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Education Expenditures and Economic Growth: Evidence from Ghana

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Abstract
This study investigated the relationship between education expenditure and economic growth in Ghana. Vector error correction and cointegration analysis are employed to test for the causal relationship between the variables for the period 1970 to 2012. The empirical results show a positive and significant long-run relationship between education expenditures and real GDP, gross capital formation as well labor force participation. The results indicate that education contributes meaningfully to the long-term growth of Ghana's economy. Also, in the short-run, Granger causality runs both directions between economic growth and education expenditures. The results may provide some insights into how the formulation and implementation of appropriate fiscal policies relating to education could help improve the quality of education and thereby contributes to economic development of Ghana. Additionally, the study may serve as a guide in the reform of Ghana's education policies leading to improved learning and educational outcomes.
Keywords: Economic growth, Education Expenditure, Vector Error Correction Model

1. Introduction

Education is often cited as an important determinant of economic growth and, as a result, plays a significant role in achieving national development and contributes to a country's economic growth (Barro, 2001). The crucial role it plays in national development strategies makes it one of the strategic investments a country can make in its citizens and it is crucial to reducing poverty and inequality. Education is a long-term investment that could translate into higher productivity for a country and as result developed and developing countries have emphasized the enhancement of the educational sector in their broad national development policies (Hussin et.al, 2012).

Countries across the globe are seeking to improve their human capital base by investing tremendously in education (Chandra, 2010; Pradhan, 2009; Lin, 2003). Ghana's commitment towards education has been tremendous. About significant part of Ghana's annual national budget (about 8.1% of GDP in 2011) have continuously been allocated to the educational sector and it keeps increasing for each budget session. Ghana's budget allocation to the educational sector increased by almost four percent (4%) to an estimated value of $3.4billion in 2012 (World Bank Report, 2012).

Several studies have emphasized the importance and contributions of education to economic growth and prominent among them are Romer (1990), Lucas (1988), Theodore Schultz (1961), Solow (1957) and Adam Smith (1776). The main theoretical approach for modeling the linkage between education and economic growth is the neoclassical growth models of Robert Solow (1957) and Romer (1990).

Given this background, this study assesses empirically the relationship between educational expenditure and economic growth in Ghana between 1970 and 2012. The paper is organized as follows: Section II presents a review of the literature; Section III presents the theoretical model; Section IV presents data sources and research methodology; Section V presents and discusses the empirical results. We conclude and summarize our findings in section VI.

2. Brief Country Profile of Ghana

Ghana is a country in the Sub-Sahara Africa with a population of 25.90 million and a population growth rate of about 2.9% as of July 2014. For the past three decades, Ghana has experienced a significant improvement in its economy and this is as a result of effective macroeconomic policies. This economic improvement has resulted in the re-categorization of Ghana as a lower middle-income country by the World Bank and other development partner agencies. Ghana's gross domestic product as of 2013 was $47.93 billion with a per capita GDP of $1,851. World Bank (2013) reports that Ghana's GDP has continually increased from almost $10 billion in 2005 to about $47.93 billion in 2013 indicating an increase of about 379.3%. Also, the service sector of the economy accounts for about 50% of GDP, the agricultural sector accounts for about 21.5% and other industries also account for 28.7% of GDP (World Bank 2013). Even though the service sector contributes significantly, the agricultural sector employs more than half of the workforce mainly small land holder (World Bank 2013). Ghana is well endowed with natural resources, but gold and cocoa has one of the major sources of foreign exchange.

Beyond this, Ghana started producing oil in 2010 and it is expected that this will boost its economic growth.

Education is very crucial to the overall development of Ghana and therefore Ghana has invested significantly in this sector of the economy. Ghana's budget allocation to the educational sector increased by approximately four percent (4%) to an estimated value of $3.4billion in 2012 (World Bank Report, 2012). From 1986-2011, education expenditure as a percent of total government expenditure ranged from 17.2% to 33.4% representing a growing trend. In comparing the growth rates of the education expenditure as a % of government expenditure from 1970-2012 to the Fast- Track Initiative target of 20%, it is important to note that Ghana has consistently met the target with the exception of 2008 (18.3%).

