Payoffs of Education Expenditure In Botswana: Long Run Economic Growth Implications

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Abstract

Currently, Botswana is one of high income economies in Africa. Since independence in 1966, the government has put emphasis on the development of human capital through education and skills development of the citizens. The country has dedicated much of the government funds to education to the extent possible while the contribution and payoffs of education expenditure have been limited. This study examines data from 1960-2013 and attempts to link GDP and education expenditure in a long run framework. It has been noted that member states of the United Nations are under pressure to achieve development goals and countries like Botswana need to estimate not only public spending requirements and the macroeconomic implications of financing them, but also the potential social and economic rewards associated with education. Estimations show that at least 40% of people in developing economies are illiterate and governments intend to leave no stone unturned in eliminating this problem. This study applies the Johansen cointegration test and Granger causality procedure to examine the long run affiliations of the variables. Astoundingly, for Botswana economy, there is no long run comovement between GDP and education expenditure for the period 1960-2013. It is advised to review the quality of education and the programmes offered by the local institutions.

Keywords: education expenditure; GDP; development goals; cointegration; causality.

Introduction

Studies pertaining to the effects of government expenditure on education have reported positive effects in various economies (Balaev, 2014; Manafi, & Marinescu, 2013; Voon, 2001; Burja, & Burja, 2013; Sylwester, 2000; Cheung & Chan, 2011; Li & Huang, 2009; Sanchez & Cicowiez, 2014). Botswana has been keen on improving accessibility of education therefore it has provided the citizens with education from primary to tertiary levels. Comparatively, the government has channeled the largest proportion of the national budget to the Ministry of Education and Skills Development. The purpose of this study is derived from this allocation of funds and this study intends to find out if education expenditure has any significant contribution to the national output. Inclusively, the education of citizens is today not only a right, but also a need since self-improvement is limited under conditions of illiteracy. This may in the end contribute in the alleviation of the soaring poverty rates. Botswana commenced in 1966 as one of the least developed economies to become one of Africa's robust income economies. Botswana after gaining independence in 1966, intended to have its own well trained work force to reduce dependency on other economies. The concern which propelled the study was also that unemployment in Botswana especially among graduates has been really alarming standing at 18% from 2010 to 2013. To the extent possible, this study intends to consider the education expenditure and determine how it relates with economics growth. Botswana was founded on the principles of multiparty democracy, which can be extrapolated that political disturbances have a limited effect on economic growth (Bollen, 1979; Cutright, 1963; Jackman, 1973; Lerner, 1958; Lipset, 1959). These studies reported a positive relationship between economic development and democracy. An overview of the extant literature shows that Botswana is not the only country which prioritizes education. Member states of the United Nations are engulfed with the task of achieving the Millennium Development Goals. Governments need not only examine public expenditure requirements and the macroeconomic implications of financing them, but also the potential social and economic benefits of pursuing them. However, Sanchez & Cicowiez (2014) reported that it takes time for better education and health to translate into higher productivity if any because learners and graduating classes need to go through one or more education cycles. Still, Sanchez & Cicowiez (2014) warned that the contributive power of education can also be limited if the skilled workers are left unemployed, for that reason there will be little contribution to the GDP.

This study is an extension to the extant literature. It has been noted that previous studies tested the affiliation between GDP and education expenditure without using techniques that examine the relationship in a long run framework. This study uses data from 1960-2013 to examine the relations using econometric techniques. The plan of this paper is as follows. Next is the literature review which ends with a synthesis of the assessed studies. Logically, then follows the research hypotheses and a description of the data set. Next will be the methodology which will be followed by hypothesis test results. Subsequently, a discussion of the results is generated. Lastly is the conclusion and practical implications of the study.

Literature Review

According to the World Bank (2004), public expenditure on education as a percentage of the GDP indicates public spending based on percentage of GDP on public education plus subsidiaries to private education at the primary, secondary and tertiary level. It has been found out that returns to investment in education have been addressed through different models (Heaton & Throsby, 1997; Johnson & Chow, 1997; Ashenfelter & Krueger, 1994; Psacharapoulos, 1994; Tilak, 1993; Byron & Manaloto, 1990; and Woodhall, 1987). According to Takii & Tanaka (2009) economists consider that education can improve human capital and raise the GDP. Several researchers estimate human capital power on economic growth from the acquisition of education attainment (Mankiw et al, 1992). From this premise the literature reviewed is structured as follows: studies affirming the positive affiliation between GDP and education expenditure and the factors affecting economic growth within the domains of social and political development.

