Impact of Public Education Expenditures on Economic Wellbeing in Developing Economies

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Abstract

Education can affect economic growth and wellbeing through different channels like by increasing the efficiency of the workforce, reducing inequality, and increasing the knowledge and the innovative capacity of an economy. The key objective of the present research is to explore the impact of public education expenditures on economic wellbeing in developing economies. The present study explored the impact of public education expenditures on economic wellbeing by using panel dataset of 21 developing economies over the period of 1980-2014. Household Final Consumption Expenditure Per Capita was used as a proxy to measure economic wellbeing. The panel estimation technique of Generalized Method of Moments (GMM) was used for the analysis. Research findings revealed that there was a positive and significant relationship between education expenditure and economic wellbeing. Economic wellbeing of the society was directly linked with more priority to educational expenditures in public budget. Hence, developing economies should enhance their public spending on education.

Keywords: *Economics of Education, Public Education Expenditure, Economic Wellbeing, Household Final Consumption Expenditure per Capita, Developing Economies*

1. Introduction

Being an important element of fiscal policy, public expenditures on different sectors of an economy carries out effective improvement in country's growth rate, employment, per capita income and distribution of income and wealth on equitable grounds (Subedi, 2013: Asghar *et al.,* 2011). The public expenditures on the social sector also have an ultimate importance and help in improving the quality of the social services extended to the inhabitants. Along

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with the other social services, education has considerable importance towards the economic development. This high value field enables people to raise their standard of living by enhancing their abilities and skills and thus increase the productivity and the level of income (Dao, 2008).

In recent years it has been observed that the human capital which generally includes the individuals attributes and their resources and development of their skills contribute in a productive way towards economic wellbeing and country's economic activities (Healy & Cote, 2001). The vast literature on human capital usually comprises of education report its benefits both at individual as well as society level (Gounder & Xing, 2012). In regard to the knowledge based economy, Endogenous growth models got popularity. These models highlighted the significant influence of human capital (that explicitly comprises education) towards the economic growth and wellbeing (Khan & Rehman, 2012).

The contributive role of human capital put the emphasis on investment and returns to investment on human capital. First classical economist, Adam Smith (1776) had initially put light on the concept of human capital in his definition of capital stock (Laroche *et al.,* 1999). The concept of returns to investment on human capital that incorporated more specifically education in form of improved and enhanced earnings, with the focus on both public and private investment had been visualized by Mincer (1958a, 1975b), Schultz, 1961; Becker, 1962; Awan *et al.,*2011; Laroche *et al.,* 1999). Furthermore, the Endogenous growth models were split into two generations.

The first generation theorists put emphasis on the accumulation of human capital and showed closeness to the neo-classical, but differ from them by considering the growth as an internal or endogenous outcome rather than the exogenous outcome. The influential work of Romer (1986) had given start to first generation theorists, which was then followed by (Lucus, 1988; Becker *et al.,* 1990; Stokey, 1991; Barro, 1991; Mankiw *et al.,* 1992; Barro & Sala-i-Martin,1995). The second generation theorists' ideas were closer to Schumpeter creative destruction idea and focused on the endogenous development of the sector of research and development (R&D). This generation included the works of (Romer, 1990; Aghion & Howitt, 1992; Grossman & Helpman, 1991; Eicher, 1996; Parente & Prescott, 1994; Goodfriend & McDermott, 1995). The econometric model in this study is captured from work of (Romer, 1986a, 1990b); Lucas (1988) and Mankiw *et al.,* (1992) and Keynesian Approach) that draw attention to the role of public spending towards accelerating the economic growth and further to economic wellbeing in developing economies.

Household Final Consumption Expenditure Per Capita is taken as a proxy to measure economic wellbeing. Along with public education expenditures, other explanatory variables like Real GDP per capita, CPI (Consumer Price Index), Unemployment Rate and Trade Openness are included in analysis. These variables are drawn from literature. Various studies have tried to highlight public education expenditures and their contribution towards the development of the society and improving the economic growth but there are limited numbers of studies which have examined the role of public education expenditures in economic wellbeing of the individuals. The present study has been undertaken to fill this research gap by empirically testing the role of public education expenditures towards economic wellbeing in developing economies.

1.1 Objective of the Study

Objectives of the study are:

1. To empirically examine the impact of public education expenditures on economic wellbeing in developing economies.
2. To identify that the public education expenditures improve the economic wellbeing of the society.

2. Literature Review

Musila & Belassi (2004) examined the effect of public education expenditures towards on economic growth in Uganda for 1965-1999. The findings revealed that public education expenditures per worker affected economic growth positively. Further results indicated that in long run public education expenditures were found to be weakly exogenous in the model, they thus contributed positively towards the economic growth of Uganda.

