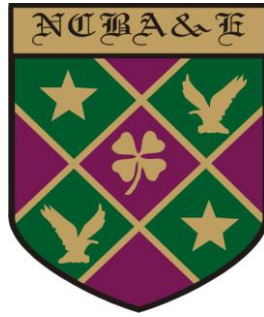


*National College of Business
Administration and Economics
Lahore*



**GROWTH IMPACT OF PUBLIC
EXPENDITURES ON HEALTH AND
EDUCATION IN PAKISTAN**

BY

TARIQ SAEED

**MASTER OF PHILOSOPHY
IN
APPLIED ECONOMICS**

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NATIONAL COLLEGE OF BUSINESS ADMINISTRATION AND ECONOMICS

GROWTH IMPACT OF PUBLIC EXPENDITURES ON HEALTH AND EDUCATION IN PAKISTAN

**BY
TARIQ SAEED**

**A dissertation submitted to
School of Social Sciences**

**In Partial Fulfillment of the
Requirements for the Degree of**

**MASTER OF PHILOSOPHY
IN
APPLIED ECONOMICS**

January, 2018



*In the name of ALLAH,
The Most Beneficial,
The Most Merciful,*

**NATIONAL COLLEGE OF BUSINESS
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Dissertation Committee:

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Administration and Economics

DECLARATION

It is to declare that this research work as not been submitted for obtaining similar degree from any other university/college.

TARIQ SAEED
January, 2018

DEDICATED
TO

My Spiritual Father

&

Parents

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By the grace of Allah Almighty, finally I am enabled to fulfill this task. I was not inclined towards the subject of economics initially, but my mentors played a pivotal role in this regard and enlightened my vision and guided me in right direction, so, I am indebted to them.

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis entitled **“Growth Impact of Public Expenditures on Health and Education in Pakistan”** has been carried out and completed by **Tariq Saeed** under my supervision during his **M.Phil. Applied Economics** Programme.

(Dr. Rukhsana Kalim)
Supervisor

SUMMARY

The objective of the study is to analyze the impact of health and education expenditure on growth. This work examines the impact on overall growth from the period of 1972 to 2013. For this, overview of health and education spending is observed in Pakistan. In this study we used ARDL Co-integration technique. Two models are used to calculate the impact and total export as a percentage of GDP, which is used as a controlled variable in both the models. The study shows positive impact on growth by expenditure on health and education both in long and short run. However, Health Expenditure impact on growth is positive and significant and Education Expenditure positive but insignificant impact on growth. Whereas, Exports has positive significant impact on growth.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Curiosity is a base for progress and development. Every single human being wants to make progress. For this he has to depend on a subject of economics. So history of economics is as old as history of man. Economics is a subject to develop somebody as an individual and as a whole also, latter is more important. But in wider sense, we mean overall development or progress of the whole world.

Human capital refers to the capabilities, experience, and skill-sets that employees bring to a business organization. These capabilities, skill-sets, and experience contribute to the productivity of the employee. Simply put, the human capital of any given venture is the economic value that its employees add to it. Adam Smith is one of the earliest proponents of human capital. Becker (1964) refined Smith's supposition by categorizing education as an investment good. Up until that point, advanced levels of education was largely considered to be a consumption and status good because the ability to consume more non-compulsory education was a "privilege" most often exercised by the middle and upper classes, and as such was used to signal higher social standing (Machin & Vignoles, 2005). Positioning the unique skills and knowledge that an individual acquires through schooling in the same category as the physical assets of an organization forms the basis for modern human capital theory. Having become an asset like any other, the assumption is made that these skills and knowledge can be invested in with the expectation of achieving a rate of return from doing so. As such, this means that individuals would invest in human capital, such as formal post-secondary education, with the idea that acquiring such human capital enables a person to be more productive.

In Economics, the total physical capital existing in an economy at any moment of time is known as Capital Stock. The physical capital or capital stock implies the capital which is tangible in nature, such as money, plant and machinery, furniture and fixture, building etc. Physical capital, can also be referred to all tangible, non-human, and man-made resources utilized in the production processes of goods and services. Examples of physical capital include business buildings and plants, vehicles and machines.

Economic growth is how much more the economy produces than it did in the prior period. To be accurate, the comparison must remove the effects of inflation. If the economy is producing more, businesses are more profitable and stock prices rise. That gives company's capital to invest and hire more employees. As more jobs are created, incomes rise. Consumers have more money to buy additional products and services. Purchases drive higher economic growth. For this reason, all countries want positive economic growth. This makes economic growth the most watched economic indicator.

Economic growth means an increase in real GDP – which means an increase in the value of national output or national expenditure. Economic growth is an important macro-economic objective because it enables increased living standards, improved tax revenues and helps to create new jobs. Gross domestic product is the best way to measure economic growth. That's because it takes into account the country's entire economic output. It includes all goods and services that businesses in the country produce for sale. It doesn't matter whether they are sold domestically or overseas.

Development is a phenomenon in which every individual is getting his due share from the economic progress with respect to one's abilities. Many theories are presented regarding economic growth and role of human capital. A metallurgist can expect to earn more than a laboratory assistant because he has invested more in education and training and these higher earnings are a return on the investment he or his parents, or the state have made in school fee and forgone earnings. Investment in human capital should increase labour productivity in the same way as investment in machinery.

Health and education are important aspects for the development of human capital. Health provides ease to work and education provides basic ability to do something correctly. These two play pivotal role in human development. Many theories are presented so far for the sake of human development. Health and education increase the productivity of labour as a whole. With these developments poor do not remain poor. Health is wealth and education is a great chance to get higher livelihood.

There are approaches about the influence of human capital on growth. The first is about the use of human capital as an input [Uzawa (1965), Lucas (1988)]. Uzawa and Lucas article tells us that there exists an association between human capital and output growth. In second approach Nelson and Phelps (1966) take human capital as a source of growth productivity. The stock of capital actually is capacity of economy which can use the technologies of that time so it is related to the rate of growth.

The major point of health led growth hypothesis is easily understood, since a healthier population leads an increase in the total factor productivity; a healthier population can work longer, can be more productive, can secure higher earnings, can have higher learning abilities and, in general can enhance the efficiency of the economy's human capital (Schultz, 1999). This hypothesis is also closely related has a basis in the endogenous growth theory developed by Romer (1986, 1990) and the other pioneer studies (Barro, 1991; Barro&Lee, 1994) that clearly point out the importance of human capital accumulation and investment for economic growth.

Better health care is a primary human need and is considered first important element of human capital. According to the World Health Organization (WHO, 2005), fifty percent of economic growth differentials between developed and developing nation is attributable to ill-health and low life expectancy. Developed countries spend a high proportion of their Gross Domestic Product (GDP) on Health Care because they believe that their resident health conserves as a major driver for economic activities and development.

The role of health care spending on stimulating economic growth has been suggested by Mushkin(2011) .This is known as the health-led growth hypothesis. According to this hypothesis, health is a capital, thus investment on health can increase income, hence leads to overall economic growth. In fact, health can affect economic growth through its impact on human and physical capital accumulation. Likewise, given that healthier people are more productive, they have a strong incentive to develop their knowledge and skills because they expect to enjoy the benefit over longer period.

Education as a human capital also plays a vital role in economic growth. It raises the productivity and efficiency of individuals and thus produces skilled manpower that is capable of leading the economy towards the path of sustainable economic development (Zaman, 2008). Moreover education is expected to act positively towards world economic development and poverty alleviation, both of which are the priorities of the world community. An investment in human capital, especially in education allows each person to contribute to the society in productive way. It becomes an important factor of an economy's capability to achieve high level of growth with low unemployment, high wages and strong social unity. Therefore, along with elements such as low unemployment and balance of payments equilibrium, education is an important issue that each country's government deals with and strives to improve.

