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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my supervisor Dr. Nadeem Iqbal for his valuable guidance, co-operation and encouragement.

I would also like to thank my friends who helped me a lot and all those who support and encourage me throughout my study.

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Impact of Educational Expenditure on Economic Growth: Case Study of Pakistan

Sana Asghar

Abstract:

This study shows the impact of education expenditure on economic growth of Pakistan. GDP growth rate and education expenditure are taken as intervene variables while gross fixed capital formation and official development assistance are taken as controlled variables. Time series data has been used for the period 1975-2016 . The data have been taken from World Development Indicator (WDI). VEC model and ARDL model has been used in the study. The results shows that there is a long run negative and significant relationship between education expenditure and GDP growth rate in case of Pakistan.

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Chapter 1

INTRODUCTION

1.1 Background of the study

Education is the fundamental need of human life. Without good education every person is incomplete. It is important for development and growth of a country. If the residents of a country are educated, they can provide contribution in science, innovation, writing and others and help set up a balanced community. Education gives youth information and skills to face daily life challenges. It helps to reduce poverty, increase economic growth and development.

Education is a process which is transferred from one person to another by presenting and teaching. To increase literacy rate it is important to increase spending on education. Government should make education compulsory from age 5-16. When education system of a country becomes better than it help in development of the country, reduce poverty and provide many opportunities to the people.

The education system of Pakistan is divided into six categories. The first one is preschool which is from age 3 to 5. It is further divided into three categories. The first one is play group second one is nursery and third one is KG. The second category out of six categories is primary school which is from class one to five. The third one is middle school which is from class six to eight. The fourth one is high school which has class 9th and 10th. The fifth one is intermediate which has grades 11 and 12. The last and sixth one is university, undergraduate and graduate degree.

First prime minister of Pakistan Zulfiqar Ali Bhutto make different education policies after 1947 for the betterment of the country. They spend more on education (Ali 2018). In 1951, the literacy rate in Pakistan was 17.9% while 18.64 million were illiterate. The illiterate population in Pakistan is due to the government because they fail to provide basic educational facilities to the people. According to Pakistan economic survey (2015) Pakistan expenditure on education as % of GDP is lowest in South Asian countries. In 2009 government of Pakistan approved new policy to increase education expenditure from 2% to 7% of GDP and Punjab government suggest this idea.

According to article 25-A of the constitution of Pakistan the government should provide free education between age 5-16 years. Pakistan is spending only 2% of their GDP on education and failed to achieve MDGs goal 2 (universal primary education). To achieve SDGs goal 4

(quality education) now Pakistan should invest more on their education system. 25 million children in Pakistan are out of school in which 13.7 million are girls between age 5-16 years (ASER). Problem of education in Pakistan is due to many issues like poor sanitation facilities, gender inequality, lack of schools. According to Annual Status of Education Report (2015) 40% of government schools don't have water for drinking, 37% don't have walls and there is no toilets in 48% of schools.

Post the eighteenth amendment to the constitution of Pakistan, the responsibility of education has been given to the provincial government. Fiscal year 2016-2017 the only province that has increased educational budget was KP. Government of Khyber Pakhtunkhwa has allocated 143 billion rupees for education out of the total 505 billion PKR- 28% of the total budget. Sindh allocate 20% of the total budget while Punjab allocate 19%. Spending on education in these two provinces have decreased from previous year. In Baluchistan expenditure on education also substantially decreased (ASER).

Pakistan has been receiving debts and foreign aid since its independence. At first, Pakistan take foreign aid for increasing industrialization and then for five year plans completion and now receiving a huge amount of foreign aid to stabilize the economy. A small portion of foreign aid is utilized by the government of Pakistan in the education sector. According to a survey report during the period 2002-2008 United States gave US\$ 11 billion to Pakistan in which only US\$ 100 million were allocated for education while US\$ 8 billions were used by the military and a large amount have been wasted because of corruption (Anwar 2010).

