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EDUCATION RETURNS AMID THE EMPLOYED AND THE SELF-EMPLOYED SECTORS: AN EMPIRICAL EVIDENCE FROM PAKISTAN'S ECONOMY

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ABSTRACT
The primary function of this cram is to approximate possessions of education on income in Pakistan. The ARDL approach is functional for estimating the long-run and short-run association among the variables using annual data from 1980-2020. Apart from considering levels of education, factors such as income, secondary, tertiary, agriculture, and industry are contained in this paper. The consequences illustrate that charge of revisit in Pakistan is elevated and optimistic, particularly at the higher schooling level. There is also an essential indication of wage differential because the elevated rank of schooling will be the income of individuals in Pakistan. By industrial measures, we recommend that workers expect the maximum profits, in communal, personal, and then freelance workers. This teaching revisits an explanation in favor of the current behavior in enrollments. Hence, rising communal asset on the way to promote improved presence in fundamental teaching is not acceptable lying based on personal competence, except reserves to enhance education features to contain high confidential profits. Using high personal profits for postsecondary training, pupils in this stage must instruct how to regain supplementary of the civic expenses of teaching, which might be distributed differently to deprived ancestry throughout allowance. In this ARDL approach, we find that Agri, Sec_, and Sec_Gr have a negative relationship with income, while the other variables such as Ind, Sec_Ger, and Ter_Gr have a positive relationship with income.
Keywords: Education, ARDL Approach, Income, Agriculture, Industry, Secondary

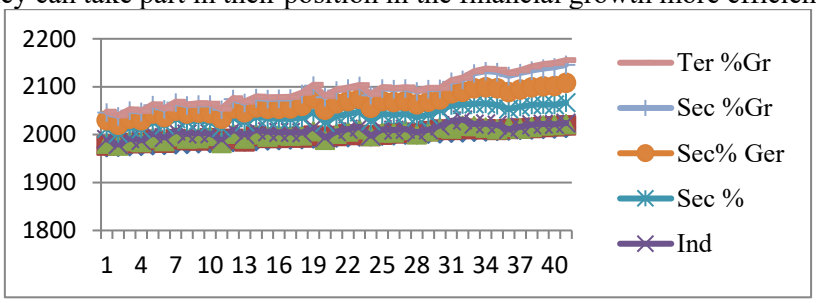
INTRODUCTION
Education has been measured as a multipurpose policy instrument. One of the goals usually attached to education policy is that improved educational achievement will direct to fewer wage inequity. Therefore, the increase in wage inequity practiced in many cities leads to improved notice in the extent of proceeds toward teaching. Proceeds toward teaching are helpful in favor of policy-concerning concerning several traditions. For example, proceeds toward learning suggest which region of the educational structure the administration must spend in the majority. The profits to learning are considerably diverse; policy-concerning are capable on the way to create extra capable allowance choice through extra expenditure funds lying on the point of learning to create advanced profits.

A study of returns to education can also help to estimate comprehensive education policies. It is, for instance, well recognized that increasing human capital is essential to economic development. Governments should consequently seek to implement policies that are constant with human capital growth. In the situation of Pakistan, the most present research on education and earnings is conducted by Nasir and Nazli (2000). They accomplished that " the study ratifies the optimistic function of learning because every time of learning creates about 7 percent profits designed for income workers". Their consequences also show that not merely each extra year of training brings a considerable increase in wages, although advanced wages are established toward advanced ranks of learning.

The policy notices here that education is connected to its prospective to increase earnings and decrease poverty. This thesis interrogates the learning-wages association within Pakistan. The study contained three primary purposes: 1) on the way to observe the industry marketplace that proceeds to learn among income-employees, freelance, and rural workers; 2) on the way to observe the work marketplace that proceeds to the ability to read and write as well as numeracy expertise intended for these types of employees; also 3) toward examining the sample of profits to learning beside the wages division. The purpose is to inquire whether education raises earnings in any specified profession and whether it also raises earnings, ultimately facilitating access to well-paying occupations such as waged labor.

This paper will also examine the role of education alongside the earnings division. It will facilitate us to declare whether the consequence of education is to lessen or stress earnings inequity. The study is prepared separately by profession and gender by age group. This study has recognized that individual assets are indispensable for firm efficiency and are accumulated in two behaviors: through experience and education. Thus, educated and experienced employees should earn more as compared to non-educated employees. Evidence from empirical studies of the developing countries, though, shows that returns to primary education may be lesser than that of post-primary education, signifying that the earnings education outline is convex.

The introductory history of education is an attempt toward a specific context for individuals across the country's development. Education plays a central role in political, economic, and social progress. It realizes the people to gain their rights and duties, which is very effective for achieving the policies. Education also increases the productivity and capability of the people and enables the natives to participate in their responsibility in the financial growth of the state. It creates the personality in the people so that they can take part in their position in the financial growth more efficiently.



Source: Pakistan Economic Survey and World Development Indicators

Figure 1: Trend of Dependent and Independent Variables

In this trend, the Income is the dependent variable, while the other variables such as Agri, Ind, Sec%, Sec% Gr, Sec% Ger, and Ter% Gr are independent.