In Pakistan, public expenditure on education lays on the fringes of 2% of GDP. According to Pakistan living and social standard survey report (2008-09), public expenditure on education as a percentage of GDP was actually reduced in 16 years and maintained for 5 years between 1972–73 and 2008-09. Thus, out of total 37years since 1972, public expenditure on education as percentage of GDP either decreased or remained stagnant for 21 years. Governments spending on education in South Asia currently are averaged about 4.1percent of GDP (GOP, 2011).

The increases in the output demand of a country through the growth of exports allow the exploitation of economics of scale for an economy. The expansion in exports promotes specialization in the production of export products, which in turn boost the productivity level and cause the general level of skills to rise in the export sector. A nation could accelerate the rate of economic growth by promoting export of goods and services.

There exists a good body of literature on the correlation between exports, investment growth and economic growth (Blassa, 1978; Feder, 1982; Fosu, 1990; Tyler, 1981 and Ram, 1985). The fluctuation in export proceeds may also influence investment and, therefore, it may also affect economic growth. There are relatively fewer evidences on linkages among export instability, investment and economic growth. The economic performance may be bounded by changes in export proceeds. Excessive fluctuations in foreign exchange earnings could become a bottleneck for development of a developing country since it generates unexpected signals and may create shortage of funds for importing essentials and machinery for development. Such signals affect investment decisions and entrepreneur's expectations for future planning. It may also generate higher risks for new investments; and as a result limits growth prospects. Moreover, the economic structure of less developed counties is characterized towards primary goods production and few exports (Chaudhary, 1994). The exports of these goods may also not be stable and, therefore, it may affect economic growth.

1.2 OBJECTIVES

The main objectives of the study are given below:

- 1) To ascertain the short and long run effects of Educational Expenditures on Economic Growth.

- 2) To ascertain the short and long run effects of Health Expenditures on Economic Growth.
- 3) To ascertain the short and long run effects of Exports on Economic Growth.
- 4) To ascertain the short and long run effects of Capital stock on Economic Growth.

1.3 HYPOTHESES

The null hypotheses of the study are:

- 1) Educational Expenditures do not affect the Economic Growth in Pakistan.
- 2) Health Expenditures do not affect the Economic Growth in Pakistan.
- 3) Exports do not affect the Economic Growth in Pakistan.
- 4) Capital Stock does not affect the Economic Growth in Pakistan.

1.4 ORGANIZATION OF THE STUDY

The study is divided into different chapters. Introduction has been presented in chapter 1. Chapter 2 presents Overview of Education and Health Expenditures in Pakistan. Chapter 3 is related to the literature review on the chosen subjects. Chapter 4 explains data sources with models defined in the study and methodology for short and long run analysis. Chapter 5 presents the estimated results and discussion is held on these. Chapter 6 finally concludes due findings of the study along with some major policy recommendations.

CHAPTER 2

OVERVIEW HEALTH AND EDUCATION SPENDING IN PAKISTAN AND ECONOMIC

2.1 OVERVIEW OF HEALTH SPENDING IN PAKISTAN

Pakistan has made significant progress in the health sector since its independence, in terms of infrastructure and health indicators. Average life expectancy has increased from 34 years in 1947 to 65 years, the number of hospitals from 292 to 1720 (920 public sector, 800 private sector) and infant mortality per 1000 live births has improved from 220 in 1947 to 66 in 2015 (Economic Survey of Pakistan, 2015). Moreover, there are recent improvements in child immunization coverage to 76% in 2007 compared with 53% in 2002 and increase in the percentage of births attended by a skilled attendant from 18% in 1999 to 36% in 2007. The TB program has recently achieved the 2010 target of 85% of cases successfully treated (Economic Survey of Pakistan, 2015). Though the progress in the health sector is positive, it is not promising in comparison with neighbouring and other developing countries (WHO, 2007). The current health situation in Pakistan is depicted with a double burden of diseases, in which underdevelopment associated diseases (infectious diseases and nutritional deficiencies) have yet not been controlled and this account for almost 46% of disease burden (Economic Survey of Pakistan, 2015). Reproductive health problems account for 12% while non-communicable diseases account for almost 10% of the total burden of disease in Pakistan (Pakistan, 2008). Prevalence of risk factors for chronic diseases is very high: smoking (41% among men over 18 years of age) accounting for over 22 million smokers in country, hypertension (24% in population over 18 years of age) and proportion of overweight adults in urban region is 28% (Economic Survey of Pakistan, 2015). Drug addiction is also common with almost 5 million addicts in the country out of which 50% are heroin addicts (Economic Survey of Pakistan, 2015). Moreover, the health situation in Pakistan is characterized by significant inequities both between urban and rural population and between different income groups (Pappas et al., 2001). As compared to the WHO recommended expenditures of US\$ 34 per capita in developing countries, Pakistan spends US\$ 18 per capita out of which the total government contribution is US\$ 4 per capita (Akram and Faheem, 2007). Funding from external international sources is also limited in Pakistan (only about 7%); while the average for low income countries is above 14% and for Bangladesh it is more than 22% (Economic Survey of Pakistan, 2015).

These has translated to the existence of a mixed health care system in Pakistan, including both public sector and private sector.

2.2 OVERVIEW OF EDUCATION SPENDING IN PAKISTAN

There are a number of factors that play their roll into Pakistan's poor public provision of education. These include the non-existence of cost-effective schooling, poor curriculum and low level of awareness among parents, especially in rural areas, regarding its outcomes and impact on household welfare. Studies show that only 41.5 percent of people older than 15 years of age are literate in Pakistan, the lowest in South Asian countries. Along with their literacy rates, Pakistan also has one of the highest dropout rates.

Education is the fundamental human right and has constructive impact on household welfare and vital prerequisite for economic growth and development in a country at the macro level. Like other social sectors, education is not a priority area of the Pakistani government. Though Pakistan is trying to make some amends for its past neglect, and investment in education has been gradually rising. In the fifth five year plan, spending on education as a percentage of total plan outlay was 1.2 percent, which increased to 1.6 percent in the sixth five year plan, 3.0 percent in the seventh plan and 8.4 percent in the eighth five year plan. The development budget for basic education has also risen by more than 7 times in the past seven years [HDC (1998)].The total public sector budgetary expenditure on education sector shows promising figures in last year's, however, the share of development spending on education is still very low.

Overall, during 2001 and 2006, the provincial governments spent the most on primary followed by secondary education and the least in professional education. However, the federal spent the least on primary and the most on colleges and universities followed by professional education. This could be because of low burden in the primary and secondary education where the private sector plays an important role.

The overall stage-wise and/or province-wise trend presents a mix picture; however, it is interesting to observe that the share of expenditure on primary and secondary education has dropped (except for secondary education in Sindh and NWFP) since 2000-01. The huge amount of money was injected in the higher education through Higher Education Commission (HEC), Islamabad. The impact of higher education grants is observed at the Federal level; where the share of college and universities has improved to 59.10 percent in 2005-06 from 33.17 percent in 2000-01.

The total public sector expenditure as percentage of GDP shows that in last years the public sector spending on education sector has been doubled since 2000-1, i.e., 2.73 percent in 2005-06 from 1.45 percent of the GDP in 2000-01. After becoming a signatory to the United Nations' Millennium Declaration in the year 2000, the progress underlining government spending was just of 1.28 percentage points of GDP. Interestingly, there was only a change of less than one-percent, i.e., 0.94 percent, of GDP between 2000-01 and 2004-05. Moreover, the public sector development expenditure as percentage of GDP presents worst picture over the same period of time; improvement of 0.40 percentage points. For equity, efficiency and effectiveness of the education sector, inputs from both the public and regulated private sector would be necessary.

EFA Review Report October 2014 outlines that despite repeated policy commitments, primary education in Pakistan is lagging behind in achieving its target of universal primary education. Currently the primary gross enrolment rate stands at 85.9% while Pakistan requires increasing it up to 100% by 2015-16 to fulfil EFA goals. Of the estimated total primary school going 21.4 million children of ages 5-9 years, 68.5% are enrolled in schools, of which 8.2 million or 56% are boys and 6.5 million or 44% are girls. Economic Survey of Pakistan confirms that during the year 2013-14 literacy remained much higher in urban areas than in rural areas and higher among males.