Additionally, within the ECOWAS sub-region Ghana is among the countries with the highest education expenditures as a percent of government spending. Furthermore, from 2006-2009, Ghana allocated 23.1% of its total government expenditure to education which ranked the country second among the ECOWAS countries in terms of government allocation of resources to education. Cote d'Ivoire was ranked highest with 24.6% of its total government expenditure allocated to education while Liberia was ranked the lowest with 12.1% of its total government expenditure allocated to education. This is illustrated in the figure 1 below.

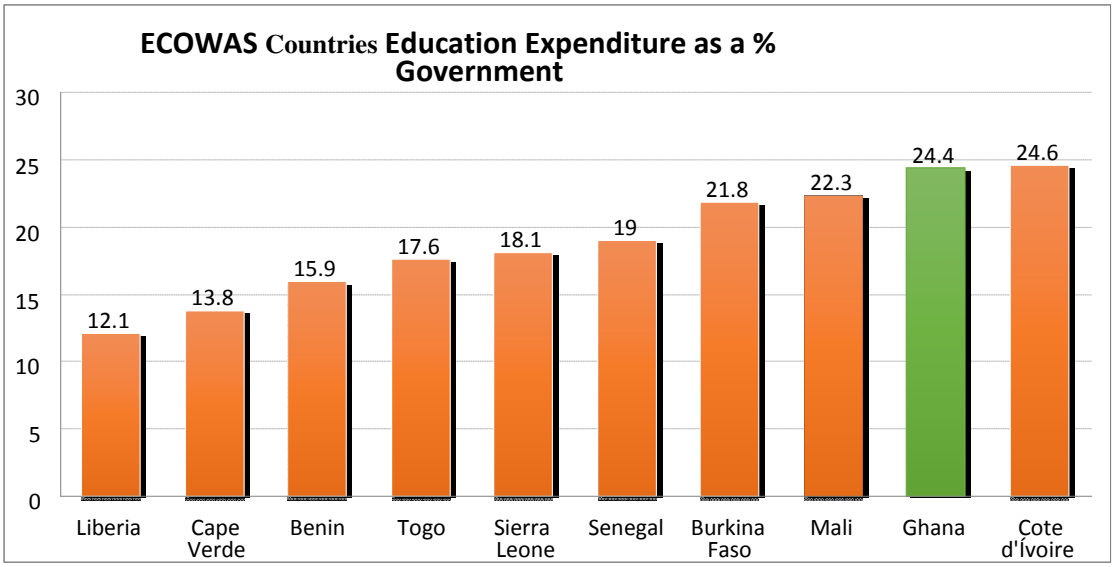

Figure 1: ECOWAS Countries Education Expenditure as a % of Total Government Expenditure
Source: UNESCO

The figure 2 below compares Ghana's education expenditure as a % of total government expenditure from 2006-2009, to Southern African Development community (SADC) countries. Ghana's budget allocation to education as a percent of total government expenditure (24.4%) was ranked the highest in comparison to the Southern African Development community (SADC) countries. The country with the least education expenditure as a % of total government expenditure was Mauritius with a value of 11.4%.