Objectives of the Study

The objectives of this study remain as follows

1. To analyze the returns to Education between the Self-employed and Employed Sectors.
2. To examine the role of education alongside the earnings division.
3. To analyze the returns to investment in education.

REVIEW OF LITERATURE

Education is considered an important mechanism employed to make it easy for adult creation on the road to developing the practice of freedom, how men and women know how to contribute to the revolution of the globe. Edification has been considered the primary method of ensuring that people achieve beneficial knowledge and skills to transition into the future. Education can be a practice or procedure that lays positive results lying on an individual's intelligence, nature, or substantial capability.

Studies based on the Developed Countries

Michaela Neifert analyzed the contrast of self-employed practice resting on earnings as well as the threat of redundancy. The study analyzed the effect of self-employed practice on the wages in the earnings and remuneration segment, respectively. Much research has shown the labor market consequences of educational attainments, labor force attachment, job tenure, and unemployment experience. The knowledge gained can be transferred to the wage sector, which increases job opportunities, and then the employer can be rewarded. For this purpose, we used the technique OLS.

The dependent variable was monthly wages within this study, and the independent variables were the years of schooling and the error term. These variables showed that continuously self-employed people could earn more than paid-employed individuals. Working in the occupation trained for an experience had a positive effect on wages. In this way, the rates of return to wages were positive for technicians and skilled workers and negative for unskilled workers. Thus, the study concluded that the effect of self-employment was more critical for the individuals concerning wages. If successfully self-employed individuals tried to enter the wage sector, then the consequences of self-employment would be more favorable than the temporarily self-employed.

George Psacharo Poulos et al. (1994) analyzed the returns to investment in education. This study focused on asset learning which contributed towards a perfect speculation occasion within humanity nowadays. Rates of return to earnings inside an aggressive segment of an economy were elevated than designed for those who are engaged within the non-aggressive segment. The study found the effect of instruction on the farm, had increased the firm's productivity, which resulted in economic growth. In this study, we used the technique OLS by using the Mincer Earnings Equation to judge the proceeds on the way to the asset on edification. This study recognized that the dependent variable was the earnings, and the independent variables were the years of schooling, experience and squared experience, and the error term. Colm Harman (2000) examined the proceeds on the way to edification. Generally, this study focused on instruction as a personal choice towards empowers in "individual funds," Thus, this gets an "interior "pace of revisit on personal assets. The "interior" pace of revisit was the concession pace that equated the current settlement worth to the current expenses price. If the more able individuals were interested in individual funds than those less able, then the "interior" pace of revisit would increase. For this purpose, we used the OLS technique intended for the judgment of the pace of revisit. In this learning, the reliant capricious was the wage, plus the autonomous capricious was the schooling and knowledge. The reading concluded that wages were highly correlated with edification; consequently, each year of edification had an equivalent fraction quantity of wages

Panos et al., (2001) examined the private earnings on the way to schooling. The proceeds toward schooling would boost if the rank of edification rose. Within this study, we used the technique Mincer equation. In this study, the dependent variable was the hourly earnings, and the independent variables were the years of schooling, experience, and the part-time job. The variables showed that the returns to education would consider the outcome of increased productivity of the firm. Thus, the study concluded that for the improvement in the educational qualifications, there would be a continuous increase in women's participation.

Aki Kangasharju et al., (2002) investigated the function of edification in freelance accomplishment. It was regarded that education was considered as an investment for the future. The fact was the achievement of schooling, caused an improved prospect pay envelope and the enormous triumph of character. For all purposes, advanced learning of group would recover escalation of their businesses. In this study, we used the Probit Models to estimate the function of edification in freelance accomplishment.

Inmaculada Garia-Mainer et al., (2004) studied the returns to education and experience. This data was concerned with the time-series data. The individual assets hypothesis states an affirmative correlation existed among assets in individual assets and wages, which occurred in this way to a better of individual funds resulting within labor marketplace through elevated income. For this purpose, we used the Wage Equation for the judgment of proceeds toward tutoring and experience. Inside this study, the dependent variable was earnings. The independent variables were the initial human capital, education, experience, individual plus labor uniqueness such as masculinity, era, activity, nature of indenture, and so on, and the error term.

Davide fiaschi et al., (2013) studied the salary positions and the toll of revisit towards learning. This study analyzed when the type of schooling attended was considered, then the returns to education increased with more outstanding educational attainments. Education was regarded as an essential part of individual human capital. Thus this had an important determinant of earnings. It was regarded that education was an investment of present resources for future returns. In general, higher education improved the job requirements of the firm in the country. In this study, we used the OLS technique, the dependent variable was the earnings, and the independent variables were the years of schooling, experience, squared experience, and the error term.