CHAPTER 3

THEORETICAL BACKGROUND AND LITERATURE REVIEW

3.1 THEORY FOCUSING ON HEALTH, EDUCATION

The positive correlation between the health care spending and economic growth which advocated firstly by Mushkin (1962), later named as health-led growth hypothesis and widely studied in the literature. The theory basically claims that the health care spending stimulate the economic growth: as health is a capital, thus investment on health can increase human capital, hence lead to overall economic growth.

The major point of health led growth hypothesis is easily understood, since a healthier population leads an increase in the total factor productivity; can secure higher earnings can have higher learning abilities and in general can enhance the efficiency of economy human capital Schultz (1999). This hypothesis is also closely related and has a basis in the endogenous growth theory developed by Romer (1986, 1990) and Lucas (1988), and the other pioneer studies Barro (1991) and Lee (1994) that clearly point out the importance of human capital accumulation or investment for economic growth. Many empirical studies has been found on relationship between health spending and economic growth are as under:

Taiba et al., (2014) investigated the causality and co-integration relationships between public spending on health and economic growth in Algeria during 1974-2014 using annual data. This paper concentrated on time series co-integration and causality in ECM framework. The findings revealed that there is a long-run causality from public spending on health to economic growth while it is not observed any short-run causality from public spending on health to economic growth. The lack of strong link from public spending on health to economic growth is not necessarily a reason to reallocate health investment away from the health sector. The improvements in health status will be worth the effort even if they turn out to have little effect on growth.

Zahra and Somay (2012) investigated the causality and co-integration relationships between economic growth and health care expenditures in developing countries during 1990-2009. This paper concentrated on panel cointegration and causality in VECM framework. The findings revealed that there is a short-run causality from GDP to health care spending, while it is not

observed any short-run causality from health spending to economic growth. Likewise, there is a bilateral causality and long-run relationship between economic growth and health spending. In other words, the findings indicated that income is an important factor across developing countries in the level and growth of health care expenditure, in long-run. As well, the health-led growth hypothesis in developing countries is confirmed.

Hammami et al., (2012) use international health care expenditure per capita data of 30 developed countries from 1975 to 2011 for exploring the causality between the real per capita health care expenditure (HCE) and real per capita GDP. The findings indicate that bidirectional Granger causality is predominant.

Sanmi and Bakare (2011) investigated the relationship between health care expenditures and economic growth in Nigeria. The ordinary least square multiple regression analytical method was used to examine the relationship between health care expenditures and economic growth. The data analysis showed a significant and positive relationship between health care expenditures and economic. The study thus recommended that Nigerian policy makers should pay closer attention to the health sector by increasing its yearly budgetary allocation to the sector. Nevertheless the key to good results lies not in ordinarily increasing particular budgetary allocation but rather in implementing a public finance system that, to the extent possible, links specific expenditure and revenue decisions and ensures the usage of the allocated fund as transparently as possible.

Akram et. al. (2008) have investigated the impact of various health indicators on the economic growth of Pakistan. For this purpose, the Error Correction, Granger Causality and Cointegration techniques have been applied on Pakistan's time series data for the period of 1972 to 2006. They have deduced that the health indicators have a positive impact on the Per Capita GDP in the long run but such impact is not present in the short run. This suggests that economic growth is influenced by health indicators in the long run. So it can be derived from these analyses that the phenomenon of health is only applicable in the longer run and it has no influence on economic growth in the short run. The author suggested that for achieving a desired Per Capita Income level, an increase in the health of Human Capital stock is needed, and especially at time when such health levels are at the lower end.

Butt et al., (2007) support the existence of a long run relationship between GDP and health expenditure and the exogeneity of GDP in Pakistan.

The study by Anyanwu and Erhijkapor (2007) has established a relation between per capita total government expenditure and per capita income to health outcomes. The two health outcomes are infant mortality and under five mortality. The data has been taken from 47 African countries for the years 1999 to 2004. This study has found a positive relationship between health expenditure and infant and under five mortality. And the opposite relation is true for North African countries.

Riman H.B. et al., (2004) have made an effort to establish the relation between various levels of governmental expenditure on health care and the health status of Nigeria. The paper is based on different estimation techniques such as semi logarithmic function and exponential logarithmic function using the data of the period 1980 to 2003. The analysis revealed that literacy rate and life expectancy have a negative correlation with expenditure on health care both in long and short run. The income elasticity of the expenditure on health care was lower than unity for both the short and the long run. The conclusion which has been deduced from this research work is that health has a major significance in Nigeria and the government needs to lay special emphasis on this sector by making a proper and equal budgetary distribution for health expenditure, and there was also need to extrapolate the implementation rate of Primary Health Care Bill.

Baldacci (2004) explores the role played by health expenditures. He constructed a panel data set for one hundred and twenty developing countries form 1975-2000 and found that spending on health within a period of time affects growth within that same period while lagged health expenditures appear to have no effect on growth. He inferred from this result that the direct effect of health expenditure on growth is a flow and not a stock effect.

Bloom et al., (2004) provide a summary of results of various studies that use life expectancy as a proxy for health in the analysis of the direct effect of health on economic growth. Across the studies they cite (Barro and Lee, 1984; Bhargava et al., 2001; Barro and i Martin, 2004; Sachs and Warner, 1997) life expectancy is shown to have a positive and significant effect on economic growth. Barro and Lee (1984) show that life expectancy has a significant positive effect on economic growth, but voice an old concern that life expectancy is a proxy for worker experience and the extension of a life time represents higher workforce participation rather than representing improvements in health. To isolate the role of health from experience Bloom et al., (2004) control for workforce experience and show that life expectancy as a proxy for health has a significant positive effect on economic growth. Their results indicate that there is a real productivity effect of health on economic growth.

Devlin and Hansen (2001) examined Granger causality between health expenditure and GDP and showed some (mixed) evidence that indeed there might be bi-directional (Granger) causality between health spending and income.

Sachs and Warner (1997) by using life expectancy as indicator of health finds a quadratic relationship between health human capital and the rate of economic growth. Study concludes that health human capital increases economic growth at a decreasing rate.

The fertility equation is drawn from Schultz (1997). He considers the determinants of fertility to be education, income, sector of employment, religion, nutrition, family planning and child mortality. Using data on country specific abortion laws and government views of fertility, the specification and results of the fertility equation are consistent with that of Schultz (1997) with child mortality positive and significant and family planning laws also having a significant effect.) Analysis of the effect of health on economic development is broken into empirical and theoretical studies. The empirical literature (Bloom et al., 2004; Webber, 2002; Knowles and Owen, 1997; Acemoglu and Johnson, 2006) focus on the labor productivity effect of health on economic growth where improvements in health lead to an increase in per capita income directly as each individual is able to produce more per unit of labor input. The theoretical models, however, explore the relationship between health and economic growth via an indirect incentive effect on education investment (Blackburn and Cipriani, 2002; Chakraborty, 2004; Ehrlich and Lui, 1991; Finlay, 2005; Kalemli-Ozcan et al., 2000; Zhang et al., 2001). Lorentzen et al., (2005) are the first to attempt to bridge the gap of the theoretical and empirical work in a cross country empirical study. Their use of the Barro and Lee (1984) data set for education weakens the result for in that data set the time series for each country do not provide realistic changes in the years of schooling (see for example the series for the USA). Moreover, Lorentzen et al., (2005) do not include health in the main equation, and the potential direct effect of health cannot be identified. The use of adult mortality rates in Lorentzen et al., (2005) is a valuable application over the use of life expectancy as a proxy for health as the effect of child mortality can be separated from the effect of adult mortality. The specifications in Lorentzen et al., (2005) are created by the authors, and although each of the equations in the system is justice able they are not consistent with, nor as informative as, those in the existing literature.

The aim of this paper is to estimate relationship among economic growth, education and health expenditure and exports which have individually been recognized in their respective literature streams, to identify effect on economic growth.