Al-Yousif (2008) examined the nature and direction of public education expenditures used as a proxy of human capital and economic growth in 6 Gulf countries through 1977-2004. The findings revealed the strong support for two-directional causality between public expenditure on education and growth. Further results revealed that nature of relationship between expenditure on education and growth fluctuates through countries but more generally results revealed a positive long term link between public education expenditures and economic growth.

Hessami (2010) conducted a study to empirically analyze the effect of size and composition of the government spending and its impact on the wellbeing in 12 European countries and annual data was taken from 1990-2000. Results revealed that there exist inversely U-shaped connection between public sector size and wellbeing. Further results stated that levels of corruption and decentralization as well as people's ideological preferences and their position in

the income distribution have control the size of government spending and its impact on wellbeing.

Tamang (2011) led a study to redefine the relationship between public education expenditures and economic growth in India. Time series for the period of 1980-2008 has been taken in the study. Findings of the study signaled the existence of long term positive linkage between education expenditure and economic growth. Further study revealed that impact of education expenditure per worker was less on economic growth than the impact created by the physical capital per labor.

Hussin *et al.,* (2012) examined the long term relationship and causality among the government education expenditure and economic growth for Malaysia for the period of 1970-2010. The findings showed that education expenditure and economic growth are positively linked with each other. a positive correlation between education expenditure and economic growth. The findings also revealed a bidirectional causal association between public education expenditures and economic growth in short run.

In the study of Idrees & Siddiqi (2013), the long run relationship has been explored between public education expenditures and economic growth. Panel study was conducted by using the data on 14 cross sections which included 7 developed and 7 developing countries over the time span of 1990-2006. The results of the study highlighted that in case of developing countries public education expenditures impact on economic growth was greater than the developed countries which showed that developing countries have "catching up effect".

Bexheti & Mustafi (2015) explored the relationship between public spending on education after the decentralization process and economic growth in Macedoina. The time period considered in the study was from 2005 to 2015. For the estimation purpose Logarithmic Regression Models were used. Results prompted that the model was found to be significant whereas negative relationship was found between public education expenditures and economic growth. Further the results favored the provision of quality education that raises the skills of labor which turnout an edge for the improving the productivity and economic growth.

For scrutinizing the dynamics of educational expenditure and economic growth Mallick *et al.,* (2016) conducted a research study for 14 Asian economies. The study used the balanced panel data over the period 1973-2012. Findings of the study suggested the existence of positive and statistically significant long term relationship between public education expenditures and economic growth for all countries. Further the results revealed that both in long run as well as in

short the unidirectional causality exist from growth of economy to public educational expenditures but in long run only public education expenditures granger causes the economic growth.

The relationship among public education expenditures and economic growth has been widely addressed but there are a few studies which have observed the role of public education expenditures in economic wellbeing of the individuals. The present study attempted to fill this gap by empirically testing the role of public education expenditures towards economic wellbeing in developing economies.

3. Research Methodology

The empirical model in this study is captured from theoretical work of Romer (1986a, 1990b), Lucas 1988 and Mankiw *et al.,* (1992) and Keynesian Approach) that draw attention to the role of public spending towards accelerating the economic growth and further to economic wellbeing of the societies.

3.1 Research Design

Research is panel estimation in nature, therefore Generalized Method of Moments (GMM) is selected for estimation of model. But before going towards Generalized Method of Moments, different statistical tests were applied in order to avoid the econometric problems like heteroscedasticty, endogeneity and serial autocorrelation in panel data analysis making model a dynamic panel model.

Pooled OLS estimation is rejected due to the presence of heteroscedasticity indicated by B&P (Breusch & Pagan) Lagrangian test. Then, Fixed and Random effect estimations were performed, Hausman test suggested us Fixed model is suitable. So after Hausman test, Breusch-Pagan LM Test of Independence was applied to test the validity of the restriction of the parameters. Breusch-Pagan LM Test of Independence on fixed effect in order to check the existence of cross sectional correlation among the error terms. In case of fixed effect, heterogeneity problem may not exist in cross sections but group wise heteroscedasticity may exist (Baum *et al.,* 2003). Modified Wald test for group wise heteroscedasticity was also used. These all tests suggested that p-value was less than 0.05 which was the clear indication of presence of endogeniety, serial correlation and heteroscedasticity.