Most of the Pakistani people prefer foreign education over Pakistani education. The reason is that there is a lot of universities in Pakistan but still not a single university stand in world top 500 universities. NUST is ranked as Pakistan's top university but still its on 501 rank in world top universities. Foreign universities focus on quality of education and inventions but In Pakistan our government is not giving value to quality of education, inventions and discoveries. The aim of our educational institutions are just to earn money.

According to some researchers, education play important role in the improvement of human capital by creating skillful labors which increase economic growth. Education not only influences an individual persons life but also affects the overall economy like GDP and aggregate production. Theories like human capital theory and Endogenous growth theory shows that education has a positive impact on economic growth both at micro and macro levels. Several researchers shows the positive relation between education and economic growth. They mentioned that education play significant role in human capital development which has a positive impact on economic growth. Investment on education is a long-term investment that can help to increase the development of human capital, reduce inequality, improve quality of life, reduce ignorance and increase economic growth (Ali 2017). Some studies find that primary and secondary education has positive impact on economic growth in developing countries than OECD countries (Khattak 2012). Government of Pakistan is not spending enough on education and health. Government spending on these two sectors will increase economic growth (Ahmed 2017).

Some researchers found that expenditure on education is part of public expenditure and post World War 2 in developed and developing countries public expenditure have increased. Many countries believe that education play important role in economic growth so they start investing more in education sector. But different researchers have different opinions while some studies shows that there is no impact of education on economic growth (Reza 2012).

1.2 Statement of problem

Many researches have been conducted on the relationship between government spending on education and economic growth. However, in case of Pakistan government is spending very less amount of GDP on education sector which led to low economic growth. In Pakistan the education sector remained most neglected sector. Literacy rate of Pakistan is lowest in the world. Government spends only 2% of GDP on education.

1.3 Objective of the study

Following are the objectives of the study.

1. To analyze problems of government policies for education and its implementation.
2. To highlight the problem that most of the foreign aid for education is wasted by the government of Pakistan.
3. To examine relationship between government expenditure on education and economic growth.
4. To recommend solutions for the poor education system of Pakistan.

1.4 Hypothesis

1. H_0 ; Education expenditure did not effect the economic growth of Pakistan
 H_a ; Education expenditure affected the economic growth of Pakistan

1.5 Research questions

Q.1. How government expenditure on education effect economic growth of Pakistan?

Q.2. What are the problems in education system of Pakistan?

1.6 Significance of the study

Several researches have been conducted on relationships between education and economic growth but this study help to analyze benefits of education in Pakistan. The study is further beneficial because it create awareness about gender gap as female literacy rate is very low in Pakistan.

1.7 Organization of the Study

This study consists of five chapters, as follow:

Chapter 1. This chapter includes the introduction of the study which is further divided into different sections i.e Section 1.1 is the Background of the Study. Section 1.2 is statement of the problem. Section 1.3 is objective of the study. Section 1.4 is hypothesis. Section 1.5 is research questions. Section 1.6 is significance of the study and section 1.7 is organization of the study.

Chapter 2. This chapter is about literature review used in the thesis. It includes journals and articles. Section 2.1 is introduction and Section 2.2 is literature review.

Chapter 3. This chapter includes theoretical background and research methodology. Here

secondary data have been used under different econometric models and tests. It has three different sections. Section 3.1 is Introduction. Section 3.2 is Theoretical Background. Section

3.3 is Econometric Methodology. Section 3.4 is Construction of Variables. Section 3.5 is data source.

Chapter 4. This chapter includes results and interpretations.

Chapter 5. This chapter includes conclusion and recommendations.

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Chapter no 2:

Literature review

2.1 Introduction

Researches have been conducted on government expenditure on education in Pakistan. Different models were used by the researchers to find the results. Results shows that there is positive relationship between education and economic growth. There are many reasons for poor education system in Pakistan like corruption, absence of political will with respect to progressive government, poor strategy assessment, absence of political security etc.