Regression coefficients explaining cross country differences in economic growth are abundant (Easterly, 2002). To stall the mining for potentially important explanatory variables, Sala-i-Martin et al., (2004) use a Bayesian Average approach to identify the key explanator of cross country differences in economic growth. The specification used in this study is drawn from the top ranking explanatory variables identified by Sala-i-Martin et al., (2004). Initial income, education, and investment price, along with dummies for population coastal density, East Asian and African countries, tropical area, malaria prevalence, and fraction Confucian are all included. Of particular interest to this paper are the demography variables, and life expectancy, mortality, and fertility are also included in the economic growth regressions. These variables feature in the Sala-i-Martin et al., (2004) list of explanatory variables, but are not the top ranking as the former list is. As catalogued by Bloom et al., (2004), however, the significance of the demographic variables in growth regressions has been asserted by many other authors.

Specifications detailing cross country differences in education are scant. Acemoglu and Pischke (2000) outline a simple specification for college education based on income and region fixed effect. However, a specification consistent with the theory regarding the incentive effect of health on education is that of Zhang and Zhang (2005). Their paper outlines a system of equation where in its simplest form education, investment, fertility and income are endogenous and jointly determined, and life expectancy also features as an explanatory variable in each of the system's regressions. In this paper I follow this simple specification where average years of schooling is explained by base year education, income and adult mortality rates (in robustness checks I add other explanatory variables). The inclusion of adult mortality enables the identification of the effect health has on education. Following the theoretical literature, an increase in health which lowers adult mortality will increase investment in education as the time horizon over which the returns to education can be awarded is extended. Thus the key indirect link, referring back to the economic growth regression is the effect of mortality on education, and then education on economic growth.

In 2005; Kalemli-Ozcan et al., 2000; Zhang et al., 2001) show that an increase in life expectancy will increase investment in education. Human capital accumulation is assumed to be the driver of economic growth, and an increase in life expectancy will expand the time horizon over which returns to education can be earned and thus encourage investment as the present value of lifetime earnings increases.

To date, the indirect effect of health on economic growth has been little explored in the empirical literature. Lorentzen et al., (2005) are the first to adopt the system of equations approach but exclude health from the growth regression and only include it in the equation for education. Thus they do not simultaneously identify the direct and indirect effect of health. To clarify the concept of an indirect effect from an interactive term, the interactive term of health and education in an economic growth regression has a different interpretation than a system of equations. A significant interactive term shows that exogenous improvements in education heighten the benefits of an increase in health on economic growth. Whereas, in the system of equations health improvements actually act to increase education and this then lead to an increase in economic growth.

Education at all levels contributes to economic growth through imparting general attitudes and discipline and specific skills necessary for a variety of workplaces. It contributes to economic growth by improving health, reducing fertility and possibly by contributing to political stability. The major importance of the educational system to any labour market would depend majorly in its ability to produce a literate, disciplined, flexible labour force via high quality education. Consequently, with economic development new technology is applied to production, which results in an increase in the demand for workers and better education. The pioneer work in this regard is the work of Lucas (1988) which revealed that the growth rate of human capital, which is also dependent on the amount of time, allocated by individuals to acquire skills. Rebelo (1991) later extended the model by introducing physical capital as an additional input in the human capital accumulation function. However, the model of endogenous growth by Romer (1990) assumes that the creation of new ideas is a direct function of human capital, which manifests in the form of knowledge. As a result investment in human capital led to growth in physical capital which in turn leads to economic growth. Other studies that supported the human capital accumulation as a source of economic growth include (Barro and Lee, 1993; Romer,1991; Benhabib and Spiegel, 1994).

Some studies have examined different ways through human capital can affect economic growth. In a recent development, Gupta and Chakraborty (2004) develop an endogenous growth model of a dual economy where human capital accumulation is the source of economic growth. They argued that the duality between the rich individual exists in the mechanism of human capital accumulation. Rich individuals allocate labour time not only for their own production and knowledge accumulation but also train the poor individuals. In a different dimension, Bratti et al., (2004) estimated a model of economic growth and human capital accumulation based on a sample of countries at a different stage 6 of development. Their result revealed that the increase in the

primary and secondary level of education contributes to an increase in productivity. They posit that human capital accumulation rates are affected by demographic variables. For example, they established that an increase in life expectancy at birth brings about an increase in secondary and tertiary education while a decrease in the juvenile dependence rate negatively affects secondary education. Finally, they added that geographic variables have a considerable importance in the human capital accumulation process. Nevertheless, studies differed on the impact of human capital on productivity growth.

3.2 THEORY FOCUSING ON EXPORTS

Many empirical studies exist in literature that have examined the linkage between exports and economic growth either by using correlation analysis or by using a bivariate causality analysis. Testing causality in a bivariate framework may not be very well free of specification bias. An important variable or variables may be missing or omitted in a bivariate causality case. Empirical studies on 'Export-led economic growth hypotheses have supported mixed results in a bivariate causality framework. Empirical support for the validity of 'export-led growth hypothesis' in both developing and developed countries was found considerably weak in recent era when analysed by using cointegration and augmented Granger causality analysis rather than earlier correlation based or simple causality analysis. A few empirical studies also exist that have included other relevant variables (e.g. financial development, trade openness, debt, imports, expenditures on R&D, share of investment in GDP, FDI, energy, exchange rate, labour stock and capital stock, etc.) for causality analysis and try to exert their influence on exports and economic growth. Afzal, Rehman, and Rehman (2008) tested the causality among economic growth, external debt servicing and exports in a bivariate and trivariate framework for Pakistan by applying Toda-Yamamoto Augmented Granger Causality analysis and found no support to 'export-led growth hypotheses. Their study further supported the 'growth driven export hypotheses. The principal findings of the study by Shan and Sun (1998) do not support the validity of 'export-led growth hypotheses. Awokuse (2003) tested the credibility of 'export-led growth hypothesis' for Canada and found it to be valid. Applying ARDL approach to cointegration and Toda-Yamamoto non-causality test, Omisakin (2009) found support for 'export-led growth hypotheses for Nigeria.

Doganlar and Fisunoglu (1999) examined the causal linkage for seven Asian countries including Pakistan and found unidirectional causality running from economic growth to export growth in Pakistan. Vohra (2001)

investigated linkage between export and economic growth for Pakistan, Philippines, Malaysia, Thailand and India, and found that exports positively affected the economic growth. Din (2004) explored the 'export-led growth hypotheses for five South Asian countries including Pakistan and found cointegration among exports, imports, and output for Pakistan. Afzal (2006) found feedback causality between manufactured exports and GDP. Amoateng and Adu (1996) and Chen (2007) supported both the 'growth-driven exports' and 'Export-led economic growth hypotheses' in trivariate and tetravariate causality analysis respectively.

The linkages between (i) economic growth and Human Capital, (ii) Human Capital and trade, and (iii) economic growth and trade, have been studied and discussed by Narayan and Smyth (2004). A strong linkage was found between economic growth and human development (Ranis, Stewart and Ramitez, 2000). Narayan and Smith (2004) tested Granger causality between human capital and real income in a cointegrated VAR processes for China and found unidirectional Granger causality running from human capital to real income in the Long Run while in Short Run, one-way Granger causality running from real income to human capital. On one side, economic growth supply the resources to improve human development and on the other side, human development in the form of improvements in quantity and quality of labour force contributes and accelerates economic growth. Judson (2002) states that even though conventional wisdom does support a positive correlation between output growth and human capital, the empirical results are mixed, i.e., the positive correlation between growth and human capital has been found exceptionally rather than as a rule. So, examining the causality between human development and economic growth for Pakistan is the need of hour.

The contribution of economic growth to human development is mainly through activities of households, government, NGOs and other civil society. The same level of income can contribute differently to human development. This depends upon the allocation of the income among households, government activities and on the behaviour and priorities of these sectors and institutions. Household disposable income directly contributes to the promotion of human development by making more expenditure on basic food, health and education. Poor households and female's control over cash income households are found to make more expenditures out of their income on human development related items than those with high income group and of male's control over cash income groups. Poor families and poor households are seen to spend less on education item of human development.