Education and Economic Growth Relationship

Drawing from Mankiw et al (1992) economists have been inquisitive to find out if increasing education expenditure will raise the economic output of the country. This stems from the idea that a trained workforce is able to better exercise their tasks and become effective and efficient. This in overall should raise the GDP of the country concerned. Baleav (2014) aimed to determine how the time delayed effects of economic development, production and gender influence political democracy since literature showed inadequate understanding of the lagged effects. The study ran estimates using the ordinary least squares (OLS) for each predictor with a systematic analysis of the distribution of the lagged effects. The results reported that economic development, education, and gender have 3 trajectories of the time delayed effect and economic development has long run effects (Baleav, 2014). It was further indicated that education expenditure produces continuous effects regardless of the timing. The study supports the idea that higher education expenditures by the government contributes to an increase in the economy.

Baleav (2014) added that education is crucial to the economy as young adults learn various subjects and gain knowledge that will ideally empower them as active citizens which in essence, should have positive implications on the GDP. While Baleav (2014) focused on a range of macroeconomic factors, Sanchez & Cicowiez (2014) aimed to determine general equilibrium models to quantify tradeoffs and payoffs from investing in human development. It is noted that countries are in pursuit of Millennium Development Goals (MDG) and improved human development and capacities is cradle to such plans expected to be met by 2015. While challenges as poverty, hunger, diseases and gender inequalities are critical, empowering the populations of each country with education seems to alleviate the earlier reported problems and an educated individual is a positive contributor to the economy as a whole. Sanchez & Cicowiez (2014) reported that achieving more rapid economic growth in the midst of a depressed economy is proving to be a significant challenge for developing economies. Drawing from this, governments need to estimate not only public spending requirements and the macroeconomic implications of financing them, but also the potential social

and economic rewards (Sanchez & Cicowiez, 2014). Sanchez & Cicowiez (2014) says that investment in schools whether it is represented by the number of years of education of the population or education expenses is a policy typically used by governments to build human capital. It has been found to be positively correlated with GDP growth in different economies drawing from Klenow & Rodriguez-Clare (2005). Even though the relation between GDP and education spending has been affirmed above, Sanchez & Cicowiez (2014) flagged that skilled graduates can affect the aggregate output of a particular country if they are employed by the different sectors of the economy. Thus a country can spend large sums of money in education and receive no payoff if the citizens are not employed by the different sectors of the economy. Li & Huang (2009) added to the affirmation of the positive affiliation between education spending and GDP by intending to examine the augmented Mankiw et al (1992) models which consider both health and education expenditure in the framework of the Chinese economy. The study considered the relationship between per capita real GDP growth and physical and human capital in the production rates of the Chinese economy using provincial data from 1978-2005. Similar to Balaev (2014) the study used the ordinary least squares and found fixed effect panel data estimation results from provinces in Western China. Not surprisingly, the empirical evidence held that both health and education have positive significant effects on economic growth (Li & Huang, 2009). However, Todaro (2000) estimated that 40% of the citizens in developing economies are illiterate, 25% of children of age between 6-12% are not able to attend primary school and 80% of the children between 12-18 years are not even secondary schools. Following Li & Huang (2009) it was found out that education has a strong economic growth impact. This therefore explains the reason why more government funds have been channeled to education than in health for example in terms of cost analysis. Cheung & Chan (2011) aimed to find out the relationship between competitive motives and happiness in several economies. The study used regression analysis and Sobel tests and testified that public expenditure was found to be a mediation effect between competitive motives and happiness. According to Cheung & Chan (2011) countries with high competitiveness motives had low public expenditure on education and thus low happiness scores. Cheung & Chan (2011) further analyzed that if more money is spent on education, more children will have the opportunity to receive it which is an investment on the part of the government.

Still, Manafi & Marinescu (2013) highlighted that governments should invest more in lifelong learning and training in order to adapt permanently the workers skills to changing labor market conditions considering the long run implications of the undertrained workers on the overall output. Voon (2001) also added to the extant literature by examining aggregate production benefits from capital improvements due to the investment in higher education which was in contrast to studies that focused on using individual wage increment approach as the basic measurement. The study examined the adjustment factors and found out that the social rules of returns to education were reported to be smaller than the rates of returns. It was also found out that in Hong Kong, social returns in higher educations have declined rapidly over the last ten years. Astoundingly, the rate of returns was also found to be smallest even at the highest education level. Sylwester (2000) reported that there might be costs upon economic growth associated with the role of human capital

and that public expenditures are positively associated with future economic growth. While many countries have been struggling with economic development policies, Burja & Burja (2013) stipulated that in order to boost sustainable development it is necessary for countries to encourage the increase of human capital values, macroeconomic development and skills especially in the case of Romania.