2.2 Review of literature

Ali and Mahmud (2018) have explored the relationship between expenditure of education and growth of economy in Pakistan. Time series data is used for the period 1973-2011. To find the long run relationship between education and economic growth co-integration technique is used. This study shows the educational exercises and policies and work of education in progress of economy in Pakistan. This study also analysis education rules and increasing economic growth of Pakistan. This study shows that there is long term relationship between education and economic growth.

Awan and Parveen (2018) focuses on impact of working women in economic development of Pakistan. Time series data is used for the period 1997 to 2016 and is collected from World Bank, SBP, Economic Survey of Pakistan and Ministry of Finance. Three variables were used i.e economic development of Pakistan as dependent variable while female literacy rate and female labor force participation as independent variables. They use Multiple regression method. The results shows that alternate hypothesis has been accepted which shows that there is no significant impact of working women on economic development of Pakistan. The reason is that the ratio of working women is very low.

Khattak (2018) studied the impact of War on terror on women's education in Swat Valley.

According to them women's education was affected more during War on terror. The main target of the terrorists were women's educational institutions. Qualitative data were used which were collected from seven districts of Swat. The study further shows the effect of War on mental and physical health of females in the area. Terrorists damaged girls and boys schools and paralyzed education system in Swat. Post-conflict some schools are repaired again but most of the schools were in outside spaces without proper infrastructure.

Arif et al (2017) focuses on the vision of quality education of different political parties of Pakistan. They use the internet mediated research (IMR). The aim is to collect the data from the internet sources as the modern technology has enabled modern researchers to use social networking sites such as Twitter, Fb and other sites like instagram, YouTube. Every political party claim to bring revolution in the education sector of Pakistan but they failed to take practical steps and it will not possible if the government cannot increase the percentage of GDP to the education sector. Pakistan need a cohesive action plan for the improvement of education in the country. The study also shows that terrorism greatly effect the education system of Pakistan. Punjab, Kashmir and Islamabad are peaceful areas while KP, Balochistan and Sindh are effected by extremism and terrorism. Study also focuses on technology and innovation which can help to reduce poverty and income inequalities. They have recommended that primary education should make compulsory in Pakistan.

Ali et al (2017) examined the relationship between government spending on education and economic growth of Pakistan over the period from 1980-2014. They utilized Johansen integration test to discover long run cointegration relationship among the chosen variables. They also used Granger causality test to find the relationship between government spending on education and GDP. The results that they have obtained shows that there is a significantly positive relationship between government spending on education and economic growth. While the relationship between gross fixed capital formation and GDP is insignificantly positive.

Ahmed and Javed (2017) examined that there is positive relationship between investment and economic growth. Time series data is used for the period 1980-81 to 2015-16 and to find the long run relationship they use Johansen cointegration. It is found that in long run FDI, transport, communication and health expenditure has negative relationship with growth while education expenditure, private investment and housing expenditure has positive relationship with growth. They have recommended that taxes should be reduced to increase investment in long run.

Sarwar et al (2017) explore that improving education system and giving employment opportunities increase economic growth of a country. Education and employment help the economy to achieve economic growth. Time series data is used for the period 1980-2013 and to find the short-run and long-run relationship Johansen Co-integration test and VECM

has been used. The results shows that there is a positive relationship between education and economic growth and employment and economic growth.

Riaz et al (2017) focuses on higher education of Pakistan. The study focus on teachers one of the most important factor of education. The study also focuses on the role of higher education commission (HEC). Qualitative research method have been used to adopt an explanatory research approach to show holistic view of initiatives in HEIs. The study find that previously the educational reforms were labs, syllabus, scholarship programs and other policies. But the results shows that the main educational reforms are effectiveness, efficiency, research and employment. HEC provide policies, equipments and funds to higher education institutes and then they use these resources to implement the reforms.

Rahim (2017) studied the primary education in KP province of Pakistan. The study focuses on three subjects English, Urdu and Mathematics. Three data sources were used 1) Education Management Information System (EMIS) (2) Annual Status of Education Reports (ASER) (3) Survey questionnaire to collect information about Parent-teacher Council and school quality in KP province. The results shows that separate classrooms help to improve students Urdu skills. According to Elementary and Secondary Education Departments Report 2012 public schools consist of only 2 classrooms in KP which means that it is affecting children's education skills. School enrollment monograde schools and PTR are important to determine English and numerical skills.