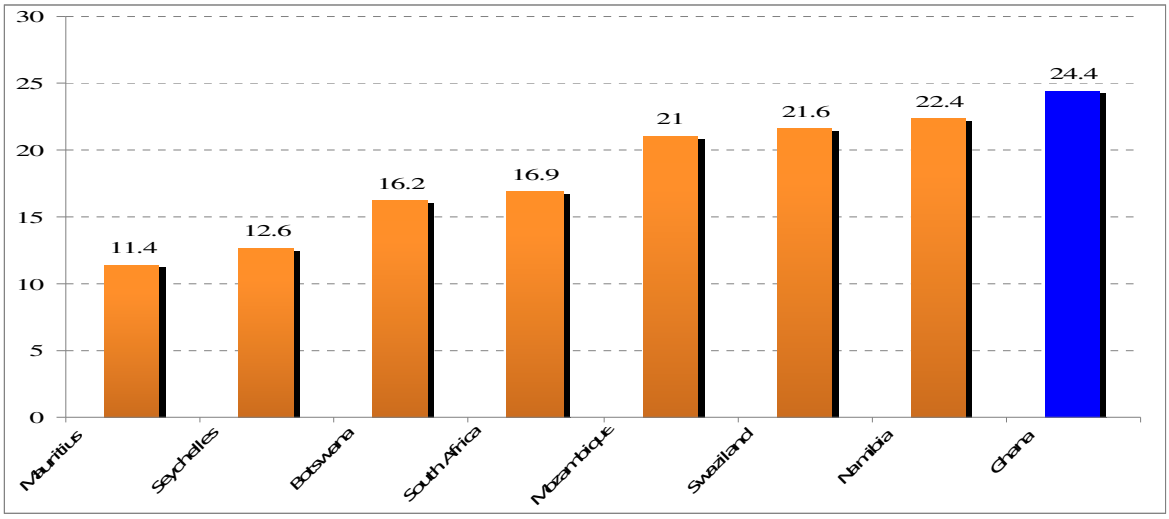

Figure 2: SADC Countries Education Expenditure as a % of Total Government Expenditure
Source: UNESCO

3. Literature Review

Numerous studies have been conducted on whether attainment of education can contribute significantly to the economic growth of a country. This is demonstrated through a large body of theoretical and empirical literature on the effect of education on economic growth. The empirical evidence suggested by this huge body of literature provides mixed and inconsistent results

Hong-Sang and Thorbecke (2003) assessed the effect of education expenditure on human capital, labor skills and economic growth in Tanzania and Zambia using the multi-sectoral Computable General Equilibrium model. The simulation results suggested that education can raise economic growth and that a well-targeted education expenditure can be effective for poverty alleviation. Okubal (2005) studied the relationship between economic growth, education expenditure and human capital over the period 1962-2002 using Vector Error Correction Model. The study found that there are both long run and a short-run relationship between education expenditures and economic growth in Uganda. Hussin et.al., (2012) examined the long run relationship and causality between government expenditure on education and economic growth in the Malaysian economy using a Vector Auto Regression model for the period 1970 to 2010. Findings from this study showed that economic growth (GDP) positively cointegrated with fixed capital formation, labor force participation and government expenditure on education. With regard to the short-run relation, it is found that there is a short-run bidirectional relationship between economic growth and education expenditures. The study indicates that education expenditure plays an important role in influencing Malaysia's economic growth. Chandra (2010) studied the relationship between economic growth and education expenditures for India over the period 1951-2009 using restricted vector autoregression method. The results indicated that there is a short run bi-directional link between education expenditure and economic growth for India. Other studies consistent with this view include Afzal et.al,(2010), Cullison (1993) and Barro (2001), Zhang and Casagrande (1998), Lin (2003), Tamang (2011), Baldacci et al (2008), Ogujiuba and Adeniyi (2005), Jorgenson and Fraumeni (1992).

Pradhan (2009) investigated the causality between public education spending and economic growth in India between 1951and 2001. The empirical investigation was carried out by Error Correction Modeling and the findings suggest that there is unidirectional causality between education expenditure and India's economic growth. The direction of causality is only from economic growth to education expenditure.

Otani and Villanueva (1993) evaluated the impact of education on economic growth for fifty-five (55) developing countries using time series data from 1970 to 1985. They found that education program and human capital investment such as vocational training and health training increases a country's output and per capita income. Fiszbein and Psacharopoulos (1992) assessed the impact of education expenditures on economic growth in Venezuela. The study found that investment in primary education have the highest impact on economic growth whereas higher education investments exhibit the least impact among the three levels of education.

Contrary to these studies, there are other studies that reported either a negative or no relationship between education expenditure and economic growth. Devarajan et al (1996) found negative correlations between education expenditures and economic growth in most of their estimates for 43 developing countries over twenty (20) years.

Other studies also found that education does not exert any impact on economic growth and work done by Benhabib and Speigel (1994) confirmed that there is weak evidence of a relationship between changes in educational attainment of the labor force and economic growth. Levine and Renelt (1992) found that government education expenditures are not robustly correlated with growth rates. Additionally, Blis and Klenov (2000) argued that it was too weak to conclude that education significantly contributed to economic growth. This finding is based on their study among the 52 countries between 1960 and 1990.