Studies based on the Developing Countries

Peter R.Moock et al., (1998) investigated education and earnings in an economy. This study regarded that the education systems serve up the countryside fine within a rule nation which would be real personalized on the way to provide wants of souk nation. Education was a vital segment of paycheck inside advertises surroundings. Elevated was the rank of instruction, the privileged was the individual's remuneration. In this study, the human capital earnings function (Mincer) was used for the estimation of education and earnings.

Simon Appleton et al., (1999) studied the instructive extension as well as financial refuse: proceeds toward edification. This study showed that it was necessary to stress the importance of education which was measured by the human capital and consequently, in determining growth. From this study, we found that the rates of return to education had sturdy sound effects on top of the prospect of service as well as freelance. Also, the instruction might have a healthier outcome resting on the received profits. In this study, we used the technique of the Mincer equation for the calculation of returns to education.

A. Irdus et al., (2000) examined the proceeds to edification among the temporary as well as engaged segments. This data was associated with the time-series data. Speculation within human being funds was regarded as a major feature in terms of returns to education that contributed to the amazing financial expansion within the budding nations, akin to Pakistan. The proceeds toward edification had been calculated via the tolls of revisit (TOR) procedure. In this study, the dependent variable was monthly income and the independent variables were self-employed, accomplished prime school accomplished derived school, finished academia, skill, good health, and experience squared.

Ayst Tansel (2004) studied education and labor market outcomes. This study focused that the highest returns at the university level had increased the expansion of education. Proceeds on the way to instruction in the confidential region were competitively privileged as compared to the communal region. However, educational opportunities had expanded the supply of educated laborers in the labor market. Education improved the income distribution among the individuals and this contributed to social and economic development. In this study, we used the Mincer earning Function the estimation of education and labor market outcomes. The dependent variable was the wages and the independent variables were the education, experience, training, and the error term. These variables showed that there was an affirmative connection between tutoring and financial expansion.

Subhashini Subbaraman (2006) investigated determinants of wages and the returns to education. The role of education was an important determinant of wage. For this purpose, we used the Earnings equation. In this equation, the dependent variable was the wages and the independent variables were the educational attainments, experience, caste, mode of payment, and the error term. The study concluded that schooling and experience had a significant effect on the determination of wages.

Florencia Lopez Boo (2007) investigated the evolution of returns to education. This study analyzed that increasing the returns to education reflected the stable or increasing earnings of the workers. The tolls of revisit toward education determined speculation within edification which would be the result of improvement in the education sector. Thus, the overall pace of revisit toward education to a supplementary time of training was greater than average income workers. In this study, we used the Mincer Equations, the dependent variable was hourly real wages and the independent variables were the years of experience, squared experience, years of schooling, and region.

Alan de Brauw et al., (2008) studied the reconciliation of proceeds on the way to edification inside remuneration service. In this study, if investment in schooling was high, then this would lead to higher returns. The lessons of profits toward instruction showed greater affiliation amid earnings as well as instruction stages within the developing nations. For this purpose, we used the Mincer Equation Function. In this study, the dependent variable was income and the independent variables were the years of schooling, experience, squared experience, and the error term. From these variables, the study found here was an activist rapport between earnings and the existence of the practice (Ali, Ali and Bhatti 2019).

Jim Kjelland (2009) focused on the economic returns of higher education. This study focused instruction endowed a person with productive-increasing human being resources and this augmented efficiency that resulted in improved earnings within the workplace souk. In this study, we used the Mincer Equation for the assessment of economic profits toward superior tutoring. In this study, the dependent variable was the wage and the independent variables were the educational attainments such

as high school, college, college graduate, and the error term. Thus, the study concluded that there was a strapping activist as well as considerable rapport amid earnings as well as education within the workplace souk.

Florencia et al., (2010) investigated the returns to education. This study focused that the tolls of revisit toward tutoring were considered as a chief determinant of encouragement on the way to spend within tutoring for purpose of mounting the productivity of the firm and hence, the economic development of the country. Intended the estimation the toll of revisit toward tutoring, we used Mincerian Equation. In this study, the dependent variable was the hourly real wage and the independent variables were age, educational attainment, urban area, and the error term. The study revealed that the increasing toll of revisit toward tutoring was mainly driven by raising the wages

Izumi Yamasaki (2012) studied the outcome of instruction on wages as well as service. Within this study, we found that the workers who had more education tended to have higher inner abilities or higher socio-economic status, and therefore, they work more efficiently in the firm. The technique 2SLS (Mincer Equation) was used for the estimation of the outcome of instruction on wages as well as on service. Within this study, the dependent variable was the income such as earnings and the independent variables were the years of schooling, family size, gender, sex, and the error term. Thus, the study revealed that arrival toward coaching in the proper sector was very high as compared to the informal sector.

Margherita Comola et al., (2013) examined salaried employment and earnings. This study estimated the consequences of paycheck on human beings' uniqueness like era, education accomplishment plus matrimonial rank. In this study, we used the Mincerian equation by OLS technique for the estimate of salaried employment and earnings

Charles Ackah et al., (2014) examined education, skill, and earnings. This data was concerned with the time-series data. This study focused that human capital was important for firm productivity and was accumulated in two ways:-through experience and education. In this study, we used the OLS Mincerian equation of proceeds toward edification by using domestic analysis facts. By using this equation, the dependent variable was the monthly wage and the independent variable was the educational attainment, a vector of other explanatory variables including experience, gender, unskilled workers, and the error term. These variables showed that the profits toward instruction were generally positive and significant. Thus, we concluded that education played a significant position in increasing individual assets for development plus economic growth.