Anwar et al (2017) focuses on impact of foreign aid on education. The study shows that foreign aid help in economic growth of a country. Pakistan has been receiving aid since its independence but a huge amount of aid have been wasted in Pakistan because of corruption. Education is also important determinant of economic growth. Time series data has been used for the period 1975 to 2010. The variables used are education, foreign aid, investment and foreign trade. ARLD techniques have been used. The results shows that there is a positive relationship between education and foreign aid. They recommended that the government should spend more on education sector and they should design good policies. Pakistan should not rely only on foreign aid but should rely on its own resources.

Umer et al (2016) studied education of women in Balochistan province of Pakistan. They find that balochi women are living according to old traditions made by the local baloch men. Women in Balochistan are considered honor of the tribe and they are not allowed to obtain higher education as it is against there cultural and tribal code. They collect data through qualitative interviews of baloch men and the results shows that women education and empowerment are tied to Balochi culture or rawaj. Balochistan is least developed in all provinces and holds the lowest rank in GPI. Women literacy rate in balochistan is lowest in the world.

Jabeen and Maqbool (2015) studied the relationship between government spending and economic growth from year 2004-2014 in Pakistan. Regression linear model is used, government spending is insignificant for the relationship between economic growth and government expenditure but is significant in long run. Four variables were used i.e health, education, GDP and GDP per capita. The main purpose of the study is to find that how government spending on education effect economic growth in Pakistan. Secondary data were used to find the impact of government spending on economic growth. Data is obtained from world bank for health, education expenditures, GDP and GDP per capita. The results shows that the relationship between economic growth and government spending in education is insignificant. Government should make proper budget for education. They recommended that government should spend more on education to increase economic growth.

Awan and Zia (2015) focuses on private and public educational institutions in district Vehari-Pakistan. There are different types of institutions like public institutions, private institutions, religious institutions, technical institutions. Public institutions and private institutions are the two main institutions all over the world. Now a days people prefer private institutions more as compared to public institutions because of better education system. The aim of this study is to find that why parents prefer private schools for their children over public schools. Primary data were collected from District Vehari, Pakistan through questionnaires and survey. Ordinary Least Square (OLS) technique is used to run the model. The results shows that people choose private schools because of their education and school quality.

Asghar and Zahra (2012) done BIA for expenditure of government on education at both the provincial and national level using survey data for 2007/2008. The results shows that lower pay deciles have a huge portion of enrollment in basic education while at higher level of education this prevalence shifts to higher pay deciles. At primary level of education spending of government is progressive which means that lower salary groups get more benefits from it, these results are both at provincial and national level. Lower-salary groups get least advantage from government spending on higher education, which shows that at higher level of education spending of government is regressive. Their study shows that government is spending a lot on the education of few (higher-education) and is spending little on the education of many (lower-education). They recommend that primary and secondary education should be provided free of cost to the poor and technical education should be made easily accessible while higher education should be provided based on merit. Supply should increases from demand to provide education to the poor.

Afzal et al (2013) focuses on gender disparity in Punjab province of Pakistan using primary data from the period 2007 to 2008. Gender equality in education and women empowerment was a millennium development goal. In rural areas parents focuses more on boys education and consider it important and mostly ignore girls education. While in urban areas education of girls and boys both are considered equally important. The study shows

that gender disparity is so strong in rural areas as compared to urban areas so it means that gender disparity do exist in Punjab province of Pakistan.

Khattak and Khan (2012) examined that how education contribute to economic growth of Pakistan during the period 1971-2008 and applied Ordinary Least Square (OLS) and Johansen Cointegration Test. The outcomes from OLS shows that secondary education contributes essentially to the real GDP per capita in Pakistan. Economic growth is also positively effected by elementary education but is statistically insignificant. The results from Cointegration test shows that there is a long run relationship between education and real GDP per capita. It is therefore, proposed to keep education on top and should universalise primary education.