Birdsall (1985), Behrman and Wolfe (1987a, 1987b), King and Lillard (1987), Deolalikar (1993) and Alderman, Behrman Khan, Ross and Sabot (1996a, 1996b) have empirically proved for many countries including India and Pakistan that family earnings changes exerted a positive impact on child's schooling. On the other hand, improvements in human development depend upon government's expenditure on social sector and how much of the total public expenditure goes to human development related items especially on basic education and health. On the other hand, NGOs do contribute to human development by deriving resources from both domestic as well as foreign private and government donations. The effectiveness of NGOs varies from country to country. In some regions of the world, their role is just supplementary, but in other few countries (e.g. BRAC and Grameen Bank in Bangladesh, The Harambee School in Kenya and Peru's Comedores Populares), NGOs appeared as a major factor in the improvement and enhancement of HD (Riddell, Robinson, deConinck, Muir and White, 1995). Ghazali Education Trust (GET), Beaconhouse education system and Zindagi seem to improve and enhance human development in Pakistan.

High level of human development (in the form of improved health, nutrition and quality education) can contribute more to economic growth. High level of human development affects the economic growth by enhancing people's choices, capabilities, creativity and hence productivity. Better health and quality labour force education are the main determinants of exports and output growth. They also help in the proper and better utilisation of foreign borrowed technology very effectively. On one hand, quality secondary and tertiary education proved it to facilitate the acquisition of skills and managerial capabilities and on other hand, its contribution towards technological capability and technical change in industries is obvious and very important. The role of better health and quality education cannot be overlooked in the exports growth that affects the Economic Growth. So there exists a positive significant correlation between economic growth and exports. Ranis, Stewart and Ramirez (1997) explored the linkage between human development and economic growth for the time period 1970-92. Their finding implied that, although both economic growth and human development should be promoted jointly, but human development be given sequential priority.

According to Narayan and Smyth (2004), exports can promote human capital accumulation in developing countries through three main channels. Firstly, exports, being the important component of trade help in facilitating transmission of technology to developing countries from developed countries. Transfer of technology is biased in favour of skilled labour and induces investment in human capital [Pissarides (1997)]. Secondly, export is a source of learning by doing. Thirdly, the diffusion of soft and hard technologies

including marketing, production and management expertise can be promoted by exports which in turn accelerate the productivity of factors of production such as labour and capital [Grossman and Helpman (1991); Kim (1998)]. Improvements in human capital can Granger cause exports. Improvements in human capital stock can increase the quality of workforce that, in turn, raises the labour productivity and accelerates further exports and hence economic growth [Chuang (2000)]. Gould and Ruffin (1995), Hanson and Harison (1995) and Stokey (1996) conducted studies for different countries and for different time periods and suggested that human capital accumulation was accelerated and promoted by trade and *vice versa*.

The exports are important and significant determinant of economic growth in Pakistan. The analysis also reveals that the exports along with labor force, investment and Domestic credit to private sector ratio are important for the long-run as well as short run economic growth of Pakistan. Fatemah and Qayyum (2018).

Expansion in exports can increase growth through a variety of channels. ‘Export-led growth hypothesis’ is one of them. ‘Export-led growth hypothesis’ postulates that exports expansion is vital to economic growth. It raises investment and employment opportunities, production efficiency, technological advancement, and hence economic growth. On the other way, economic growth can also increase exports [see Ahmed (2001); Afzal, Rehman, and Rehman (2008)]. Jung and Marshall (1985) found that the internally generated economic growth better explained exports growth. New trade theories also support growth causing exports hypothesis [e.g. see Helpman and Krugman (1990)]. It is concluded from the above discussion that high exports economies also perform well in their growth rate of GDP. Such type of linkages between economic growth and exports induce the researchers to examine the causality between the two.

Empirical analysis based on bivariate causality framework on both the hypotheses has provided the diverse results. However, a few studies have been found in literature that tested causality between the human development and economic growth. The studies that tested the bivariate causality between human development and economic growth include De Meulemster and Rochat (1995) for six developed countries including Sweden, UK, Japan, France, Italy and Australia. All the studies conducted for developed countries provide mix results about unidirectional and bidirectional causality. Lee and Lee (1995) utilised secondary school achievement test score as a direct measures of human capital for 17 developed and developing countries including India, Iran and found that the higher initial human capital stock per worker led to higher economic growth per worker. A few studies have been

carried out for the developing countries. A study conducted for Pakistan by Khan, *et al.*, (1991) found one-way Granger causality running from literacy to productivity for Pakistan. Narayan and Smyth (2004) tested temporal bivariate causality between real income and human capital in a co-integrated VAR processed for China for the time period 1960 to 1999 and found the evidence of long run Granger causality running from human capital to real income while the short run one way causality running from real income to human capital was observed.

A few studies also exist in literature that has tested the causal link between exports and economic growth by including human development as a third variable in a multivariate framework. Chuang (2000) tested the casual linkages among exports, human capital and economic growth for Taiwan for the period 1952-95. He found the bidirectional casualty between exports and human capital accumulation. Human capital based endogenous growth theory and export-led growth hypothesis were found valid in case of Taiwan. Narayan and Smyth (2004) employed co-integration and error correction techniques to test the casualty among real income, real exports and human capital stock for China using annual data over the period 1960 to 1999 and found evidence of co-integration among real income, real exports and human capital when real exports served as dependent variable and human capital and real income are taken as independent variables. They found (i) the evidence of short run bidirectional Granger causality between human capital and real exports, (ii) unidirectional Granger causality running from real income to human capital and (iii) no evidence of Granger causality between real exports and real income. Furthermore their results do not support the ‘export-led growth hypotheses.

In the present study, relationship between health and education expenditure and GDP per capita and exports are examined in case of Pakistan by including as a third variable.

CHAPTER 4

METHODOLOGY AND DATA SOURCES

4.1 SPECIFICATION OF ECONOMETRIC MODELS

On the basis of the literature review we examine the relationship of education expenditure, exports and capital with economic growth. It is hypothesized that there is a positive relationship of education expenditure, exports and capital with economic growth.

Model-I

This study recommends the following model structure to find out the impact of Educational expenditures on economic growth.

$$G_t = f(EE_t, X_t, K_t)$$

$$G_t = aEE_t^\alpha X_t^\beta K_t^\gamma$$

Where α, β, γ are the elasticity coefficients.

Natural logs (Ln) of the equation are given below:

$$\text{Log}G_t = a_0 + \alpha \text{Log}EE_t + \beta \text{Log}X_t + \gamma \text{Log}K_t + \varepsilon_t$$

Where

$t = 1, 2, 3, \dots, 42$ (time period ranging from 1972-2013)

G_t = GDP Per Capita in time t (as a proxy of Economic Growth)

EE_t = Educational expenditure as a percentage of GDP in time t

X_t = Total Exports as a percentage of GDP in time t

K_t = Gross Fixed Capital as a percentage of GDP in time t

ε_t = white noise error term

There has been also found a relationship between health expenditure and economic growth along with exports and capital.

Model-II

This study recommends the following model structure to find out impact of Health expenditures on economic growth.

$$G_t = f(HE_t, X_t, K_t)$$

$$G_t = aHE_t^\alpha X_t^\beta K_t^\gamma$$

Where α, β, γ are the elasticity coefficients.

Natural logs (Ln) of the equation are given below:

$$\text{Log}G_t = a_0 + \alpha \text{Log}HE_t + \beta \text{Log}X_t + \gamma \text{Log}K_t + \varepsilon_t$$

Where

$t = 1, 2, 3, \dots, 42$ (time period ranging from 1972-2013)

G_t = GDP Per Capita in time t (as a proxy of Economic Growth)

HE_t = Health expenditure as a percentage of GDP in time t

X_t = Total Exports as a percentage of GDP in time t

K_t = Gross Fixed Capital as a percentage of GDP in time t

ε_t = white noise error term

4.2 DATA SOURCES AND VARIABLES

Annual data from 1972-2013 is used in the present study. The data has been collected from Finance Division, State Bank of Pakistan, Government of Pakistan (Economic Survey of Pakistan) and World Development Indicators (WDI).