Mohd Nahar Mohd Arshad et al., (2015) studied the profits of instruction and salary gaps. The objective of this study was to recover worth and quantity in higher edification through the efforts of the administration. The pace of revisit toward education was commonly estimated by using the OLS technique. Within this study, the dependent variable was individual earnings. The independent variables were the age of the individual, educational level, marital status, fender, geographical location, employment, and ethnicity

Studies based on Pakistan

Monazza Alam (2005) studied the charges of revisit toward edification via femininity within Pakistan. Discrepancy workplace souk proceeds toward man and woman edification were solitary of latent elucidation intended for big femininity gaps in education in Pakistan. For this purpose, there were a variety of techniques such as OLS, Heckman alteration, 2SLS, and family unit preset things that were used for the opinion of financial proceeds to edification. Within this study, the dependent variable was the log of earnings of individuals and the independent variables were the schooling and the family size. This study revealed that the earning function estimated a larger gender in financial profits toward instruction, by proceeds toward women’s edification being to a large extent and appreciably elevated than men’s. This also suggested to there was a differential action among workers.

Durdana Qaiseer Gillani et al. (2013) analyzed the employment status and earning functions in the urban informal sector. This study was concerned with the time-series data. The main purpose of the study was on the way to determine the contrast of individual assets and other socio-economic variables on earnings of self-employed, especially in the urban informal sector. However, the informal sector had the potential to absorb a greater number of rural and urban workers and it contributed to the skills development of the workforce. Due to this reason, employment caused economic development and poverty reduction in the informal sector. In this study, we used the technique OLS for the estimation of employment status and earning functions in the urban informal sector.

DATA AND METHODOLOGY

In this section, we present the model specification, description of variables, source of data, and procedure of estimation.

Model Specification

For model specification, we explain our model as:

$$\Delta Inc = f(Agri,\ Ind,\ Sec\_,\ Sec\_Gr,\ Sec\_Ger,\ Ter\_Gr)$$
$$(-) \quad (+) \quad (-) \quad (-) \quad (+) \quad (+)$$

The variables within this reading are, Income as a dependent variable and other variables such as Agriculture (Agri), Industry (Ind), Percentage of students in secondary education (Sec_), School enrollment secondary (Sec_Gr), Gross enrollment ratio secondary (Sec_Ger), and School enrollment tertiary (Ter_Gr) are independent variables respectively. The signs in this study reveal the direction of the relationship between income and explanatory variables as discussed in the literature.

Description of Variables

The variables such as Inc, Agri, Ind, Sec_ Sec_Gr, Sec_Ger and Ter_ Gr can be described as follows:

Gross National Income (GNI)

Gross national income (GNI) is defined as the amount of worth supplementary through the entire manufacturers who are inhabitants in a country, in addition to any product taxes (minus subsidies) not incorporated in the production, in addition to earnings expected from a foreign country such as worker return and property income. GNI dealings income established by a nation both nationally and from abroad. In this value, GNI is fairly like Gross National Product (GNP), which dealings output from the nation and companies of a particular nation, despite whether they are placed within its borders or abroad. GNI includes the whole assessment of commodities and masses formed inside a country (i.e. its GDP), collectively through its income established from further realms (especially curiosity and bonus), a smaller amount of related payments made to other countries. Generally, Gross National Income (GNI) is calculated by gross domestic product (GDP) in addition to net revenue of primary income (worker return and investment income) from a foreign country.

Symbolically, it is represented as:

GNI=GDP+net primary income from abroad

Here,

GNI=Gross National Income

GDP=Gross Domestic Product

Agricultural Growth (Agri)

Agricultural Growth is a mainly significant pathway for addressing the wants of the constantly poor that, as a set, are principally dependent on agriculture. But the results show that agricultural growth has been an astonishingly significant part of poverty exits, and also find indication that agricultural growth helps to entries into poverty. The results also show that agricultural productivity growth is not the simply, or still the most serious, issue in exiting poverty in countryside areas main factors comprise relative prices (especially of food crops), skill inequity, efficient public expenses, and significantly, which reduces the strength of agricultural growth.

Wiggins suggests four possible reasons for the poverty existing: Firstly, that small-holder do not command more land because of risk loathing; Secondly, the land marketplace is interlocked with bigger markets and social affairs throughout a high degree of investor lending; Thirdly, a deficient of liquidity; and Fourthly, that buyers of land may not use it for creative purposes but for leisure time, tariff reprieve, conjecture or funds laundering. In most cases, the constantly poor are not very occupied in markets. For example, the constantly poor bought little of their food necessities and only engaged in recognized housing and financial markets to an imperfect amount (Wiggins, 2006).