4. Theoretical Model

The econometric model for this study is a log-linear model which follows the neoclassical growth model by Solow (1957) and Romer (1989). The estimated model for this study is as follows:

$$InRGDP_t = c + \alpha InEDU_t + \beta InGCF_t + \gamma InLFPR_t \qquad (1)$$

Where; c is the constant term, RGDP is Real Gross Domestic Product, EDU is Government Expenditure on Education GCF is Gross Fixed Capital Formation and LFPR is Labor Force Participation Rate

5. Data, Methodology, and Estimation

5.1 Data Description

The study used time series annual data that spans 1970 to 2012. A total of four macroeconomic variables were used for the study (Table 1). The definitions and sources of each of the variables are described in Table 1.Table 2 presents a summary of the descriptive statistics using data averaged over 1970-2012.

Table 1: Data Description and Source

VARIABLE	DEFINITION	DATA SOURCE
RGDP	Real Gross Domestic Product which measures economic growth	World Bank
EDU	Education Expenditure as a proxy for Human Capital	World Bank
GCF	Gross Capital Formation as a proxy for Physical Capital	World Bank
LFP	Labor Force Participation as a proxy for Labor	World Bank

5.2 Research Methodology

The research methodology discusses the procedure that was employed to achieve the goals of this empirical study. First the time series data was analyzed to test for its stationarity using Augmented Dickey-Fuller (1979) and Phillip-Perron (1988) unit root tests. The stationarity test is relevant as most time series data are non-stationary and if this is not checked, running regressions with it, may yield to spurious regression (Owusu-Nantwi and Kuwornu, 2011). These two unit root tests determine whether the variables are stationary or not and also indicates the degree of integration. Performing this test correct for the spurious autocorrelation associated with time series data by adding lagged differenced terms on the right-hand side of the equation as indicated in equation 2 (Owusu-Nantwi and Kuwornu, 2011). The ADF test equation is:

$$\Delta Xt = \mu + \gamma T + \delta Xt\text{-}1 + \sum_{i=1}^{k} \lambda i\, \Delta Xt\text{-}1 + \varepsilon t \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where X_t represents the variable in question, T is the trend, k is the lag length and εt is a random variable assumed to be white noise.

This augmented specification is then used to test the following hypothesis:

H0: Y_t has a unit root/ non-stationary (H0: $\gamma = 0$)

Ht: Y_t has no unit root / stationary (H1: $\gamma < 0$)

Y_t is the variable at time t

Johansen multivariate cointegration test is performed after the unit root test when the variables are found to have no unit root or stationary at the first difference I(1). Furthermore, if the variables are cointegrated then the relationship may be interpreted as a long-run equilibrium relationship. Lastly, a Granger causality test using vector error correction model is estimated to determine the short-run causality among the variables. The short run granger causality test is measured by the Wald Test.

6. Empirical Results

6.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the macroeconomic variables. All the variables exhibit a positive mean values. Also, the sum squared deviation row represents the net change over the sample period. It shows that education expenditure increased by 4.07%. The education expenditure has a larger standard deviation among all the variables. In terms of skewness, education expenditure, gross capital formation and real GDP are positively skewed while labor force participation rate exhibits a negative skewness. The value for kurtosis in each variable is below the benchmark for a normal distribution of 3 which near normality.

The range of variation between maximum and minimum is quite logical and the mean-to-median ratio of each variable is approximately 1. The standard deviation compared to the mean is low which indicates small coefficient of variation. All the variables are approximately normally distributed as indicated by the Jarque-Bera statistics.

Table 2: Summary of Descriptive Statistics

	LEDU	LGCF	LLFPR	LRGDP
Mean	8.642289	9.369405	6.909228	9.963598
Median	8.453280	9.232870	6.923022	9.940984
Maximum	9.513991	10.13824	7.032583	10.26772
Minimum	8.181729	8.914480	6.767287	9.741074
Std. Dev.	0.430473	0.364997	0.078218	0.152688
Skewness	0.683285	0.756445	-0.247450	0.393162
Kurtosis	2.166884	2.330992	2.013589	2.124112
Jarque-Bera	2.454864	2.622393	1.167185	1.327757
Probability	0.293044	0.269497	0.557891	0.514851
Sum	198.7727	215.4963	158.9122	229.1628
Sum Sq. Dev.	4.076755	2.930905	0.134597	0.512897

Source: Authors Computation (2015) using E-Views 8

6.2 Unit Root Test Result

The ADF and PP unit root tests results are presented below in table 3. The test results reveal that all the time series variables are integrated of order one I (1). This indicates that the variables are stationary at the first difference I(1).