Reza and Valeecha (2012) examined that education has a positive impact on economic growth. They used time series data for the period 1981-2010 for econometric analysis. The results shows that in short run there is no relationship between education and economic growth while in long run there is positive relationship between the two factors.

Aziz et al (2010) focuses on the impact of higher education on economic growth of Pakistan from the period 1972-2008 using Cobb-Douglas production function. The aim of the study is to build a relationship between higher education and economic growth of Pakistan. The study find the role of higher education in the development of a country. This study further shows that educated labor force has a positive impact on economic growth.

Anwar and Aman (2010) focus on the effect of foreign aid on the education sector of Pakistan. In recent years the developed countries give a huge amount of foreign aid to educational sector of Pakistan. Some economists think that foreign aid is not always good for recipient countries as it may cause corruption and aid dependency. Most of the studies shows that there is a positive relationship between aid and economic growth while some studies shows that there is no or negative relationship between them. The aim of the study is to find effectiveness of aid on educational sector of Pakistan by using time series data for the period 1991-2007. Results indicate that a very small amount of foreign aid is efficiently used in Pakistan while most of it wasted away. They also examined the effect of foreign aid on literacy rate using Johansen Cointegration test and the results shows significant and positive relationship between them in the long run. They also find the effect of foreign aid on literacy rate using Error Correlation model. The results shows insignificant relationship between them in the short run. They have recommended that the foreign aid should be use affectively and efficiently by the government.

Nawaz and Akram (2007) studied the government spending on education and health using the benefit incidence approach. Data from PSLM (Pakistan standards of living measures) has been used to calculate education and health services of Pakistan at regional and provincial

level. GINI and Concentration coefficient has been used to calculate public expenditure benefit inequalities. The results shows that government expenditure on education is progressive in Pakistan but the progressiveness according to health is partially accepted because the government expenditure on health is progressive for overall Pakistan but at regional and provincial level it is regressive. Government should focus on both regional and provincial level and should target rural areas and low-income groups.

Mukit (2012) examined long run relationship between public expenditure on education and economic growth in Bangladesh. Time series data has been used for the period 1995-2009. The results shows that in long run public spending on education has a significant and positive impact on economic growth. Cointegration technique has been used which shows that in long run one percent increase in public expenditure on education increases 0.34% GDP per capita.

Hanif and Arshed (2016) examined the relationship between education and economic growth in SAARC countries. Economic growth is important factor for the development of a country. GDP growth were explained through many theories and Cobb-Douglass were mostly used in making a production function using labor and physical capital as inputs but later studies shows that human capital is also very important input for production function. In this study they use three proxies for human capital to see the impact of these proxies on economic growth. The results shows that territory education enrollment has higher impact on economic growth as compare to secondary and primary education enrollment.

Arshad et al (2016) examine the role of foreign aid in development of Pakistan's education system by using time series data for the period 1967-2010. Four models were developed to find the results by using polynomial distributed lag model. The results shows that in current year foreign aid has no impact on educational sector of Pakistan while in previous year foreign aid has positive and significant impact on educational outcomes. In previous two years foreign aid received by the country has positive relationship with educational sector except literacy rates.

Chapter 3:

Theoretical Background and Econometrics Methodology

3.1 Introduction:

This chapter is about Theoretical Background and Econometric Methodology. It is further divided into different sections. Section 3.2 is theoretical background of the study in which we relate this study with economics. Section 3.3 is Econometric Methodology in which equation is estimated. Section 3.4 is Construction of Variables which define the variables and Section 3.5 is data source.

3.2 Theoretical Background of the Study:

Role of government is to fulfill basic necessities of the Public. Government spend on different sectors of the country in which education sector is one of the most important sector. Government spending in the education sector has a positive impact on economic growth. Spending in the education sector help in the development of Human Resources which lead to economic development. Education gives skills and information to youth to face different challenges in life.

