Econometric Analysis of Different Type of Institutions Effect on Education Expenditure in Pakistan

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Abstract

The spending on education for the families residing in Pakistan is evaluated in this study. The data used for this analysis is PSLM (Pakistan Social and Standard Living Measurement) for the year 2018–19. It examines the elements and variables that contribute to the families' total educational costs. The estimation results indicate that the amount of money a family spends on education depends on the family number of children, different type of colleges and university and institutions, and the degree levels of the children living in the four provinces of Pakistan. However, it is revealed that every factor has a favorable impact on the policy recommendations for the families of Pakistan interested in the attainment of education. Every discovery may also have an effect on various educational system-related problems. Each of these factors influences the amount of money that households spend on education differently. The regression will be executed using the regression analysis technique and the OLS (Ordinary Least Square) Method. This approach and methodology considered to carry out the regression when a model contains quantitative dependent variables. Estimates and outcomes will be initiated to implement the plan. It will provide solutions for any issues that can be explained by the variables pertaining to family education spending.

Keywords: Education Spending, Household, Number of the Children, Family Head, Distance from Education Institutions, PSLM, OLS, Regression T-test, P-Value

Introduction

The public capitalizes two ways in schooling, organization level and family level. In the circumstance of Pakistan, there is a realistic amount of evidence about how much money the government spends on education, but there is not much information about how much money households spend on education. Public and private sector expenditures are equally significant. Because the presence or absence of either one indicates a suboptimal allocation of resources and investments made by households and by, the government is interconnected and dependent on one another. As a result, ignoring education expenditures by households is costly because a lack of information leads to incorrect assumptions regarding households' willingness to pay for education. National educational policies are less effective because of these flawed assumptions. As a result, it is crucial to investigate and evaluate the demand for education in Pakistan and the willingness

of households to pay for it. The goal of this study is to find out how different socioeconomic factors affect how much money is spent on education at the household level in Pakistan. A double logarithmic specification of the Engel Curve has been used in this study to evaluate the association between education expenses and their elements. Attention of household in education is assessed by the family's spending on schooling. Instead of focusing on factors that influence educational attainment as did previous studies (Ahmed, Amjad, Habib, & Shah, 2013 ;) the study focuses on the factors that influence education spending at the household level. 2001; Alderman, Orazem, and Paterno Saqib, 2004). Educational achievement is likewise a purpose of individual features of the kids in addition to the features of the household, so it somewhat enlightens the outlay in our petition for edification by families (Qian & Smyth, 2011). Expenditure on education reflects households' readiness to recompense for their kids' education. Second, we examine whether household budgets and income elasticity of demand for education in Pakistan change with income level to trial the hypothesis that schooling is an essential worthy. Three ways this study adds to the literature First, rather than using the educational extent of the household head or parentages, the study suggests using the maximum stage of education in the family as a substitution for education consciousness. Second, it is for spending on education supply-side factors rather than demand-side factors, which have fascinated additional scholars in latest research. Thirdly, the different to operate OLS or Tobit relapse models, this education recycled log typical Tobit prototypes that modifies for the sensible leftward adjusting in log of expenditure on exercise at domestic level, delivered the truth with that numerous people are represented by no usage on schooling. Education improvement is viewed as a vital part to upgrading efficiency; it advances groundbreaking thoughts and developments, which thusly raises the effectiveness of the labor force and lift up monetary development (Wongmonta and Glewwe, 2017; Yang et al., 2014). For supported monetary development, venture towards human resources, especially in schooling is undeniable to battle comprehensive and select financial difficulties looked at by any nation (Confirmations, 2011; Gamlath and Lahiri, 2017). The extreme number of nations has guaranteed arrangement of education institutions; while institutions at a grass root level is yet an unsettled inquiry in a large part of the immature nations because of monetary imperative, unfortunate organization, and less consideration by government and nearby specialists (Singh and Shastri, 2020). Many creating and less-created nations experience the ill effects of elevated degrees of pay imbalance and neediness and it led to more noteworthy changeability in the assignment of education assets across families (Abdelbaki, 2012; Basuki et al., 2019; Costa and Gartner, 2017). These variables aren't just contracting the bureaucratic and nearby government's financial plan portion of schooling in absolute spending plan, but in addition answerable for blocking family expenditure on training. Numerous different elements, for instance, elevated degree of expansion, orientation imbalances, and territorial contrasts as far as open positions, joblessness, political precariousness and high expense in confidential area education foundations make fluctuation in schooling use (Afzal et al., 2012; Kuvat and Kizilgol, 2020; Pallegedara and Kumara, 2020) Feasible advancement objectives are appended to education turn of events and especially education objectives are acting the advancement of education turn of events, both concerning quality and concerning amount (Sial et al., 2020). Arrangement of value schooling in the point of view of Pakistan, the public authority of Pakistan has committed education advancement as well as the achievement of Joined Country 17 Feasible Improvement Objectives by 2030. In such manner schooling, related use supposedly increased by 4.7 percent in 2018-19. Furthermore, a measure of Rs.4.8 billion for 11 on-going and 21 new improvement projects designated in 2019-20 under the Bureaucratic, Pakistan Social Advancement Program (Legislature of Pakistan, 2019). Moreover, a measure of Rs.29.047 billion has been allotted to the Advanced education Commission for 128 on-going and 10 new ventures for public area colleges in the country. Pakistan has been honored with an open door that around 60% of the complete