Table 3: Unit Root Test

Test	Augmented Dickey Fuller (ADF)				Phillip-Perron (PP)			
Variable	Level		First Difference		Level		First Difference	
	Intercept	Trend& Intercept	Intercept	Trend& Intercept	Intercept	Trend& intercept	Intercept	Trend& intercept
LEDU	1.44028 (0.9989)	-0.6373 (0.9713)	-6.2608 (0.000)***	-6.9319 (0.0000)***	1.8900 (0.9997)	-0.637 (0.9713)	-6.259 (0.0000)***	-6.982 (0.0000)***
LLFPR	-0.733 (0.8170)	-2.918 (0.1768)	-4.062 (0.006)***	-3.987 (0.0270)**	-1.657 (0.4378)	-1.853 (0.6440)	-4.062 (0.0058)***	-3.985 (0.0271)**
LGDP	2.6338 (1.0000)	-1.012 (0.9310)	-4.076 (0.003)***	-5.797 (0.0001)***	3.5067 (1.0000)	-0.156 (0.9920)	-4.089 (0.0027)***	-6.2142 (0.0000)***
LGCF	0.5857 (0.988)	-2.348 (0.3998)	-6.753 (0.0000)*	-7.138 (0.000)***	1.1236 (0.9971)	-2.307 (0.4211)	-6.786 (0.0000)*	-7.433 (0.0000)***

Source: Authors Computation (2015) using E-Views 8

***Significance level at 1% level of confidence, ** Significance at 5% level of confidence

6.3 Vector Error Correction Model (VECM) Analysis

6.3.1 Lag Length Selection Criterion

Table 3 presents the result for the lag length selection criteria. The study adopted four lag selection criteria (Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ)) were used for the analysis. All four selected criteria suggested a lag length of three (3). Therefore, the lag length of three (3) were used for the cointegration test and vector error correction analysis (VECM).

Table 4: Lag Length Selection Test

Lag Length Test	Final Prediction Error (FPE)	Akaike Information Criterion (AIC)	Schwarz Information Criterion (SIC)	Hannan-Quinn Information Criterion (HQ)
0	4.20e-11	-12.54200	-12.34285	-12.50312
1	3.25e-15	-22.05230	-21.05657	-21.85793
2	2.21e-15	-22.67303	-20.88071	-22.32315
3	2.10e-16*	-25.74943*	-23.16053*	-25.24405*

Source: Authors Computation (2015) using E-Views 8

6.3.2 The Cointegration Test

Table 5 presents the Johansen multivariate cointegration test result. Cointegration test allows for the testing of long-run equilibrium relationships (cointegration) among the variables (Chandra, 2010). The results presented in Table 5 consist of both the trace and maximum Eigenvalue test. These tests determine the number of cointegration vectors. Both the trace test and maximum Eigenvalue test tests the null hypothesis that the number of cointegrating vectors is less than or equal to 0, 1, 2, or 3. For each case, the null hypothesis is tested against a

general alternative.

Table 5: Johansen Cointegration Test

Model	Null Hypothesis	Trace Statistic	Critical Value (5%)	Maximum Eigen	Critical Value (5%)	Results
Lag Length: 3#	r ≤ 0	61.24964	47.21	30.29826	27.07	Standard trace showed two cointegration vectors and Maximum Eigen values showed one cointegration vectors
	r ≤ 1	30.95138	29.68	16.37208	20.97	
	r ≤ 2	14.57929	15.41	11.18325	14.07	
	r ≤ 3	3.396042	3.76	3.396042	3.76	

Source: Authors Computation (2015) using E-Views 8
*Significant at 5% level of confidence, Critical level obtained from Osterwald-Lenum (1992)
#: See Table 4.

From the result below, the trace test statistic for the null hypothesis of number of cointegration (H_o: r=0) is 61.2494. This value is above the critical value of 47.21 at five percent (5%) significance level and therefore we reject the null hypothesis of no cointegration in favor of the alternative hypothesis.