Education not only influences economic and social life of humans but also affect the whole economic system of a country. Educational institutions of Pakistan just focus to earn money and they do not focus on quality of education. Educational institutions in developed countries try to provide quality education to their people they focus mostly on new discoveries and innovations.

According to World Bank (2016) in 2014 in Pakistan education expenditure was 2.1% of GDP which is lowest in South Asia countries. According to EFA global monitoring report UNESCO (2015) education expenditure in percentage of GDP was 4.9% in Bhutan, 4.7% in Iran, 3.2% in India, 8% in Maldives, 2.1% in Bangladesh and lowest in Pakistan which is 2.0%. According

to Education Statistics of 2008-2009 in rural areas literacy rate was low i.e 48% as compared to literacy rate of urban areas i.e 74%. In terms of gender literacy rate was 69% men and 45% women. Literacy rate province wise was 45% in Balochistan, 50% in Khyber Pakhtunkhwa, 59% in Sindh and 59% in Punjab.

Due to unemployment many professionals and students left Pakistan for better jobs and employment opportunities. Government of Pakistan has been taken various measures to solve the problem of brain drain by improving quality of education.

According to some researchers there is positive relationship between education and economic growth such as Barro (1991), Mankiw, Romer and Weil (1992), Hanushek (1995), Temple (2001), Lindahl (2001). According to other researchers education play important role in human capital development such as Barro (1991) and Mankiw, Romer and Weil (1992). According to some other researchers there is insignificant effect of public investment on economic growth (Olukayode 2009). Blankenau et al. (2007) shows that there is long run positive relationship between government spending on education and economic growth.

3.3 Econometric Methodology:

VEC model and ARDL model has been used while taking GDP as dependent variable and education expenditure, gross fixed capital formation and official development assistance as independent variables. GDP growth rate and education expenditure are intervene variables while gross fixed capital formation and official development assistance are controlled variables.

$$GDP = F (EE, GFCF, ODA)$$

Here,

GDP means growth domestic product which has been taken in percentage form.

EE is the education expenditure.

GFCF is the gross fixed capital formation.

ODA is official development assistance.

Estimated Equation;

$$GDP = \beta_0 + \beta_1 EE + \beta_2 GFCF + \beta_3 ODA$$

β_0 is constant while $\beta_1, \beta_2, \beta_3$ are coefficients of EE, GFCF and ODA.

3.4 Construction of Variables:

GDP growth rate depends on different factors. Three factors has been used in this study in case of Pakistan i.e education expenditure, gross fixed capital formation and official development assistance. These factors are used to find relationship between economic growth and government expenditure on education.

GDP growth rate measures growth of components of an economy that how fast these components grow. Three methods are used to add these components together i.e final expenditure, value added in production or income.

In the final expenditure method there are four components of GDP growth rate. These four components are personal consumption, business investment, Government Spending and net trade. In this study data for GDP growth rate has been taken from WDI for the period 1975-2016.

Education expenditure is the amount that is allocated by the government for different educational activities. Educational expenditure includes spending on schools, colleges, universities and other educational institutions. In the study data for educational expenditure has been taken from WDI for the period 1975-2016.

Gross fixed capital formation is net investment. It is used to calculate GDP or to measure net increase in fixed capital. Gross fixed capital formation includes spending on machinery, plant, land improvements and equipment purchases; construction of industrial buildings, railways, roads etc. In the study data for gross fixed capital formation has been taken from WDI for the period 1975-2016.

Official development assistance is a term first used by Development Assistance Committee in 1969. It is used to measure aid. In this study data for official development assistance has been taken from WDI for the period 1975-2016.

3.5 Data Source:

This study used the data over the period 1975-2016. The data of GDP growth rate, education expenditure, gross fixed capital formation and official development assistance for these years were collected from World development indicators (WDI). GDP growth rate data is taken in percentage form.

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Chapter 4

Results and discussions

4.1 Introduction:

To complete this study, it is necessary to analyze the data of the variables taken in the previous parts of the study and interpret its results in order to test the hypothesis and to answer the research questions. In this regard, this chapter of the study is about the model application, results, and its interpretations. The results of the model have been given in the forms of tables and have been explained. Further various tests and its results have also been given and have been explained in different sections of the chapter.