populace lies between the ages of 15-64 years. On the off chance that serious consideration as far as human resources might be given to this gathering, it can assume a vital part in higher monetary development. Pakistan has the ninth biggest workforce on the planet, and it is the second biggest labor supply/work trading country in South Asia. The unfamiliar settlement contributed from the trading of labor/work was US$ 21.73 billion out of 2018-19 (Legislature of Pakistan, 2019). The unfamiliar settlements assume a positive part in monetary solidness and reinforce the prosperity of the family area. Education improvement of the family part is one of the vital variables for possessing a superior station on the planet work market (Suhaimi and Ghani, 2020). The world work market requests laborers which are sound as far as specialized expertise as it is one of the variables for supporting efficiency, effectiveness, and monetary development (Acemoglu, 2009; Barro and Lee, 2013; Tsaurai, 2018; Yun and Yusoff, 2019). Interest in human resources improvement especially schooling and wellbeing drives a positive commitment to financial development and lightening poverty (Akca et al., 2017; Bischoff and Prasetyia, 2019; Hooda, 2015; Pallegedara and Sisira, Kumara, 2020). As a significant part of instruction venture, the family spending plan distribution affects youngsters schooling and human resources amassing (Tune and Zhou, 2019). Disparity in family education expenditure prompts a bigger imbalance in kids' schooling results (Amankwah et al., 2018; Aslam and Kingdon, 2008; Chi and Qian, 2016). It has been gotten crowed out the impact of a bigger interest in kids' schooling on different sorts of family utilizations which might decrease expectation for everyday comforts of family and extend social imbalance inside a locale (Chi and Qian, 2016; Sarma and Pais, 2008). This study covers a near report on family education expenditure for in general Pakistan and territories of Pakistan while using a family financial plan overview dataset.

Objectives of the study
1. To analyze the factors prompting family educational spending based on distance.
2. To quantify the extent how much the families of Pakistan spend on education.
3. To consider such statistics and practical conclusions into effect for policy implications pertaining to education of Pakistan.

Background and Significance of the Study
The factors influencing household education spending are the focus of the current study. Although many scholars have previously studied education, no one has clearly attempted to break down the costs of education by degree. However, the researcher has attempted to determine the factors that influence household education spending from graduation to a doctorate. Quantifying household spending on educational attainment will surely be helpful to researchers and policy implications.