Industrial Growth (Ind)

Industrial growth is increasing income and/or returns earlier than the general market. Growth industries generally include a large number of growth stocks. Investments in these industries are generally appropriate for a shareholder who is prepared to agree to larger risk as a substitute for the chance of larger profits. Therefore, the results show that Industrial growth plays a key role in economic strength. It raises the productive capacity of the people and creates ever-rising service opportunities. The people therefore can have more goods and services: freedom and improved health deprived of the preceding generations.

Industrial growth reduces reliance on agricultural exports to receive badly-needed overseas trade.

Secondary Education (%Female) (Sec_)

Amount of feminine pupils registered within the entire derived edification schemes articulated since a proportion of the full amount of pupils (feminine) registered on derived edification phase within a certain discipline time. In secondary education, pupils (% female) in Pakistan was 40.48 as of 2013. Its maximum value over the past 42 years was 42.77 in 2009, while its lowly value was 19.90 in 1971.

Gross enrollment ratio, secondary (%) (Sec_Ger)

The number of children enrolled in a stage (secondary), despite age, is divided by the inhabitants of the age faction that formally corresponds to a similar level. **Or** Full conscription within derived edification, despite the era, articulated since a fraction of people of certified derived edification period. GER might be able to go ahead of 100% owing on the way to the addition of over-aged and under-aged pupils since of their untimely or delayed school entry as well as rank recurrence.

Symbolically, it is expressed as follows:

$$GER_{SEC}=\frac{Enrollment\ in\ secondary\ level}{Population\ of\ formally\ age-group\ for\ secondary\ level}\times 100$$

Secondary School enrollment, (%gross) (Sec_Gr)

Gross conscription percentage is a fraction of whole conscription, regardless of era, to inhabitants of the time set which formally communicates the rank of edification exposed. Derived edification inclusive the condition of fundamental edification which initiate on the prime rank, as well as aspire on lying basics designed for lifetime knowledge and human being expansion, through contribution to the extra topic- or ability-oriented lessons by a further expert instructor.

School enrollment, tertiary (%gross) (Ter_Gr)

While enrollment in tertiary edification, regardless of era, articulated since a proportion of whole people of five-year era faction subsequent lying on the derived discipline departure.

$$\%gross_{SEC}=\frac{Enrollment\ in\ tertiary\ level}{Population\ of\ formally\ age-group\ for\ tertiary\ level}\times 100$$

Table No. 1: Description of Variables

Variables	Sources of Data	Unit of Measurement	Expected Signs
Dependent variable			
Income(Inc)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	
Independent Variables			
Agriculture(Agri)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	_ ve
Industry(Ind)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	+ ve
Secondary_(Sec_)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	_ ve
Secondary_Ger(Sec_Ger)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	+ve
Secondary_Gr(Sec_Gr)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	_ve
Tertiary_Gr(Ter_Gr)	WDI,IMF,PAKISTAN ECONOMIC SURVEY	%	+ve

Sources of Data

To obtain the data, we use the following sources World Development Indicator (WDI), International Monetary Fund (IMF), and Pakistan Economic Survey, etc.

Procedure of Estimation

The procedure of estimation is used to estimate the variables, which are discussed as follows:

Stationary of Data

A data is said to be stationary if the data have such mean and variance, which are constant above the time and the value of the covariance among the two time periods depends merely upon the space and not the real time on which the covariance is calculated. If the data have such mean and variance, which are not constant, then this is the situation non-stationary.

Augmented Dickey Fuller Test (ADF)

Dickey and Fuller (1981) proposed a test based on the presence of unit root normally recognized as the Augmented Dickey Fuller (ADF) test. From this test, we conclude that all of our selected variables such as income, agriculture, industry, secondary education(%), secondary(%)ger, secondary(%)gr and tertiary(%)gr are stationary at the level and 1st difference.

Cointegration analysis

Cointegration analysis describes such an arrangement in which a linear arrangement of two or other time series can be stationary in the sense that there is a long-run or short-run or equilibrium association among the two and other time series variables.

In the cointegration theory, the regression equation can be expressed as follows:

$$\boldsymbol{Inc = \alpha + \beta_1 Agri + \beta_2 Ind + \beta_3 Sec\_ + \beta_4 Sec\_Gr + \beta_5\ Sec\_Ger\ + \beta_6\ Ter\_Gr}$$

In this equation, the α represents the intercept and the parameters β's represents the slope of variables such as Agri, Ind, Sec_, Sec_Gr, Sec_Ger and Ter_Gr which is known as the cointegration of parameter.

Auto-regressive Distributed Lag Models Approach (ARDL)

In Auto-regressive distributed Lag Model Approach, there are two lagged models: the auto-regressive and the distributed lagged. In the auto-regressive model; we consider lagged values of the dependent variable, while in the distributed lag model; we consider both current and lagged values of independent variables.

