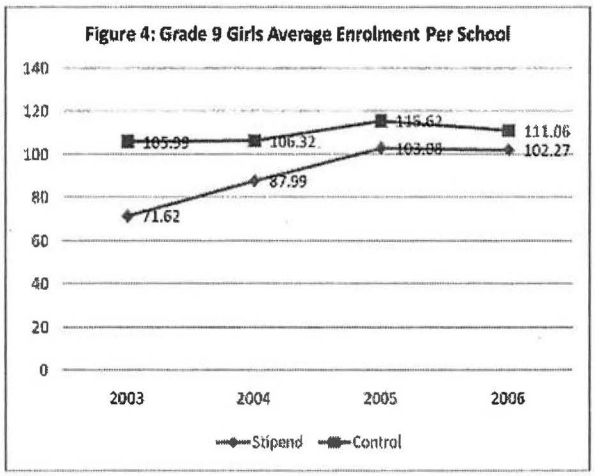
Figure 4: Grade 9 Girls Average Enrolment Per School
140
120
100
80
60
40
20
0
105.99
106.32
116.62
111.06
71.62
87.99
103.08
102.27
2003
2004
2005
2006
Stipend
Control

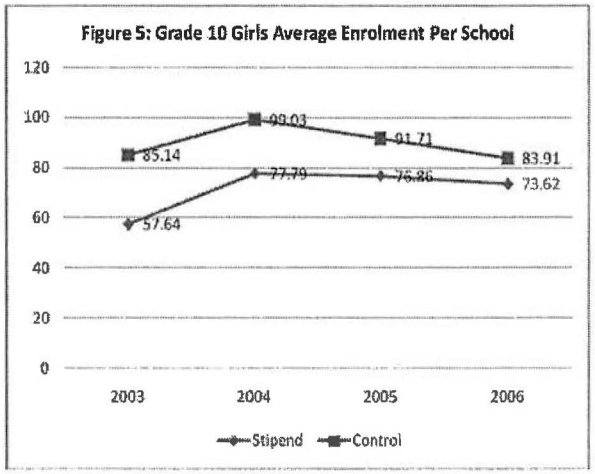
Figure 5: Grade 10 Girls Average Enrolment Per School
120
100
80
60
40
20
0
85.14
99.03
91.71
83.91
57.64
77.79
76.86
73.62
2003
2004
2005
2006
Stipend
Control

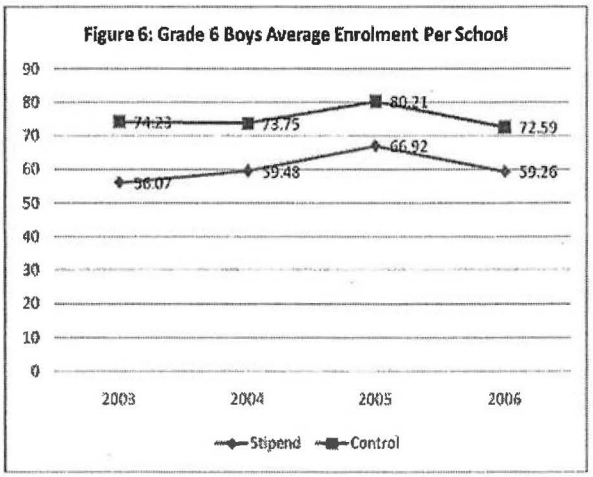
Figure 6: Grade 6 Boys Average Enrolment Per School
90
80
70
60
50
40
30
20
10
0
74.23
73.75
80.21
72.59
56.07
59.48
66.92
59.26
2003
2004
2005
2006
Stipend
Control