4.3 DESCRIPTION OF VARIABLE

Total Exports as Percentage of GDP

The annual data of Exports for Pakistan in US Dollar is taken from World Development Indicators (WDI) by World Bank (2014). It's converted in Millions Rupees. After this conversion the total exports is taken as a percentage of GDP. It is hypothesized that there is positive relationship between export and economic growth

Health Expenditures as Percentage of GDP

The annual data of health expenditures is taken from various issues in Pakistan economic surveys in Millions Rupees. The health expenditures is taken as a percentage of GDP. It is hypothesized that there is a positive relationship between health expenditure and economic growth.

Education Expenditures as Percentage of GDP

The annual data of education expenditures is taken from various issues in Pakistan economic surveys in Millions Rupees. The total educational expenditures are taken as a percentage of GDP. It is hypothesized that there is positive relationship between educational expenditure and economic growth.

Total Gross fixed Capital Formation as Percentage of GDP

The annual data of Gross fixed capital formation for Pakistan in US Dollar is taken from World Development Indicators (WDI) by World Bank (2014). It's converted in Millions Rupees. After this conversion it is taken as a percentage of GDP. It is also hypothesized capital has positive relationship between.

GDP Per Capita

GDP per capita for Pakistan in local currency (Rupees) is taken from World Development Indicators (WDI) by World Bank (2014). It is converted in Millions Rupees.

4.3 METHODOLOGY

4.3.1 Unit Root Test

In time series analysis, the variables must be stationary otherwise, tests will not be suitable and casting results will be fictitious. Granger and Newbold (1974) stated that the OLS estimation of regression is not genuine if the variables are non-stationary.

We have many unit root tests to find out stationarity but ADF is preferable because of its stability in values as compared to other different sampling experiments. We can make best conclusions on the basis of ADF results (Engle and Granger, 1987).

We can execute ADF test by applying different forms of regressions through the use of intercept and time trend.

The ADF test is applied to find out stationarity among the variable. If the computed value is less than the critical value, we reject the null hypothesis. Acceptance of null hypothesis indicates the non-stationarity of data.

4.3.2 Co-Integration and Error Correction Mechanism (ECM)

After the confirmation about the same order of variables, we need to find out the co-integration. Through co-integration this research study would examine the long run relationship between the variables for each model. We can find co-integration through the Engle-Granger test, Johansen-Juselius test or Autoregressive Distributed Lag (ARDL) bound test. EG may not be suitable to apply because it is reliable in case of two variables and Asterious (2006) pointed out the following drawbacks of this method:

1. One momentous problem is the order of variables. It is not confirmed in this test which variable is dependent.
2. When we estimate more variables, more co-integrating relationships exist but in case of EG it is not possible. It does not provide us co-integrating vectors.
3. The third issue is that it follows two step procedures. Firstly it produces errors and then finds out stationarity through estimation of regression.

Johansen (1988) has presented a maximum likelihood testing procedure on the number of co-integrating vectors through Vector Autoregressive (VAR) structure.

In this study we used Autoregressive Distributed Lag (ARDL) model which have more advantages than the Johnson co-integration approach .First , the ARDL approach can be applied irrespective of whether the regressors are I(1) and I(0). Second, while the Johansen co-integration techniques require large data samples for validity, the ARDL procedure provides statistically significant result in small samples (Pesaran and Shin, 1997; Pesaran and Shin, 1999; Narayan, P., 2005; Udoh and Ogbuag, 2012). That means, it avoids the problem of biasness that arise from small sample size (Chaudhry & Chaudhry, 2006). Third, the ARDL procedure provides unbiased and valid estimates of the long run model even when some of the regressors are endogenous (Harris and Sollis, 2003, Pesaran and Shin, 1999, Ang, J., 2009). Further, in using the ARDL Approach, a dummy variable can be included in the co-integration test process, which is not permitted in Johansen's method (Rahimi and Shahabadi, 2011). Therefore, due to the above mentioned advantages, the researcher has used the ARDL method of co-integration to investigate the impact of human capital development on economic growth.

This technique consists of two steps. In the first step, F-test confirmed the presence of long run co-integration among the variables. In the next step, the values of this relationship would be found.

CHAPTER 5

RESULTS AND DISCUSSION

The empirical results are based on investigating the properties of time series data, followed by long run relationships and short run dynamics among variables. Two models are estimated and the results are reported in this chapter.

5.1 EMPIRICAL RESULTS FOR MODEL-I

A. Testing of Unit Roots

The log form of Gross fixed capital formation (K), Total Exports (X), and Educational Expenditures (EE) is used in the model. The Augmented Dickey-Fuller (ADF) test is applied at level as well as at first difference of the series with trend and intercept (Table 1). Optimum lag length is 0 for all variables attained through Schwarz Bayesian Criterion (SBC). Order of integration is one which is common in case of all variables. It means all variables appear to be stationary at first difference. After indication of unit root in the model, next step is to move to the cointegration analysis.

Table 1
Augmented Dickey-Fuller Test for Unit Roots

Variables	ADF-statistics (At Level)	ADF-statistics (1st Difference)	Probability
LG	-2.401609	-7.605421***	0.0000
LX	-2.623956	-7.062542***	0.0000
LEE	-1.640124	-4.354268***	0.0005
LK	-1.625012	-5.874014***	0.0033

*, **, *** represent significance of the test statistics at 10 percent, 5 percent and 1 percent levels of significance.

B. The Long-run relationship

The first step in co-integration process is to determine lag length of the structure. The resulted lag length is one, Schwarz Bayesian information criteria (SBC) is used for this purpose. The obtained value of F-statistic is mentioned below in Table (2).

Table 2xxx
The Results of ARDL Cointegration Test

ARDL (1, 0, 1, 0, 0, 1, 0) F-Statistic = 5.8521**		Schwarz Bayesian Criterion	
Level of Significance	Pesaran <i>et al.</i> , (2001)		
	Lower Bound Value	Upper Bound Value	
5%	3.5645	4.7456	
10%	2.9412	4.0257	

Source: Author's Calculations

Table (2) confirms the presence of cointegration through F-Statistics which is greater than upper value at all levels of significance. The long run relationship is confirmed among the variables. Table (3) is the estimation of the long run coefficient of the variables.

Table 3: Long Run coefficients

Dependent Variable: $\ln G_t$				
Variables	Coefficient	Standard Error	T-statistics	Prob.
$\ln X_t$	0.2548	0.0787	3.2386**	.003
$\ln EE_t$	0.0686	0.2625	0.2614	.795
$\ln K_t$	0.7473	0.7879	0.9484	.349
C	1.3815	0.4723	2.9248	.005

Source: Author's calculations

Note: *, ** and *** denote rejection of the null hypothesis of insignificant at the 0.10, 0.05 and 0.01 level respectively.

Table (3) reveals the positive coefficients of all variables indicating that these variables have direct relation with economic growth in the long run. 1% rise in exports, capital and educational expenditures will lead to 0.25%, 0.74% and 0.07% increase in economic growth respectively.

The impact of exports on economic growth is statistically significant at 1% level but capital and educational expenditures have not shown significant impact on economic growth. The findings of this study is consistent with the findings of Zaheer et al.,(2011) that shows the insignificant impact of educational spending on economic growth in Pakistan but different from Zaman et al.,(2011), Siddiqui (2013) and Stewart (1998). The insignificant impact may be due to low proportion in budget to education sector.

Pakistan is blessed with naturally talented individuals, but due to worse law and order, very low employment opportunities, and insufficient research activities, a number of professionals are leaving Pakistan for the sake of better career and life.

Short Run Dynamics

The short run relationship among the variables is found through ECM. The findings of ECM are given in Table (4).