Equation Estimated

In an ARDL approach, the regression equation can also be expressed as follows:

$$\begin{aligned}\Delta Inc_t = {} & \alpha_0 + \alpha_1 \sum_{n=1}^{k} \Delta Agri_{t-1} + \alpha_2 \sum_{n=1}^{k} \Delta Ind_{t-1} + \alpha_3 \sum_{n=1}^{k} \Delta Sec\_{t-1} \\ & + \alpha_4 \sum_{n=1}^{k} \Delta Sec\_Gr_{t-1} + \alpha_5 \sum_{n=1}^{k} \Delta Sec\_Ger_{t-1} + \alpha_6 \sum_{n=1}^{k} \Delta Ter\_Gr_{t-1} \\ & + \delta_1 Agri_{t-1} + \delta_2 Ind_{t-1} + \delta_3 Sec\_{t-1} + \delta_4 Sec\_Gr_{t-1} + \delta_5 Sec\_Ger_{t-1} \\ & + \delta_5 Ter\_Gr_{t-1}\end{aligned}$$

$$\begin{aligned}Y_t = {} & \alpha_0 + \sum_{t=1}^{k} \delta_1 jAgri_{t-j} + \sum_{t=1}^{k} \alpha_1 jInd_{t-j} + \sum_{t=1}^{k} \alpha_2 jSec\_{t-j} + \sum_{t=1}^{k} \alpha_3 jSec\_Gr \\ & + \sum_{t=1}^{k} \alpha_4 jSec\_Ger_{t-j} + \sum_{t=1}^{k} \alpha_5 jTer\_Gr_{t-j} + \in_t\end{aligned}$$

$$\begin{aligned}\Delta Y_t = {} & \alpha_0 + \sum_{m=1}^{n} \partial_1 j\Delta Agri_{t-j} + \sum_{m=1}^{n} \alpha_1 j\Delta Ind_{t-j} + \sum_{m=1}^{n} \alpha_2 j\Delta Sec\_{t-j} \\ & + \sum_{m=1}^{n} \alpha_3 j\Delta Sec\_Gr_{t-j} + \sum_{m=1}^{n} \alpha_4 j\Delta Sec\_Ger_{t-j} + \sum_{m=1}^{n} \alpha_5 j\Delta Ter\_Gr_{t-j} \\ & + \pi ECM_{t-j} + \mu_t\end{aligned}$$

Bound Test

Inbound test, we take the values of F-statistics, lower critical bound, and upper critical bound values at 1%, 5%and 10% respectively. The value of F-statistics shows that it lies on all the values of lower and upper bound. Also, there is a point to be noted in this Bound test, our null hypothesis is: that there is no long-run association existing within this model and our value of the Bound test satisfies the null hypothesis.

Stability Test

To verify the stability of the model for strategy implications, stability of coefficient is experienced. Intended for this purpose, the Cumulative Sum of Recursive Residual (CUSUM) and Cumulative Sum of Recursive Residuals of squares (CUSUM) are drawn at 5%. This test is used to check the stability test, which shows the power of the model to be tested.

Econometric Issues

In this section, represent the tables of descriptive analysis, ADF for unit root test with level and 1st difference, bound test long-run, short-run relationship and the stability test.

Descriptive Analysis

Descriptive analysis is short descriptive coefficients that sum up the known data position or can be an illustration of the whole population.

Table No. 2: Descriptive Statistics

Variables	Mean	Median	Std. Dev.	Skewness	Kurtosis
Inc	4.9797	4.6125	2.5982	0.6573	3.4410
Agri	3.5522	3.4976	3.4802	-0.2684	4.2348
Ind	5.7077	4.9211	3.7679	0.0324	4.2348
Sec_	31.3938	31.7599	6.2919	0.6020	2.1986
Sec_Ger	25.5468	26.5001	7.1952	0.5518	2.2804
Sec_Gr	24.4881	25.2808	6.6413	0.5022	2.1706
Ter_Gr	3.5536	2.4125	2.2556	1.7611	4.9103

Source: Calculations are carried out with the help of E-Views (Quantitative Software).

In this table, the value of Agri in the case of Skewness is -0.2684. And this value is negative, which represents the negative relationship between Inc and Agri. This shows that due to skill inefficient and inefficient public expenses, the strength of Agri is very low.

ADF Test for Unit Root

The following table represents the Augmented Dickey Fuller Test with Level and 1st Difference at 1%, 5% and 10% respectively.

From the Table No. 3, discussing our first variable which is dependent variable **Inc**, is significant at Level's Intercept, Trend & Intercept but not at none which is also not necessary because if the variable satisfies at least two of these conditions then we can say that our variable is significant. At 1% rank of consequence, 5% rank of consequence, and 10% rank of consequence, the result can be expressed as I (0) which shows the significance at Level. Our next independent variables such as **Agri** and **Ind** are also significant at the level which can also be judged by simply noticing the values of Intercept, Trend & Intercept, and None. The result is as I (0) which means that the variables are significant at level. However, the other independent variables such as **Sec, Sec.Ger, Sec.Gr,** and **Ter.Gr** is significant at 1st difference. The result is as I(1) which means that the variables are significant at 1st difference.