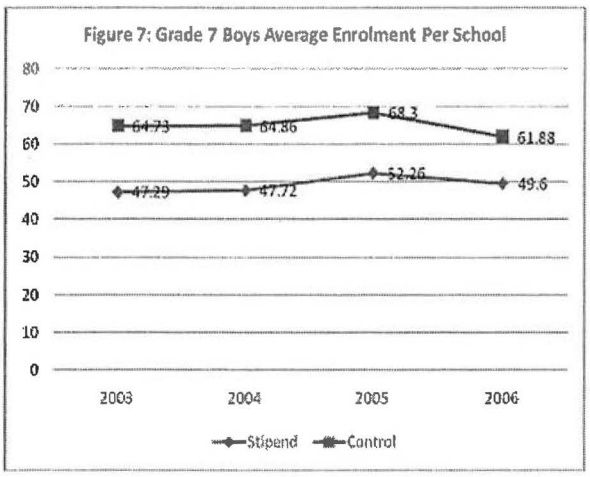
Figure 7: Grade 7 Boys Average Enrolment Per School
80
70
60
50
40
30
20
10
0
64.73
64.86
68.3
61.88
47.29
47.72
52.26
49.6
2003
2004
2005
2006
Stipend
Control

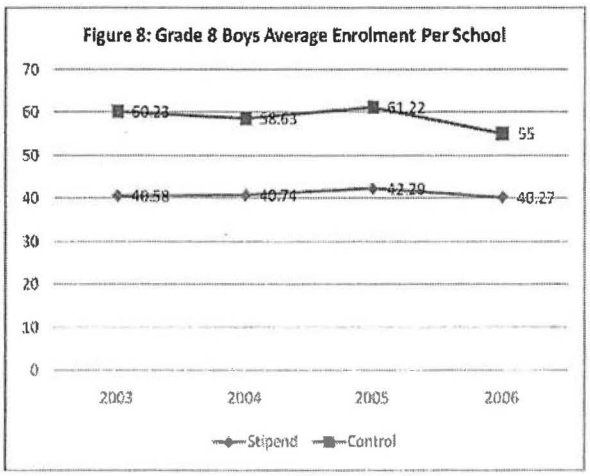
Figure 8: Grade 8 Boys Average Enrolment Per School
70
60
50
40
30
20
10
0
60.23
58.63
61.22
55
40.58
40.74
42.29
40.27
2003
2004
2005
2006
Stipend
Control

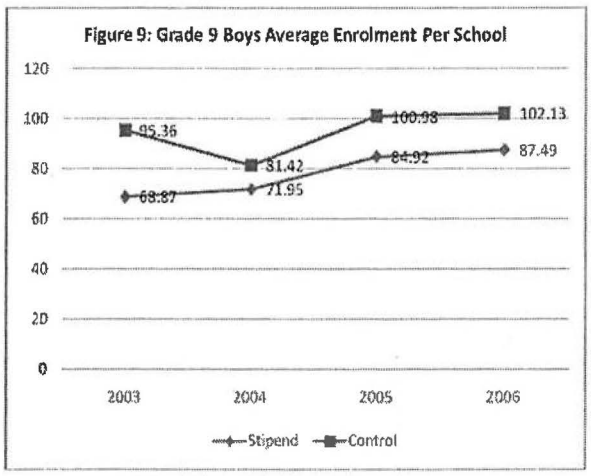
Figure 9: Grade 9 Boys Average Enrolment Per School
120
100
80
60
40
20
0
95.36
81.42
100.98
102.13
68.87
71.95
84.92
87.49
2003
2004
2005
2006
Stipend
Control

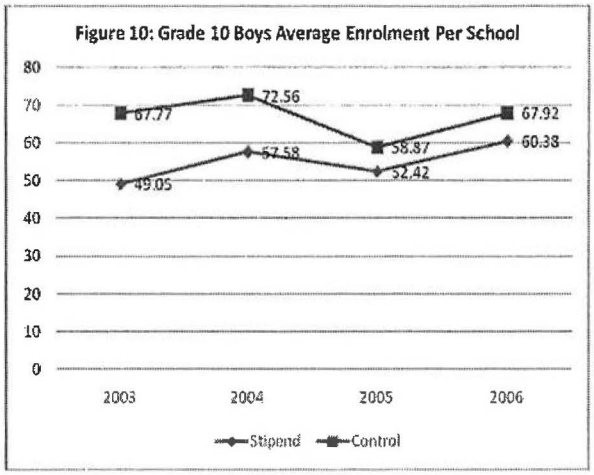
Figure 10: Grade 10 Boys Average Enrolment Per School
80
70
60
50
40
30
20
10
0
67.77
72.56
58.87
67.92
49.05
57.58
52.42
60.38
2003
2004
2005
2006
Stipend
Control