Table 3.1
Statistical Tests

Tests	Probability Values
Breusch and Pagan Lagrangian Multiplier Test	6856.87 (0.000)
Hausman Specification Test	14.00 (0.0296)
Breusch-Pagan LM Test of Independence	1640.215 (0.000)
Modified Wald Test for Group-Wise Heteroskedasticity	3072.09 (0.000)

After applying all above mentioned statistical tests, Difference GMM was applied. According to Arellano-Bond (1991), GMM estimator is the most popular choice for estimating dynamic panels with unseen heterogeneity and predetermined regressors (Williams *et al.,* 2018). Furthermore, Sargan test was executed to check the validity of restrictions. The null hypothesis of this test is about the validity of over identifying restrictions which checks whether the instruments used in regression analysis are exogenous or not. The probability value of Sargan test was less than 5%. After applying Sargan test, estimation was done through two step estimator method of Arellano-Bond (1991) instead of one step estimator method. Windmeijer, (2005) finds that two step method works very well than one step Method. In the present study, Probability value was greater than 0.05% at AR (2) which was in the favor of null hypothesis (No Autocorrelation). Autocorrelation problem is removed at order 2. Now the estimates are unbiased and consistent which was obtained from Arellano Bond dynamic panel data estimation with two step estimators (Mileva, 2007).

3.1.1 Empirical Model

In the light of above discussion, the model for estimation of study is proposed.

The econometric specification of model takes the following form.

$$HCEPC_{it} = \beta_0 + \beta_1 EDUEXP_{it} + \beta_2 HEALTHEXP_{it} + \beta_3 RGDPPC_{it} + \beta_4 CPI_{it} + \beta_5 UR_{it} + \beta_6 TO_{it} + \mu_{it} \quad (1)$$

Here, *HCEPC*= Real Household Final Consumption Expenditure Per Capita (constant 2010 US$),

EDUEXP = Public Expenditures on Education (% of total public expenditures

HEALTHEXP= Public Expenditures on Health (% of total public expenditures), *RGDPPC*= Real GDP Per Capita (constant 2010 US$), CPI = Consumer Price Index, UR =Unemployment rate (% of total labor force) and *TO* = Trade Openness.

3.2   Population

Data is collected from developing economies.

3.3   Sample and Sampling Techniques

This study is based on the secondary data of 21 developing economies from 1980-2014. The panel data on selected 21 developing economies are categorized as Asian and African countries. The countries are chosen on the basis of availability of data.

Table 3.3

The List of Developing Economies for Panel Estimation

Asian Countries	African Countries
Bangladesh	Botswana
India	Burkina Faso
Indonesia	Cameroon
Iran	Egypt
Jordon	Kenya
Malaysia	Lesotho
Pakistan	Mali
Philippines	Morocco
Sri Lanka	Sierra Leone
Thailand	Togo
….	Tunisia
10	11

3.4   Instrumentation

Research instruments in this model are dependent and independent variables. The data of dependent variable (Household Final Consumption Expenditure Per Capita) and other independent variables (Public Expenditures on Education, Public Expenditures on Health, Real GDP Per Capita, Consumer Price Index (inflation), Unemployment rate and Trade Openness) is collected from Worldwide Development Indicators (WDI).

4. Data Analysis & Interpretation

In this section, descriptive analysis is presented while taking the simple averages of 'Educational Expenditure Shares' and "Real Household Final

Consumption Expenditure Per Capita. A rising trend is found in both variables (positive relationship). The regression analysis may further analyze this relationship. The results are as shown in Table 4.1 and Table 4.2 respectively.

Table 4.1

Public Education Expenditures Shares and Household Final Consumption Expenditure Per Capita

Sr. No	Countries	Public Expenditures on Education	Real Household Final Consumption Expenditure Per Capita
	Low Public Educational Expenditure Developing Economies		
1.	Pakistan	10.05018	1.439585
2.	Egypt	11.57414	2.267684
3.	Bangladesh	14.05725	1.270891
	Middle Public Educational Expenditure Developing Economies		
4.	Morocco	19.41846	2.826381
5.	Iran	20.09486	2.029093
6.	Thailand	20.34193	3.525307
	High Public Educational Expenditure Developing Economies		
7.	Botswana	21.36168	3.85621
8.	Tunisia	21.03007	3.667434
9.	Indonesia	25.79214	3.777954

Table 4.2
Results of Difference GMM Panel data Specification

Variables	Coefficients
LHCEPC L1.	0.8186627
	(0.0000)***
EDUEXP	0.0022562
	(0.057)**
HEALTHEXP	-0.0001126
	(0.901)
RGDPPC	0.0000697
	(0.000)***
CPI	0.0000277
	(0.949)
UR	- 0.0043646
	(0.000)***
TO	0.1410972
	(0.107)*
Sargan Test	574.3188
	(0.0022)
AR(1)	-2.5417
	(0.011)
AR(2)	-.27819
	(0.780)
Countries	21
Observations	735

Note: ***, **,* represents at 1, 5 and 10 percent level of significance.
Probability values are in parentheses.

5. Discussion

Real Household Final Consumption Expenditure Per Capita (HCEPC) is the main dependent variable which tells about the living standard of the person or the family that based on their financial wellbeing. It is taken as a proxy of economic wellbeing. Household Final Consumption Expenditure is basically the expenditures extended by the household on the purchase of both durable and non-durable goods and services in order to meet their needs and achieve their respective satisfaction level (OECD, 2009). Household Final Consumption Expenditure Per Capita is taken in real form and then its natural log is taken.