Table No. 3: ADF Test with Level and 1st Difference

Level				1st Difference			Conclusion
Variables	Intercept	Intercept and Trend	None	Intercept	Intercept and Trend	None	
Inc	-5.5226***	-6.2507***	-0.8484	___	___	___	I(0)
Agri	-7.9246***	-7.8399***	-0.8999	___	___	___	I(0)
Ind	-4.5685***	-4.8959***	-1.0480	___	___	___	I(0)
Sec	___	___	___	-6.6030***	-6.5359***	-6.2235***	I(1)
Sec.Ger	___	___	___	-5.0286***	-5.2496***	-4.5087***	I(1)
Sec.Gr	___	___	___	-5.2418***	-5.2978***	-4.8422***	I(1)
Ter.Gr	___	___	___	-6.2115***	-7.1859***	-2.7185***	I(1)

Source: Researchers are concerned with EViews's (Quantitative Software). Note that *shows the significance at 1%, ** shows the significance at 5% and *** shows the significance at 10%.

Bound Test

The following table shows the bound test of F-statistics and lower and upper critical values at 1%, 5%, and 10% respectively.

Table No. 4: Bound Test

Variables	**F-statistics**	**Upper Bound**	**Lower Bound**
Conclusion		**Critical Values**	**Critical Values**
Inc, Agri, Ind, Sec,		2.94***	1.99***
Sec.Ger, Sec.Gr, Ter.Gr	6.75 (0.000)	3.28***	2.27***
Cointegration		3.99***	2.88***
R-squared=0.8981		DW Stat=2.4446	
Adj.R-squared=0.7644			S.E of Regression=1.7326
F-statistics=6.7176		Prob (F-statistics) =0.000	
Akaike Info Criterion=4.2300		Schwarz Criterion=5.1781	

Source: Calculations are carried out with the help of E-Views (Quantitative Software). Note that *shows the significance at 1%, ** shows the significance at 5% and *** shows the significance at 10%.

The calculated value of F-statistics is 6.7580 and is significant at 1%, 5%, and 10%. From the given results we concluded that the value of F-statistics is 6.7580 which is greater than all the significant values whether they are Lower Critical Bound (LCB) or Upper Critical Bound (UCB) at the 10%, 5% and 1% respectively. The further given values of the R-squared show that our model is 89% accurate with our selected model and the Adjusted R-square is also close to the R-squared which also represents the model correction. In this table, the R-squared is 0.8981, which shows that 89% of the deviation independent variable is elucidated by deviations in independent variables within this model. In this test, the value of the Durbin-Watson Stat is 2.4446, which is close to 2 and this shows the absence of autocorrelation in this model.

Estimates of Long-run Coefficient of the Model

The following table presents the results of the Lon-run relationship between variables, which is achieved by the ARDL approach.

Table No. 5: Estimates of Long-run Coefficient of the Model

Variables	Coefficient	St.Error	t-Statistics	Prob
Agri	-0.2566	0.1409	-1.8205	0.0874
Ind	0.5180	0.1067	4.8573	0.0002
Sec	-0.1425	0.1441	-0.9884	0.3377
Sec.Ger	8.3488	2.2382	3.7302	0.0018
Sec.Gr	-8.9622	2.3120	-3.8764	0.0013
Ter.Gr	0.6531	0.1851	3.5282	0.0028
C	12.4666	2.6957	4.6246	0.0003
R-squared=0.8287			Adj.R-squared=0.6038	
Prob (F-statistic) =0.0052			DW Stat=2.5356	

Source: Calculations are carried out with the help of E-Views (Quantitative Software).

In an ARDL approach, we calculated the long-run association between variables. And from this table, we show that the coefficient of Agri is depressing, and it has a value of -0.2566 which is statistically considerable. The coefficient of Agri entails that 1% amplification in Agri will reduce the earnings by 0.2566%. This is the considerable value which is shown with its P-value i-e 0.0874. The negative sign indicates that due to the factors such as market failure, iniquity skills, lack of modern technologies, fragmentation of land, and illiteracy of farmers, agricultural growth is very low in Pakistan. In such a situation, agricultural growth has a negative relationship with income. In this situation, to promote agricultural growth public policy, public investment and services are significant determinants, need assurance and constant funding –public expenses and relief – for transportation, education, and agricultural research and expansion. Durdana Qaiseer Gillani et al. (2013); Florencia et al. (2010); and Jim Kjelland (2009) also disclosed the role of education and public investment in the advancement or promotion of agri. sector.

In this table, the R-squared is 0.8287, which shows that our model is more favorable. This value indicates that 82% of changes independent variable is being explained by the independent variables in our model. The value of Durbin-Watson Stat is 2.5356, which is close to the 2 indicating the absence of autocorrelation. Further, the value of Prob (F-statistics) is 0.0052, which shows that our all variables are more significant at 2and 3 lags.

4.6. Estimates of Short-run Coefficient of the Model

The estimates of the short-run relationship of variables are shown in the following table by employing the ARDL approach.