Review Literature
Jana and Maiti (2019) broke down state-wise uniqueness in open expenditure on advanced education in Indian states. According to the study, budgetary allocations for higher education in India have decreased to less than 1% of the country's gross domestic product since 1991, following economic reform. The versatility of advanced education use to net state homegrown item in numerous Indian states is not as much as solidarity. Tune and Zhou (2019) explore the job of disparity in an open door in education expenditures in China utilizing Board information of china. Schooling of family heads, area (metropolitan/rustic) and pay of the family was taken as free factor and the outcomes uncovered that each of the previously mentioned factors tracked down the critical yet the negative determinants of education expenditures. Chandrasekhar, Rani, & Sahoo (2019) concentrated on the expenditure on advanced education by utilizing information from the two late Public Example Study Office overviews. The creators assessed that families picking advanced education burn through 15.3 percent of their complete expenditure in provincial regions; and 18.4

percent in metropolitan regions. The creator further assessed that the offer was bigger in southern states as individuals from south were bound to concentrate on specialized schooling in confidential foundations and accordingly likewise had additional exceptional borrowings. The creators dissected that more unfortunate Indian families were less inclined to get advance for advanced education as they were risk-averter and dubious about future returns. Iddrisu et al. (2018) utilized the Ghana expectation for everyday comforts Overview, 2012-13 to explore the head choice for education spending by keeping the job of family factors in such manner. The aftereffect of the examination features that the specialists found no distinctions in mean education spending among the families on grade school selected understudies in both orientations while the guardians like to contribute more on male understudy than female one at more significant level of education. They reasoned that the advanced education choice of guardians for understudy education spending was male situated in Ghana and disregard the female youngster for this situation. Wongmonta and Glewwe (2017) attempted to investigate the job of orientation on the determinant of instruction utilizing the Socio-financial aspects Overview Information of Thailand, Thailand. They utilized the Engel bend to figure out the level of equity among the orientation concerning education expenditures. The consequence of the review that uncovered similar to male kid, the female kid was like by the guardians regarding education spending. They likewise inferred that guardians of Thailand treated the orientation similarly when they settled on contribute on them. Bayar and Ilhan (2016) investigate the factors that influence education spending in Turkish households. The paper particularly appraises the impacts of various pay bunches on the instruction used by the Tobit strategy. The estimated outcomes indicate that higher levels of household income are associated with higher levels of educational expenditure; groups with higher incomes spend more on education than those with lower incomes do. Additionally, families with household heads and mothers with higher education levels are more likely to invest in education than those without. Parents with higher human capital spend more on their children's education. Both income mobility and educational mobility between generations are low in Turkey, according to the study.

Material and Methods

Data Range and Data Source

The analysis of Pakistani households to ascertain the average amount spent on education forms the basis of this study. The Pakistan Social and Living Standard Measurement (PSLM) Assessment Round VII 2018–2019 provided the data for this investigation. KPK, Punjab, Sindh, and Baluchistan are the four parts of Pakistan that comprise the informational collection. With a random sample size of 2166 people from all over Pakistan, this review is cross-sectional in nature. Household-level data on various socioeconomic factors, such as the number of children of the family head and the different type of educational institutional like private, public, and formal and non-formal and NGO are provided by the survey's statistics. Tuition, fixed scholastic fees, housing costs, and transportation costs are all considered education-related expenses.

Research Design

The equation is evaluated using the Linear Regression and Ordinary Least Squares (OLS) methods. The type of dependent variables determines the estimation method. Both the OLS method and the regression analysis method are used because this dependent variable is quantitative or continuous in nature. The regression analysis method was unquestionably used to estimate the model. The estimated model will provide each explanatory variable's reliability and quantifiable statistics. A variable is deemed statistically significant if its probability or P value is less than 5% (0.05), 10% (0.10), or 10% (0.05); if it is greater than 5% or 10%, it is deemed statistically insignificant. Additionally, we evaluate the Model's overall performance using the F statistic. The power of the explanatory variable is sufficient to support the model if the probability value of the F test is less

than 5%. Each individual variable's relevance can also be assessed using the T test and P-value results. The impact of the explanatory factors on the dependent variable, the amount of money a household spends on education will be measured using estimated coefficients. The coefficient of the multiple linear regression model will explain the extent of the effect on the dependent variable.