Table 4: Dependent Variable = $\Delta \ln G_t$

Variable	Coefficient	Standard Error	T-statistics	Prob.
$\Delta \ln X_t$	0.0223	0.0296	0.7553	.445
$\Delta \ln EE_t$	0.0060	0.0258	0.2329	.817
$\Delta \ln K_t$	0.0655	0.0317	2.0634*	.049
ECM_{t-1}	-0.1877	0.0936	-2.0046*	.051
$R^2 = .67026$ Adj- $R^2 = .61140$ F-Statistic = 7.9894 DW-Statistic=2.8691				

Source: Author's calculations

Note: *, ** and *** denote rejection of the null hypothesis of insignificant at the 0.10, 0.05 and 0.01 level respectively.

The short run results reveal that the coefficients of all variables are positive. The significant value of ECM_{t-1} is -0.1877 and confirms the movement towards long run equilibrium by 18.77% in each year. The variables involved in the assessment are the cause of 67.02% changes in the dependant variable.

Table 5: Diagnostic Tests

<i>Normality Test</i> (Jarque-Bera Statistics)	Probability = .834
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<i>Serial Correlation</i> (Breush-Godfrey Serial Correlation LM Test)	Probability = .764
<i>Heteroskedasticity Test</i> (White Heteroskedasticity Test)	Probability = .778
<i>Model Specification Test</i> (Ramsey RESET Test)	Probability = .592

Source: Author's Calculations

Table (5) shows the diagnostic test results of the model. The probability values are greater than 0.10 in case of all tests. According to estimated values Serial correlation and Heteroskedasticity problem is not found. The model has perfect functional form and residual is normally distributed.

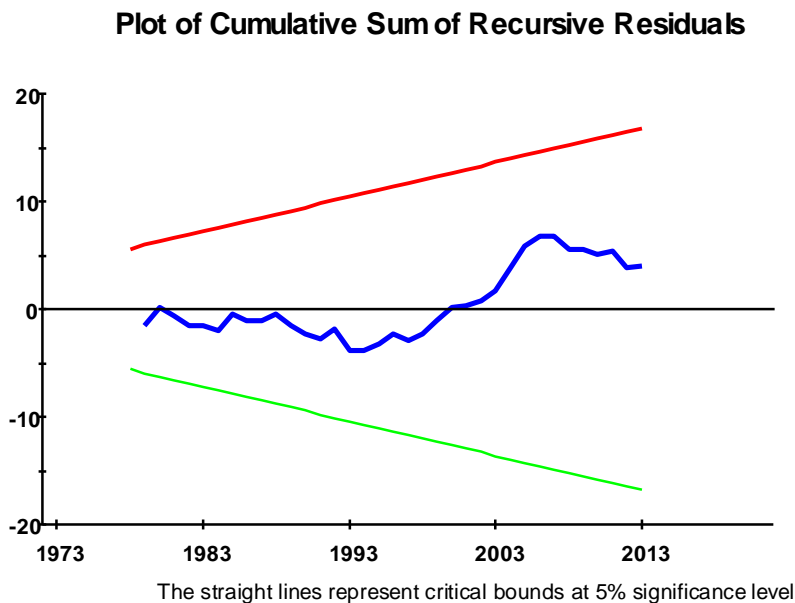


Figure 1: CUSUM

Plot of Cumulative Sum of Squares of Recursive Residuals

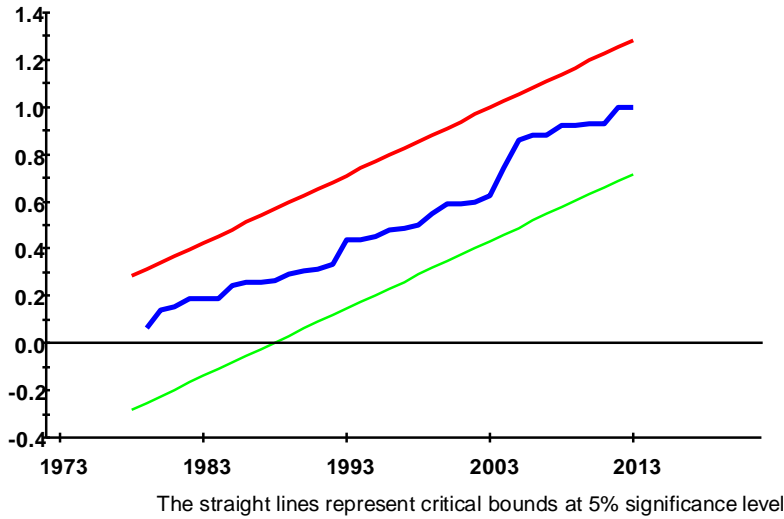


Figure 2 CUSUM SQUARE

Figure 1 and 2 show the CUSUM and CUSUMsq test for the model which describes the resulted values fall between the critical values so the stability and reliability is found in model.

EMPIRICAL RESULTS FOR MODEL-II

a. Testing of Unit Roots

The log form of Gross fixed capital formation (K), Total Exports (X), and Health Expenditures (HE) is used in the model. The Augmented Dickey-Fuller (ADF) test is applied at level as well as at first difference of the series with trend and intercept Table (6). Optimum lag length is 0 for all variables attained through Schwarz Bayesian Criterion (SBC). Order of integration are one which is common in case of all variables. It means all variables appear to be stationary at first difference table (6). After indication of unit root in the model, next step is to move to the cointegration analysis.

Table 6: Augmented Dickey-Fuller Test for Unit Roots

Variabl es	ADF- statistics (At Level)	ADF- statistics (1st Difference)	Probability
LG	-2.401609	-7.605421***	0.0000
LX	-2.623956	-7.062542***	0.0000

LHE	-3.640124	-5.354268***	0.0025
LK	-1.625012	-5.874014***	0.0033

*; **, *** represent significance of the test statistics at 10 percent, 5 percent and 1 percent levels of significance.

b. The Long-run relationship

The first step in cointegration process is to determine lag length of the structure. The resulted lag length is one, Schwarz Bayesian information criteria (SBC) is used for this purpose. The obtained value of F-statistic is mentioned below in Table (7).

Table 7: The Results of ARDL Cointegration Test

ARDL (1, 0, 1, 0, 0, 1, 0) Schwarz Bayesian Criterion		
F-Statistic = 5.3442**		
Level of Significance	Pesaran <i>et al.</i>, (2001)	
	Lower Bound Value	Upper Bound Value
5%	3.5645	4.7456
10%	2.9412	4.0257

Source: Author's Calculations

Table (7) confirms the presence of cointegration through F-Statistics which is greater than upper value at all levels of significance. The long run relationship is confirmed among the variables. Table (8) shows the longrun coefficient of variables.

Table 8: Long Run coefficients

Dependent Variable: $\ln G_t$				
Variables	Coefficient	Standard Error	T-statistics	Prob.
$\ln X_t$	0.1715	0.0810	2.1173*	.041
$\ln HE_t$	0.1955	0.1026	1.9057*	.065
$\ln K_t$	0.2338	0.2238	1.0445	.303
C	1.1700	0.3865	3.0265**	.004

Source: Author's calculations

Note: *, ** and *** denote rejection of the null hypothesis of insignificant at the 0.10, 0.05 and 0.01 level respectively.

Table (8) reveals the positive coefficients of all variables indicating that these variables have direct relation with economic growth in the long run. 1% rise in exports, capital and health expenditures will lead to 0.17%, 0.23% and 0.19% increase in economic growth respectively.

Exports and health expenditures have significant impact on economic growth at 5% and 10% respectively. It means if there increase in exports, it can have positive and significant impact on GDP of Pakistan. The results of significant relationship between exports and GDP are similar to Quddus(2005), Usman(2010) and Azam(2011). Similarly the increase in health expenditures by the Government can be helpful on enhancing the economic growth. The findings of this model is consistent with the findings of Devlin(2001), Butt(2007) and Sanmi (2011) that shows the significant impact of health spending on economic growth but different from Sachs and Warner (1997). Significant impact of Health expenditures on growth is because of people spending, high in health so diseases become reduced and people participation high in economic growth activities. Capital however does not have appeared statistically significant because political instability and uncertainty hampered economic growth in Pakistan. The result is similar to Anwer et al., (2010) which show insignificant impact of capital stock on economic growth.