Table No. 6: Estimates of Short-run Coefficient of the Model

Variables	Coefficients	Std.Errors	t-Statistic s	Probs
D(Inc(-1))	0..4932	0.1519	3.2465	0.0051
D(Agri)	-0.0100	0.0674	-0.1488	0.8836
D(Agri(-1))	0.2420	0.0796	3.0407	0.0078
D(Agri(-2))	0.2250	0.0636	3.5368	0,0027
D(Ind)	0.2181	0.0774	2.8187	0.0124
D(Ind(-1))	-0.3904	0.0838	-4.6596	0.0003
D(Sec)	-0.3133	0.1956	-0.6019	0.1287
D(Sec.Ger)	0.5191	0.6989	0.7428	0.4683
D(Sec.Ger(-1))	8.1783	7.2293	1.1313	0.2746
D(Sec.Ger(-2))	-38.1221	9.1342	-4.1736	0.0007
D(Sec.Gr)	-1.1088	0.7272	-1.5249	0.1468
D(Sec.Gr(-1))	-8.0553	7.4377	-1.0830	0.2948

D(Sec.Gr(-2))	39.1131	9.4403	4.1432	0.0008
D(Ter.Gr)	-1.5357	0.5054	3.0387	0.0078
D(Ter.Gr(-1))	-1.6253	0.6141	-2.6468	0.0176
CointEq(-1)	-2.2418	0.2509	-8.9352	0.0000

Source: Calculations are carried out with the help of E-Views (Quantitative Software).

The short-run co-integration is used to reveal the Coefficient, Std. Error, t-statistics, and the Prob in the short-run. In short run, variables tend to vary fastly, plus this variation is also not even stable. Henceforth, in short run, our main focus was only on the term "Coint-Eq. that confirms the presence of long run association between examined data series. In this table, the last value is Coint Eq (-1) which is also satisfied in our terms that is negative and the probability is less than 0.05. The above displayed table replicates short run ARDL estimates for the examined model. This table, also shows that whether there is long run association exists or not. The table also shows the short-run relationship of Inc in Pakistan, Which is based on the selected ARDL model (2,3,2,0,3,3,2). The results show that Agri, Sec and Sec.Gr have a negative relationship with the Inc. But the other variables such as Ind, Sec.Ger and Ter.Gr has a positive relationship with the Inc.

Test of Stability for Model

The results show that our model is stable as shown by the following diagrams

(Inc/Agri, Ind, Sec, Sec.Gr, Sec.Ger, Ter.Gr)

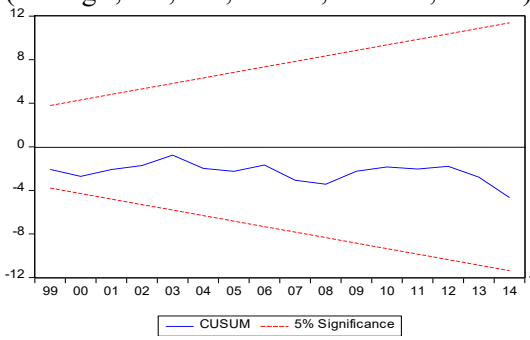


Figure 3: CUSUM

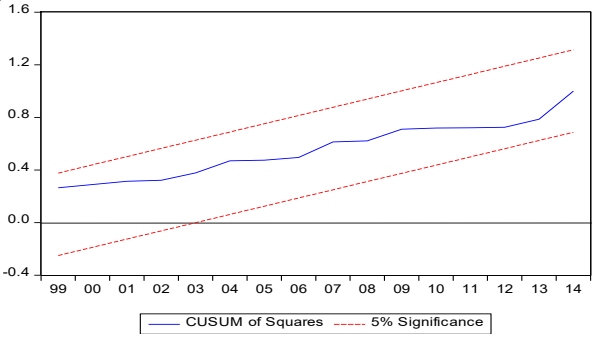


Figure 4: CUSUMS

Source: Authors' calculations (E-Views 9. 5)

CONCLUSION

Education has played a very important role in human capital for progress and development. An additional skilled worker increases the efficiency of a firm as compared to a worker with no education. Therefore, the skilled worker would receive considerably higher than the non-educated worker and returns to education would be greater in the country. This fact has resulted in policy initiatives at rising education in developing countries where output is normally little. This paper indicates the character of returns to education in Pakistan and confirms the observed prose on the convexity of proceeds toward edification in Pakistan. We discover that returns to education more than triple from primary to secondary stage or superior—a sign of a rather strapping convex association.

In addition, our conclusion shows here stiffs sprint by exceedingly cultured which contain superior expansion chances as compared to those sprints through a lesser number of educated ones, in any case of the market condition. Education is chiefly vital for freelance and remuneration workers to raise earnings. The regression results show that education is supplementary paying to the self-employed faction. This result contains a significant suggestion for mutual instruction as well as the duty and communal sanctuary rule: the little revisit toward spending in little capability persons and the elevated revisit toward investing into soaring capability persons which entails that instructive speculation should be tilted to the lofty capability persons.

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