4.2 Diagnostic tests:

4.2.1 ADF test for stationarity:

Hypothesis:

H_0 : Unit root exists.

H_1 : Unit root does not exist.

Variable	Level (prob)	First difference (prob)	Integration
Education expenditure	0.0422**	--	<i>I(0)</i>
GDP growth rate	0.0029***	--	<i>I(0)</i>
GFCG % of GDP	0.0725	0.0000***	<i>I(1)</i>
Official development assistance (ODA)	0.8217	0.0275**	<i>I(1)</i>

***, **, * indicate significance at 1%, 5% and 10% level of alpha, respectively.

The first two (Education expenditure and GDP growth rate) probability values suggest that we shall reject null hypothesis and accept alternate hypothesis at level, meaning that the data is stationary at level. The data of the remaining two (GFCF and ODA) is not stationary at level because we cannot reject null hypothesis at level as restricted by their probability values. These data are stationary at first difference asserted by their probability values at first difference.

4.2.2 Test for Serial correlation

$H_0: \text{Cov}(\mu_t, \mu_{t-1}) = 0$ (No serial correlation).

$H_1: \text{Cov}(\mu_t, \mu_{t-1}) \neq 0$ (Serial correlation exists).

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.124485	Prob. F(2,33)	0.3369
Obs*R-squared	2.552098	Prob. Chi-Square(2)	0.2791

The above probability value of Chi square exceeds 0.05 which implies that we cannot reject null hypothesis which indicate that there exists no autocorrelation in the model.

4.2.3 Test for Heteroscedasticity

H₀: No heteroscedasticity in the model.

H₁: Heteroscedasticity exists in the model.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

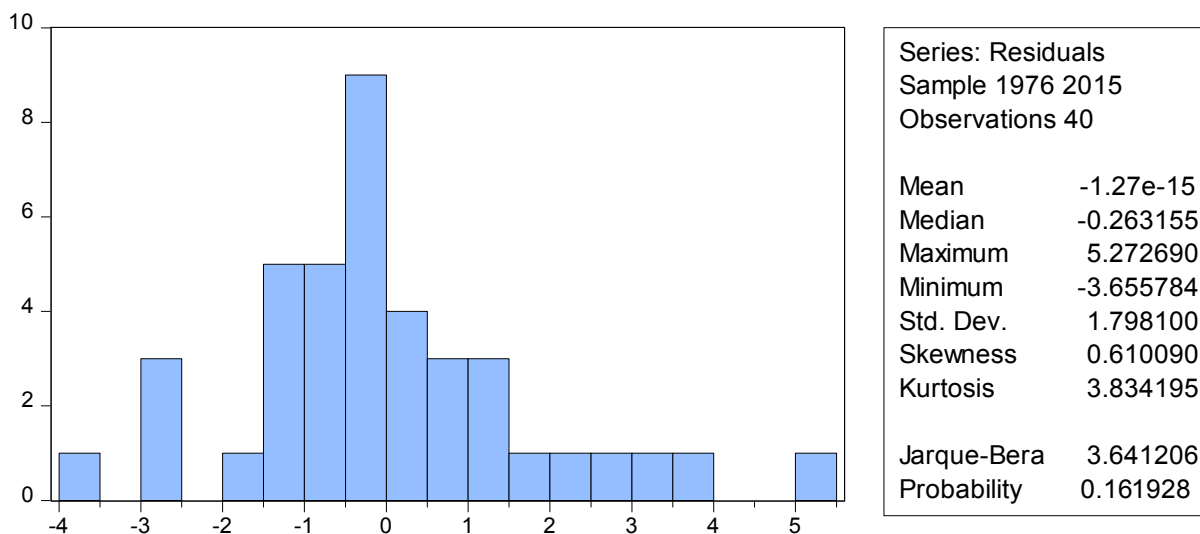
F-statistic	0.371668	Prob. F(4,35)	0.8272
Obs*R-squared	1.629827	Prob. Chi-Square(4)	0.8034
Scaled explained SS	1.768305	Prob. Chi-Square(4)	0.7783

The probability value of Chi square in the front of observed R square is 0.8034 which is greater than 0.05 means that we cannot reject null hypothesis which further asserts that there exists no problem of heteroscedasticity in the model.