Short Run Dynamics

The short run relationship among the variables is found through ECM. The findings of ECM are given in Table (9).

Table 9: Dependent Variable = $\Delta \ln G_t$

Variable	Coefficient	Standard Error	T-statistics	Prob.
$\Delta \ln X_t$	0.0279	0.0260	1.07 47	.290
$\Delta \ln HE_t$	0.0319	0.0170	1.8742*	.069
$\Delta \ln K_t$	0.0381	0.0329	1.1562	.255
ECM_{t-1}	-0.1631	0.0885	-1.8418*	.074
$R^2 = .70026$ $Adj-R^2 = .64140$ $F\text{-Statistic} = 6.2894$ $DW\text{-Statistic} = 2.6691$				

Source: Author's calculations

Note: *, ** and *** denote rejection of the null hypothesis of insignificant at the 0.10, 0.05 and 0.01 level respectively.

The short run results reveal that the coefficients of all variables are positive. Only health expenditures are significant to economic growth in the short run. The significant value of ECM_{t-1} is -0.1631 and confirms the movement towards long run equilibrium by 16.31% in each year. The variables involved in the assessment are the cause of 70.02% changes in the dependant variable.

Table 10: Diagnostic Tests

Normality Test (Jarque-Bera Statistics)	Probability = .452
Serial Correlation (Breush-Godfrey Serial Correlation LM Test)	Probability = .253
Heteroskedasticity Test (White Heteroskedasticity Test)	Probability = .406
Model Specification Test (Ramsey RESET Test)	Probability = .262

Source: Author's Calculations

Table (10) shows the diagnostic test results of the model. The probability values are greater than 0.10 in case of all tests. According to estimated values Serial correlation and Heteroskedasticity problem is not found. The model has perfect functional form and residual is normally distributed.

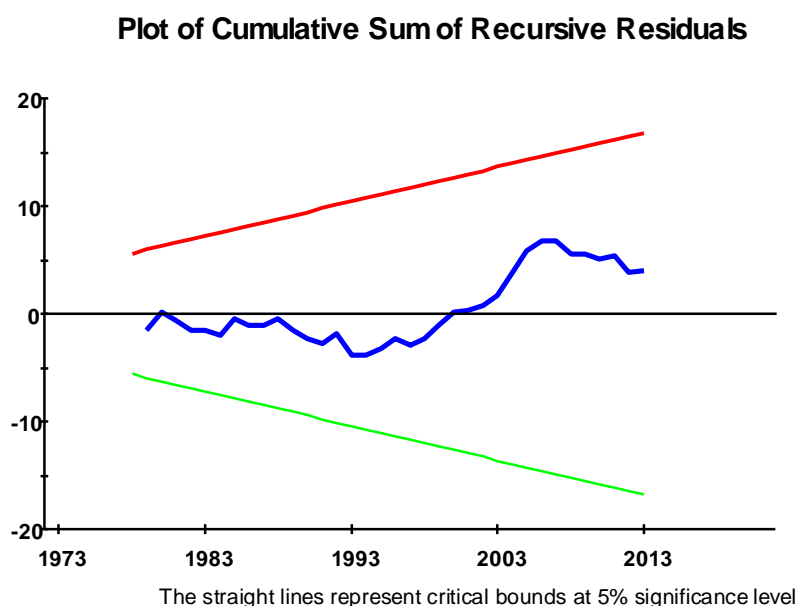


Figure 3 CUSUM

Plot of Cumulative Sum of Squares of Recursive Residuals

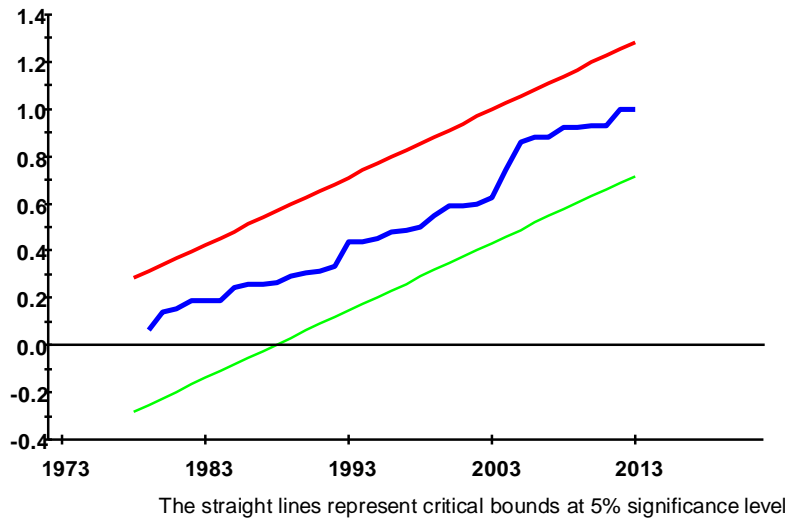


Figure 4 CUSUM SQUARE

Figure 3 and 4 shows the CUSUM and CUSUMsq test for the model which describes the resulted values fall between the critical values so the stability and reliability is found in model.

CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study has made an effort to investigate the relationship between total volume of sectoral growth and Sectoral trade in Pakistan. The empirical

examination was based on Autoregressive Distributive Lag (ARDL) method and ECM technique covering the time period from 1972 to 2013. Three models were estimated in the present study to explore the relationship between sectoral growth and sectoral trade.

On the basis of results, we accept the null hypothesis that agricultural growth does not affect the agriculture trade. The results show that the agricultural growth plays positive but insignificant role in agricultural trade. The role of agriculture human capital is positive and significant. The role of exchange rate is negative and significant.

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CHAPTER # 6

CONCLUSIONS

The study has made an effort to investigate the relationship of health and educational expenditures with economic growth in Pakistan. The empirical examination was based on Autoregressive Distributive Lag (ARDL) method

and ECM technique covering the time period from 1972 to 2013. Two models were estimated in the present study.

On the basis of first model, we accept the null hypothesis that educational expenditures do not affect the economic growth in Pakistan. The results show that the educational expenditures plays positive but insignificant role in economic growth. The findings of this study is consistent with the findings of Zaheer et al.,(2011) that shows the insignificant impact of educational spending on economic growth in Pakistan but different from Zaman et al.,(2011), Siddiqui (2013) and Stewart (1998). The insignificant impact may be due to low proportion in budget to education sector.

On the basis of second model, we reject the null hypothesis that health expenditures do not affect the economic growth in Pakistan. The results show that the health expenditures plays positive and significant role in economic growth. The findings of this model is consistent with the findings of Devlin(2001), Butt(2007) and Sanmi (2011) that shows the significant impact of health spending on economic growth but different from Sachs and Warner (1997). Significant impact of Health expenditures on growth is because of people spending, high in health so diseases become reduced and people participation high in economic growth activities.

We reject the null hypothesis that Exports do not affect the economic growth in Pakistan. Exports have significant impact on economic growth at 5% and 10% respectively. The results of significant relationship between exports and GDP are similar to Quddus(2005), Usman(2010) and Azam(2011).

We accept the null hypothesis that Capital Stock does not affect the economic growth in Pakistan. Capital however does not have appeared statistically significant because political instability and uncertainty hampered economic growth in Pakistan. The result is similar to Anwer et al., (2010) which show insignificant impact of capital stock on economic growth.

6.2 POLICY RECOMMENDATIONS

On the basis of results some policy implications may be derived:

Educational expenditure shows positive impact on economic growth. It means government should increase the proportion of educational expenditure in budget the growth will increase resultantly as shown by results. Health Expenditure also shows positive and significant impact on economic growth if government increases it's proportion in budget it will be helpful to increase the growth of a country. The exports impact is positive and significant that does create a same impact on growth of economy.

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