Econometric Model
Dependent variable $= C + B_1X_1 + B_2X_2 + B_3X_3 + e$

Dependent variable	(Y)	=	Education Expenditure
Constant		=	C
X_1		=	Education Level (Degrees)
X_2		=	Number of children of the Family Head
X_3		=	University/College Type (Public & Private etc.)
e		=	Error Term

Results and Discussions
Table 1: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.516	0.266	0.255	84675.6886

Table 4.1 (Researcher's own contribution, PSLM 2018-19)
Table 4.1 displays the R square and Adjusted R square values, which illustrate how each explanatory variable accounts for variation in the dependent variable. It displays the variance in educational expenditures that accounts for the independent variables in the regression mode. Thus, 26.6% of the variation in educational costs can be explained by independent factors. The F test statistics, which is summarized in Table 4.2, provides a thorough illustration of the strength and potency of each independent variable as well as how they affect the dependent variable. The overall significance of the regression model is indicated by the statistical significance of the F statistic's probability value of 0.000. The previous section discussed the Model Summary and ANOVA table, which provides detailed information on the model's performance and plausibility. It is time to discuss and examine the ways in which each factor influences the overall amount spent on education. Additionally, it will clarify the ways that each factor influences the amount of money spent on education.

ANOVA Summary
Table 2: (Researcher's own contribution, PSLM 2018-19)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5550248752327.473	32	173445273510.234	24.191	0.000
	Residual	15293550803414.492	2133	7169972247.264		
	Total	20843799555741.965	2165			
Dependent Variable: Total Education Expenditure						

The significance level for the model estimation was taken as (5 & 10 %.)
Dependent Variable = Log (Expenditure on Education)
Log on Independent Variables as well that are quantitative in nature.

R Square	=	0.266	Adjusted R square	=	0.255
F Statistic	=	24.391	Probability	=	0.000
e	=	Random Error Term			

Education Mean Expenditure

Table 4.3 displays the average amount spent on education by a family or household for each degree-bearer in an easy-to-read, exclusive table. This expense makes complete sense in light of the degree's nature and the family leader's behavior.

Total Expenditures			
Education Degrees	Mean	N	Std. Deviation
BA/B.SC/B.Com	34653.975	726	39661.0743
B.Ed./M.Ed.	48541.127	71	69035.9159
B.A/B.SC/BS/BE	69960.991	454	57551.1260
MA/MSC	54251.555	299	54671.3398
Degree in Medicine (MBBS/BDS/Pharm-D)	242270.561	107	280201.8506
Degree in Agriculture	98307.692	13	127890.3401
Degree in Law	83215.152	33	49761.3751
Degree in Engineering	129034.545	99	94143.7682
Degree in Accountancy	110503.846	26	64332.9432
MPhil	123361.765	34	84433.6067
PHD	202600.000	7	142580.6906
MS	250222.222	9	302608.2566
Other	23196.094	288	48854.2060
Total	63124.772	2166	98120.4415

Table 3 (Researcher's own contribution, PSLM 2018-19)

Estimation Results

The estimation's findings will be used to share how much each factor contributes to the education expenditures of the families who want to send their kids to college. The spending component of all variables toward education attained in the various educational institutions will be separated in table 4.4.

Model		Unstandardized Coefficients		Standardized Coefficients	T-Values	P-Values
		B	Std. Error	Beta		
1	(Constant)	38197.746	7383.474		5.173	0.000
	Private	32867.036	2302.244	0.280	14.276	0.000
	Deeni Madrassa	-8801.504	2112.394	-0.085	-4.167	0.000
	NGO	-5978.464	21227.455	-0.005	-0.282	0.778
	Non Formal Education	69780.405	10740.494	0.132	6.497	0.000
	Privately	-3216.941	1256.208	-0.054	-2.561	0.011
	Others	3157.147	3438.117	0.018	0.918	0.359
	Number of Children	459.504	1231.008	0.007	0.373	0.009

Table 4 (Researcher's own contribution, PSLM 2018-19)