Also for the maximum Eigenvalue test the null hypothesis for no cointegration is 30.293 which is greater than the critical value of 27.07 at five percent (5%) significance level. Therefore, the null hypothesis is rejected in favor of the alternative hypothesis of cointegration. For r ≤ 1 for both trace test and maximum Eigenvalue, the null hypothesis for both are rejected in favor of the alternative hypothesis of the present of cointegration

Contrary to the above discussion, for r≤2 and r≤3, the null hypothesis for both trace test statistic and maximum Eigenvalue are not rejected at five percent (5%) significance level because the trace test statistic and maximum Eigenvalue test values are less than the critical values. Thus, there are two cointegrating relationships among the variables. Cheung and Lai (1993) suggested that the rank will be dependent on the trace test results because the trace test showed more robustness to both skewness and excess kurtosis in the residual.

6.3.3 The Long-Run Relationship

Table 6 presents the results of the normalized long-run relationship based on the model discussed above. The estimates of the long run relationship as presented in the table above shows that education expenditure (LEDU), gross capital formation (LGCF) and labor force participation rates have positive effects on Real Gross Domestic Product (LRGDP) and are statistically significant. These results are consistent with other studies such as Chandri (2010), Blankenau and Simpson (2003), Bose, Haque and Osbon (2003). The coefficients in the long-run relationship are long run elasticities. This indicates that each coefficient measures the corresponding magnitude or the extent of change in the dependent variable following a unit or percentage change in a particular explanatory variable. Therefore, the measure of elasticity indicates that real GDP is elastic with respect to education expenditure, gross capital formation, and labor force participation.

Table 6: Estimates of Long-Run Cointegration Model

Dependent Variable (LGDP)	Independent Variables			
	LEDU	LGCF	LLFPR	C
Coefficient	0.095070*	0.101719*	2.118732*	4.552929
t-value	[5.20548]	[4.00580]	[29.0873]	

Source: Authors Computation (2015) using E-Views 8

The long-run Granger causality result is presented in Table 7 and is identified in the error correction term (ECT-1) for each variable in the Table. The result indicates that the error correction term (ECT-1) for real GDP variable is negative and statistically significant. This implies that the model is consistent and stable meaning that the series cannot drift too apart and convergence is achieved in the long run. The speed of adjustment of the error correction is -0.395 and this implies that the system correct its previous level of disequilibrium by 39.5% within one period. That is 39.5% of previous year's real GDP disequilibrium from the long run will be corrected.

Also, the error correction term (ECT-1) in the EDU equation is 0.28 and statistically significant implying that 28.12% adjustment is needed to correct its previous year of disequilibrium. Additionally the ECT-1 for GCF and LFPR are 0.196 and 0.055 respectively and statistically significant. This implies that 19.6% and 5.5% of adjustment for GCF and LFPR respectively is required, in the long run, to correct its respective previous year of disequilibrium.

6.3.4 Short-run Granger causality

The Short-run Granger causality test result is presented in the same Table 7. The Wald test is conducted to investigate the short-run causal relationship. The null hypothesis states that there is no Granger causality and also the alternative hypothesis states that Granger causality exists.

The results suggest that there is a significant indication that there is a causal relationship running from education expenditure to real GDP. That is education expenditure is the Granger causality of the real GDP in the short run. Thus, in Ghana, education expenditure determines real GDP in a linear way. This indicates that short run real GDP will be affected by education expenditure. The coefficients for both gross capital formation (LGCF) and labor force participation (LLFPR) are insignificant and this indicates that these variables are not important for explaining the variation in real GDP in the short run.

Additionally, real GDP and Labor force participation are the Granger causality of education expenditure in the short run. This indicates that a causal relationship is identified between education expenditure and real GDP and labor force participation and it is statistically significant. This indicates that real GDP and labor force participation Granger cause education expenditure. The coefficient for gross capital formation is insignificant indicating that gross capital formation do not Granger-cause education expenditure. In summary, the causal link between real GDP and education expenditure is bidirectional indicating that the causation runs from real GDP to education expenditure and also from education expenditure to real GDP. This is because the P-values in both cases are less than the assumed critical values. This implies that education expenditure in the past years contributes to the economic growth of Ghana and vice versa.