4.2.4 Jarque-Bera test for normality

H₀: Error term is normally distributed.

H₁: Error term is not normally distributed.



The probability value is 0.1619 which exceeds 0.05 meaning that we cannot reject Null hypothesis which further implies that error term is normally distributed.

4.2.5 Bound Test:

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Bound test is used to identify whether long run relationship between dependent and independent variables exist or not.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.744392	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

The above value of F-statistics is 4.74 which exceeds the upper bound value of 3.67 at 5% level of alpha, means that Long Run relationship exists between predicting and predictor variables.

4.3 ARDL Model:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EDU_EXP	-3.343200	1.533488	-2.180128	0.0361
GFCF_PC_GDP1	-0.246363	0.497839	-0.494865	0.6238
ODA1	8.32E-10	8.48E-10	0.980778	0.3334
C	12.88210	3.662962	3.516853	0.0012

The estimated equation will be like.

$$\text{GDP growth} = \beta_0 + \beta_1 \text{Education expenditure} + \beta_2 \text{ODA} + \beta_3 \text{GFCF_pc_GDP} \dots \dots \dots (1)$$

or

$$\text{GDP growth} = 12.88 - 3.34 \text{Education expenditure} + 8.32 \text{ODA} - 0.24 \text{GFCF_pc_GDP} \dots (2)$$

From the above values of estimation, we can say that there exists a negative relationship between education expenditure and GDP growth rate in the case of Pakistan. The value of t-statistics and probability confirm its significant impact. Each one-unit change in education expenditure has brought a negative change in GDP growth rate by 3.34 units. On the other hand, official development assistance (ODA) has positive insignificant and GFCF has negative insignificant relationship with GDP growth rate.

4.4 Conclusion

The overall results after applying the essential tests conclude a long run negative and significant relationship between education expenditure and GDP growth rate in case of Pakistan which means that there is some leakage or misuse of the expenditure. Also, an

enormous rate of brain drain from the developing economies to the developed world is a general trend for a long time. Most of our researchers, doctors, engineers and other technical experts go abroad as they do earn attractive income here and hence affect domestic economy

awfully as the affairs of the already struggling economy are then regulated by the inexperience and, or under-educated people which further deteriorate the crippling situation of the local economy.

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Chapter 5

Conclusion

5.1 Conclusion

The study has been conducted to find impact of education expenditure on economic growth of Pakistan. In the given study 3 independent variables are used which are education expenditure, gross fixed capital formation and official development assistance. Various test have been applied i.e Jacque-bera for normality, ADF test for stationarity, Bound test to find relationship between dependent and independent variables. The data has been taken from World Development Indicator (WDI) for the period 1975-2016.

The tests and results concluded that there is a long run negative and significant relationship between education expenditure and GDP growth rate of Pakistan which means that the education expenditure of Pakistan is wasted or misuses. There are many reasons for that like corruption and most of the foreign aid for education is wasted by the government. There is also a problem of brain drain in developing countries like Pakistan. Most of our doctors, engineers, researchers go abroad for better jobs and lifestyle. This greatly affect the economy as experience citizens left the country leaving behind un-educated and inexperience people.

Recommendations

- 1.** Government should make Spending distribution fair.
- 2.** Proper education should be provided to improve human's skills.
- 3.** Government should increase education expenditure because it will help in economic growth as educated people will make economy good.
- 4.** In public policies government should keep education on top priority.

- 5.** Government should depend more on its own resources and should not dependent more on foreign aid.
- 6.** Government and policy makers should utilized aid positively.
- 7.** Government should focus on institutional development and technical education.
- 8.** Primary education should be made compulsory and free of cost.

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