We will be able to talk about this table in detail if we approach it methodically by looking at each variable and its strength. When there are no variables in the model, the table shows the constant value, also referred to as an intercept that represents the average amount spent on education. It implies that there is a chance that we have overlooked a variable. However, the value or amount of expenditure with the strongest probability value of 0.00 is unquestionably represented by this interception. If we examine the above table, it represents the mentioned variables of the type of educational institution. By observing this variable empirically, we can settle some important results based on statistical tools applied in SPSS in order to find out the configuration of expenditure by family heads or member for their children to acquire education. Table 4.4 will open further gateways to investigate and analyze the plan of expenditure by the households. The research has kept the government institution as base category. Based on this ground, we can observe and conclude that those families who are interested in sending their children in private organizations are likely to spend on average 0.28 units or 28% more as compared to public organizations for the sake of getting higher education as probability value for category is less than 5 % or 0.005. If we further focus on the results, then it will further indicate that those students who are funded by the Deeni Madrasa or educate in such institutions. Value of this variable coefficient is (-0.085) and follows that students studying in deeni madrassas are likely to spend on average 0.085 units or 8.5 % less as compared to those educators who get their higher education in public sectors. The next category is NGO (Non-Government Organizations) that also plays a role in the education sector. Results declare or depict that those students who are backed by such organizations draw no difference in terms of spending compared to the public organizations, as probability value for this category is greater than five percent. This situation clarifies that students studying in NGO sector devote same as public or government education sectors. Subsequent category is Non- Formal Education wrinkled with the education. This type of education is often used interchangeably with terms such as community education, adult education, lifelong education and second-chance education. It refers to education that occurs outside the formal school system. Now this schooling in term of getting education is debated in the present study. It shadows in table 4.4 that kids who are educated from this forum are likely to spend 0.132 units or 13.2 % less as compared to those students who are referred to public sector organizations. The logic for this justification is the rate of this variable category coefficient (-0.132) with probability value less than five percent. The succeeding category that has to be compared with the public sector belongs to class of students who attain education as privately. Results show that such students or family's children who wish to attain education spend on average 0.054 units or 5.4 % less as compared to public education institutions. The variable coefficient (-0.054) absolutely helps to quantify the strength of education expenditure and probability values having less than five percent or 0.005 draws difference in spending between two categories. The final type of this variable includes others than the rest of the categories, which have not been included in the above-mentioned categories due to any reason. This type shows in table 4.4 that such students on average spend 0.018units or 1.8 % less comparatively to those who get such education in public or government sector because the coefficient value for this variable is (-0.018) with high significant probability value. If we observe the table, 4.4 then we can examine that probability value for this variable is statistically insignificant as it exceeds up to five percent. It is indicative that the number of children does not matter or create any hindrance in the way of education. Further, it follows that the number of children does not affect household or family expenditure for their children, and they continue education regardless of having less or greater number of children.

Conclusion

This study looks at how much a family spends on education. In this analysis, we have examined family education spending using a variety of demographic and socioeconomic factors. It implies that household spending on education is unaffected by an increase in the number of children of the family head. It demonstrates how family members or heads of households can still influence by continuing education for their children, at any point in their lives; they want to keep doing it. When the household's choice for selecting the type of educational institutional is examined more closely, huge discernible differences in spending patterns are found. It concludes that parents who connect with these various kinds of schooling organizations are very interested in the education of their children. The family heads look engaged and more committed to the attaining of education regardless of caring and choosing the type of institution. It also classifies the different organization and their behavior for promoting education in Pakistan. We can also look at the fact that there are notable differences between those who attain education in different types of schooling organizations. There is significant difference in the spending level between the public and private education institutions. The funding or direct education from any NGO (Non-Government Organizations) seeks no difference in spending level compared to public organizations. However, the non-formal education and privately seeking educator shows massive difference in spending level in respect of acquiring education in Pakistan. Ultimately, it regresses that government should focus and allocate more and more resources to all types of education institutions to streamline the education throughout the country. This analysis makes it abundantly evident that significant efforts must be made to enhance Pakistani education by enhancing the country's peripheral job sectors. It should be a top priority for the state or government to give more attention to improving current system of education.

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