Table 7: Vector Error correction Model (VECM)

Dependent Variable	Independent Variables –Chi-Square Value (Wald Test)				t-statistic
	LGDP	LEDU	LGCF	LLFPR	Error Correction Term (-1)
LGDP		6.861604 (0.0324)**	0.292275 (0.8640)	4.116290 (0.1277)	-0.395004 [-2.81659]
LEDU	12.47191 (0.0020)***		2.534349 (0.2816)	8.085737 (0.0175)***	-0.283432 [-2.30595]
LGCF	2.803889 (0.2461)	3.301849 (0.1919)		9.635198 (0.0081)***	0.196193 [2.01328]
LLFPR	11.13675 (0.0038)**	11.79964 (0.0027)**	0.347548 (0.8405)		0.055118 [3.07300]

Source: Authors Computation (2015) using E-Views 8

***1%significance level, **5% significance level, *10% significance level ( ) probability and [ ] t-value

Additionally, the results exhibit a significant causal link between gross capital formation and labor force participation. That is to say, labor force participation Granger causes gross capital formation in the short run. This result indicates that in the short run, variation in gross capital formation is determined by variation in the labor force participation. In the economic sense, if the labor force participation increases in the short run, productivity increases and therefore firms earn economic profits which enable them contribute significantly to capital formation in terms of investing in physical capital. However, the coefficients for both real GDP and education expenditure in the short run are insignificant indicating that they do not Granger-cause gross capital formation. Therefore, the causal link between gross capital formation and labor force participation is unidirectional indicating that the causation run from labor force participation to gross capital formation but not vice versa.

Finally, real GDP and education expenditure Granger cause labor force participation. This exhibits a causal link between labor force participation and real GDP as well as education expenditure. This indicates that the causal link between labor force participation and real GDP is unidirectional indicating that the causation run from real GDP to labor force participation and not from labor force participation to real GDP. For education expenditure, the causal link is bi-directional meaning the causation run from education expenditure to labor force participation and also from labor force participation to education expenditure.

In conclusion, the results of this study are consistent with other studies and that the direction of causation running from education expenditure to economic growth and vice versa is identified by other studies such as Hussin (2012), Bose et.al, (2003), Basu and Bhattarai (2009), Parmani (2009), Okubal (2005), Al-Yousif (2005), Blankenau and Simpson (2003), Bose et.al, (2003) and Basu and Bhattarai (2009)

7. Conclusion

This paper investigated the long run relationship between education expenditure and economic growth in Ghana. The study further examined the causal links among the variables. In this study, vector error correction and cointegration analysis is employed to test for the causal relationship between the variables for the period 1970 to 2012. The empirical results reveal that there is a positive and significant long-run relationship between real GDP and education expenditure, gross capital formation as well labor force participation. Also, in the short run, education expenditure Granger cause economic growth and vice versa.

The result indicates that education improves the standards and quality and productivity of the labor

force in Ghana and thereby contributes to the economic development and growth of Ghana. Implying that education is essential to Ghana's economic growth and human capital capabilities.

At the policy level, this study may provide some insights on how the formulation and implementation of appropriate fiscal policies relating to education could help improve the quality of education and thereby contributes to economic development of Ghana.

In addition, the positive and statistically significant relationship between education expenditure and economic growth is important and clearly shows the relevance of education to the sustainable economic development of Ghana. However, Ghana has a high youth unemployment situation in Ghana and therefore education expenditure can be employed effectively to address this challenge. This involves improving the quality and the accessibility of education in Ghana and it involves redesigning of the education curriculum to incorporate entrepreneurship training to ensure that the youth are to develop innovative business ideas and be able to transform those ideas into business opportunities. Government through fiscal policies could provide seed capital to support young entrepreneurs to transform their business ideas to business ventures. This could be through revolving loan fund, guaranteed loans, and venture capital. Also partnership between the educational sector and the industry which is relevant as it will enable students to have practical experience through internships and this will better prepare them for the job market.

In the future, this study could be extended to include quality of education variables to assess how these measures have influenced the labor force and thereby its impact on economic development in Ghana. Furthermore, future study could assess which specific level or levels of education (primary, secondary or tertiary education) contributes mostly to Ghana's economic growth. This will enable policymakers to direct resources towards which level of education contributes less to the economic development of Ghana.

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