Potential Economic Growth Inhibitors

Section 2.1 above only attempted to review the relationship between GDP growth and education spending in Botswana while overlooking potential inhibitors of GDP. Takii & Tanaka (2009) attempted to determine how different education systems affect GDP by examining the diversity of human capital by country an overlapping generation models in which agents are heterogeneous in income and innate ability. Relatively, according to Takii & Tanaka (2009) the diversity of human capital on GDP has not been given priority. The study to the extent possible, evidenced that the diversity of human capital induced by heterogeneity dynamics can increase the GDP. Drawing from this study, even though GDP is expected to rise with high education expenditure, the diversity of the workforce is also crucial in the analysis of such relationships. Groot & Van Den Brink (2007) for instance, ruled that education and health are the most important investment in capital. From this study it was highlighted that education and health have a considerable impact on individuals and there is mutual relation between education and health. In extension, Groot & Maasen Van Der Brink, (2003) conveyed that the average return to a year of education is between 6-8%. Effectively, it has been noted by Chen & Liu (2013) that most variations in China's macroeconomic performance came largely from business cycles using trigonometric and transition equations.

The discussed literature generally supports the positive relationship between GDP growth and education expenditure (Balaev, 2014; Manafi, & Marinescu, 2013; Voon, 2001; Burja, & Burja, 2013; Sylwester, 2000; Cheung & Chan, 2011; Li & Huang, 2009; and Sanchez & Cicowiez, 2014). It will not be wise to overlook other factors which may affect the GDP within the dimensions of the social circle such as diversity of the workforce (Takii & Tanak, 2009) and political factors. This study attempts to determine if there is positive impact of education expenditure on the overall economic growth (GDP) using econometric techniques. This study uses data from 1960-2013 to study the significance of education on the Gross Domestic Product. Implications of this relationship will be imperative for Botswana, which is a developing economy aspiring to be self-sufficient in all sectors.

Research Hypotheses

Drawing from the previously discussed literature, there is a consensus that there is a positive relationship between GDP sustainability and education spending (Balaev, 2014; Manafi, & Marinescu, 2013; Voon, 2001; Burja, & Burja, 2013; Sylwester, 2000; Cheung & Chan, 2011; Li & Huang, 2009; and Sanchez & Cicowiez, 2014). The other authors have also attributed GDP instabilities to various factors such as the type of government, diversity of the workforce, and business cycle fluctuations. From this platform it is hypothesized that:

H1 *GDP trends positively with education expenditure*

H2 *GDP leads education expenditure.*

Data Description

The data for the study was obtained from the International Financial Statistics and Global economy which is an open educational resource in world economy responsible for information dissemination pertaining to macroeconomic indicators for all countries. The study examines data from 1960-2013 for Botswana's GDP and education expenditure. Botswana is an African middle income economy which has experienced robust economic growth commencing as one of the poorest countries in the world before and after independence in 1966. From the descriptive statistics, the mean GDP was $3.87 billion for the period 1960-2013 while education expenditure averaged 0.842 $billion for the period under examination. The definition in terms of how Botswana calculates the annual expenditure on education was obtained from Botswana Financial Statistics which are central bank (Bank of Botswana) monthly publications on key economic performance indicators. In terms of the distribution properties of the data set, the summary statistics show that the set is highly dispersed for GDP, stipulating a flat distribution (platykurtic) with kurtosis coefficients greater than 3 for GDP ($3.28 > k > 3$). The kurtosis coefficients for expenditure in education were reported to be 2.47 which reports that the data is concentrated around the mean such that it is highly peaked (leptokurtic). There were no modifications to the data set. In terms of skeweness, the data set was not symmetric, registering positive skewness coefficients for both GDP and education expenditure (1.17 & 0.79). Hence the data set does not exhibit normal distribution properties. Table 1 shows descriptive of the data set. (Figures in U$ billions).