Under normal and controlled conditions Household Final Consumption Expenditures Per Capita tends to increase, as it shows the improving financial condition of the individual and the society.

Expenditures on education (*EDUEXP*) is basically the spending or the expenditures which includes current, capital and transfers from both national and international sources are done on educational institution, educational administration and subsidies for private entities by the locals, regional and national governments (Eurostat, 2016).The present study shows that Education expenditures have a positive association with economic wellbeing. Study results are well matched with (Mallick et al*.,* 2016; Baldacci et al*.,* 2010; Hessami, 2010 and Angelopoulos et al*.,* 2007).

Government Expenditures on Health (HEALTHEXP) referred as the amount of resources or the finances directly allocated for the improvement of population's health status or further the distribution of health facilities and the goods and services of medical care among the individuals of the country (World Health Organization, 2006).The findings reveal negative and insignificant relation between government health expenditures with economic wellbeing. The results are not consistent with the work of (Halici et al*.,* 2016; Baca Campodonico et al., 2014; Boussalem et al., 2014; Asghar &Awan, 2012 and Maitra & Mukhopadhyay, 2012).

Real GDP per capita (RGDPPC) is taken to illustrate the income level of the individuals in a society. Moreover, household consumption levels apart from the other socio-economic determinants are highly influenced by their respective income levels. It is country's economic output per person that is measuring the total output of the country and then dividing it to the total population. Real GDP per capita which basically represent the each person's income level is expected to show the positive association towards economic wellbeing. Such positive association can be seen in the work of (Nicklaus, 2015; Ezeji &Ajudua, 2015; Adedeji & Adegboye, 2013).

Consumer Price Index (CPI) is used as a proxy for inflation. The persistent upsurge in the general price level highly affects the consumption patterns of the individuals in the society. Every rise in the inflation rate reduces the purchasing power of the individuals accordingly because with every rise in the inflation rate, the ability of the individual to buy goods and services reduces thus affecting the living standards of the inhabitant of the society (Anafo et al*.,* 2014). Inflation is also incorporated to show its impact of the household consumption expenditure per capita. Consumer Price Index (CPI) has showed positive but insignificant relationship with economic wellbeing. The findings are

not matched with the findings of (Anafo et al*.,* 2014, Burke & Ozdagli 2013; Bălăcescu & Zaharia, 2011; Casadio & Paradiso, 2010).

Unemployment rate (UR) significantly affects the consumption patterns of the individuals in the society as unemployment hit the income levels of the individuals. If the time span of unemployment increases then this leads to the more loss in the consumption of the households (Bentolila & Ichino, 2000). In order to analyze the effect on economic wellbeing, the inclusion of unemployment is important as unemployment is shown to have major and significant contribution towards the household final consumption expenditures per capita. The findings reveal that Unemployment rate negatively affects economic wellbeing and this result is consistent with (Campos & Reggio, 2014; Bentolila & Ichino, 2000: Dynarski & Sheffrin, 1987).

Trade Openness (TO) or trade liberalization policies are adopted by any country to have strong and significant influence on improving economy's growth as well as welfare of its households. Trade openness has a positive impact of the economy's aggregate welfare level but its impact on different economic agent is different. Some get positive benefits out of it by increasing their living standards while the other might get hurt by it (Cho & Diaz, 2008; Okodua & Alege, 2014). Trade openness is generally denoted as the reduction or the removal of barriers and restriction which are imposed on trade in form of tariffs, quotas, duties etc. and thus allowing the free trade among different countries (OECD, 2016). Findings of study reveal a positive tendency of trade openness to accelerate the individual's wellbeing. The positive relationship between trade openness and economic wellbeing is favored by (Okodua & Alege, 2014; Andersen & Babulla, 2008; Dao, 2015).

6. Conclusion

The results of panel estimation reveal a positive and significant relationship between public education expenditures and economic wellbeing. However, the impact of public health expenditures is insignificant. The unemployment rate negatively affects the real household consumption expenditure (economic wellbeing) which is clearly an indication of bad impact of unemployment rate over the performance of economy. The real GDP per Capita improves the real household consumption per capita which is a proof of psychological law of consumption by Keynes i.e. as the income level of economy rises, the consumption rises. We may conclude that if the public expenditures on education rise along with real GDP of the economy the economic wellbeing of people improves.

7. Recommendations

This research study recommends the following for the policy makers.

1. The share of public expenditure on education should be increased in order to enhance the economic wellbeing of the society.
2. The unemployment rate should be lowered to improve the real consumption capability of the individuals.
3. Real GDP growth can raise the real purchasing power and economic wellbeing.

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