Table 1: Descriptive Statistics of The Data Set as from 1960-2013

STATISTIC	GDP	EDUC. EXPENDITURE
Mean	3.87	0.84
Median	1.70	0.43
Maximum	15.30	2.91
Minimum	0.030	0.01
Std Dev.	4.47	0.88
Skeweness	1.17	0.79
Kurtosis	3.30	2.47
Jarque-Bera	12.43	6.19
Probability	0.001	0.045
Sum	208.72	45.50
Sum. Sq. Dev.	1060.81	41.30
Observations	54	54

Methodology

Sylwester (2000) considered expenditure for public education as a fraction of the GDP which determines education expenses in period *"t"* denoted by *"e"* and growth rate of output per capita during period *"t"* denoted by *"g"*. The models took the form

$$e = f[y(+),h(?).dem(+),pop(-),x] + c^{*}\ ineq \qquad (1)$$

$$g = j[y(-),h(+),e(-),e_{t-1}(+),z] + b^{*}\ ineq \qquad (2)$$

Where according to Sylwester (2000) $f[*]$ and $j[*]$ are both linear functions of the respective variables. However a Voon (2001) measured the relation by using models based on the average wage or production of the graduate or non-graduate worker. The labor force adjustment model was represented as

$$\Phi_t = [(\omega_s(\gamma_t - \gamma_{t-1}) + \omega_u(\gamma_{t-1} - \gamma_t)/[\gamma_{t-1}\omega_s + (1 - \gamma_{t-1})\omega_u \qquad (3)$$

For this study it has been noted that the above mentioned models do not provide the long run relationship assessment between education expenditure and the GDP. It is from here that the study takes the stand of using the econometric methods: cointegration and causality tests to examine the statistical drifts of the variables in a long run framework. Following Bank of Botswana (2011) education expenditure for this study was defined as

$$EXP_{(g)} = y_1|\eta_t| + y_2|\eta_t| + y_3|\eta_t| \qquad (4)$$

Where: $y_1|\eta_t| =$ recurrent expenditure conditional upon budget conditions at the time *"t";* and $y_2|\eta_t| =$ development expenditure conditional upon budget conditions at the time *"t"* and $y_3|\eta_t| =$ government net lending conditional upon budget conditions at the time *"t"*

GDP for Botswana's economy was defined as indicated by the Table 2.

Table 2: Botswana's GDP determinants[1]

Government Final Consumption
Central
Local
Household Final Consumption
Non-profit services
Household (marketed)
Household (non-marketed)
Net Increase in Inventories
Livestock
Minerals
Other
Gross Fixed Capital Formation
Construction
Machinery & Equipment
Transport & Equipment
Mineral Prospecting
Gross Domestic Expenditure
Exports
Exports of services
Exports of goods
Total exports (goods & services)
Imports
Import of goods
Imports of services
Total imports (good & services)
Net errors & omissions
GDP at current prices

[1]*as reported by Bank of Botswana (central bank)*

Cointegration Analysis

Hypothesis 1 postulated that GDP trends positively with education expenditure. The Johansen cointegration test was selected to test the long run comovement of the variables. Following Granger (1969) a set of $I(\delta)$ variables is said to be cointegrated or $CI(\delta,\ d)$ if there exists a linear combination, that is $I(\delta - d)$ for $d > 0$. For this study, a VECM of this form will be considered

$$\Delta X_t = \Pi X_{t-k} + \sum_{i=1}^{k-1} \Gamma_i X_{t-1} + \phi D_t + \varepsilon_{it} \qquad (5)$$

Following Lasak (2010), the matrix X_t is a vector of $I(1)$ series of order $p \times 1$ and ε_{it} is a $p \times 1$ vector of Gaussian error with variance–covariance matrix Ω and Π, Γ_1,..... Γ_{k-1}, ϕ are freely varying parameters. Then when X_t is cointegrated we will have the reduced rank condition

$$\Pi = \alpha\beta' \qquad (6)$$

The constant matrices α and β' are defined as $p \times r$ having rank r, which will represent the error correction and the cointegrating equations respectively. The deterministic vector was defined as

$$D_t = \mu_0 + \mu_1 t \qquad (7)$$

The trace test was defined as

$$LR_{tr}(r|k) = -T \sum_{i=r+1}^{k} \log\left(1 - \lambda_i\right) \qquad (8)$$

And the maximum-eigen value test was defined as

$$LR_{max}(r|r+1) = -T\log\left(1 - \lambda_{r+1}\right) \qquad (9)$$

$$= -T \sum_{i=r+1}^{k} \log\left(1 - \lambda_i\right) - \left(LR_{tr}(r+1|k)\right) \qquad (10)$$

$$= LR_{tr}(r|k) - LR_{tr}(r+1|k) \qquad (11)$$

Causality Analysis

Hypothesis 2 postulated that GDP predicts government expenditure. The Granger causality test was selected to test for pairwise causality. If I allow EXP_t to be government expenditure at time *"t"* and GDP_t to be GDP at time *"t"* then following Granger (1969) if the two variables (GDP_t, EXP_t) are strictly stationary GDP_t will Granger cause EXP_t if past and current values of GDP_t contain additional information on future values of EXP_t (Karagianni et al, 2012). If I then designate $F_{GDP,t}$ and $F_{EXP,t}$ to be information sets of observations of GDP_t and EXP_t for the time *"t"*, GDP_t will then Granger cause EXP_t if

$$\left(GDP_{t+1}.....GDP_{t+1}\right) \Big| \left(F_{EXP,t},\ F_{GDP,t}\right) \sim \left(GDP_{t+1}.....GDP_{t+1}\right) \Big| \ F_{GDP,t}\right) \qquad (12)$$

Then for the reverse causality, EXP_t will Granger cause GDP_t if

$$\left(EXP_{t+1}.....EXP_{t+1}\right)\Big|\left(F_{GDP,t}, F_{EXP,t}\right) \nsim \left(EXP_{t+1}.....EXP_{t+1}\Big| F_{EXP,t}\right) \quad (13)$$

allowing $\nsim$ to denote equivalence in the distribution and $k \geq 1$. Failing to reject the null (H_0):$\alpha_{21} = \alpha_{22} \cdots = \alpha_{2k} = 0$ implies that GDP_t does not Granger cause education expenditure (EXP_t). Similarly, failing to reject the (H_0):$\beta_{11} = \beta_{12} \cdots \beta_{1k} = 0$ will then signify that education expenditure (EXP_t) does not Granger cause GDP_t. However, following Granger (1969) if cointegration exits between GDP_t and EXP_t the error correction models for testing causality will then be

$$\Delta y_{1t} = \alpha_0 + \delta_1(y_{1t-1} - \gamma y_{2t-1}) + \sum_{i=1}^{k} \alpha_{1t} \Delta y_{1t-i} + \sum_{i=1}^{k} \alpha_{2i} \Delta y_{2t-i} + \varepsilon_{1t} \quad (14)$$

$$\Delta y_{2t} = \beta_0 + \delta_2(y_{1t-1} - \gamma y_{2t-1}) + \sum_{i=1}^{k} \beta_{1t} \Delta y_{1t-i} + \sum_{i=1}^{k} \beta_{2i} \Delta y_{2t-i} + \varepsilon_{2t} \quad (15)$$

Hypothesis Test Results

Hypothesis 1 postulated that GDP trends positivley with education expenditure. The result of the trace test reports ρ-values of 0.50 and 0.65 for the period 1960-1989. Since the ρ-values are greater than the critical level of 0.05 (0.5> ρ >0.05) and (0.65> ρ >0.05) the hypothesis was rejected. For the period 1990-2013, the ρ-values of 0.06 and 0.12 which are both greater than the critical level of 0.05 were reported. In consequence the hypothesis was rejected. Table 3 shows results of the Trace test.

Table 3: Trace Test Results[3]

Hypothesized No. of Coint. Vectors	Eigenvalue	Trace Statistic	Critical Value[1]	ρ-values[2]
		1960 - 1989		
0	0.29	7.70	15.50	0.50
1	0.01	0.20	3.84	0.65
		1990- 2013		
0	0.36	15.0	15.50	0.06
1	0.08	2.41	3.84	0.12

[1]*critical level of 0.05*
[2]*based on the MacKinnon-Haug-Michelis (1999) ρ-values*

[3]as computed by EViews 7

The maximum-eigen value test was also carried out to determine the number of cointegrating equations. For the period 1960-1989, the ρ-values reported were 0.09 and 0.12 which are both greater than the critical level of 0.05 thus the hypothesis was rejected. Similarly for the period 1990-2013 the ρ-values reported were 4.32 and 0.65 which are both greater than the critical level of 0.05 (4.32> ρ >0.05) thus the hypothesis was still not suppoted. Table 4 shows results of the maximum eigen value test.

Table 4: Maximum Eigenvalue Test Results[3]

Hypothesized No. of Coint. Vectors	Eigenvalue	Max-Eigen Statistic	Critical Value[1]	ρ-values[2]
		1960 - 1989		
0	0.36	12.54	14.30	0.09
1	0.082	2.41	3.84	0.12
		1990- 2013		
0	0.29	7.50	14.30	4.32
1	0	0.20	3.84	0.65

[1]critical level of 0.05
[2]based on the MacKinnon-Haug-Michelis (1999) ρ-values
[3]as computed by EViews 7

Hypothesis 2 postulated that GDP predicts government expenditure on education. The results of the Granger causality test for the period 1960-1989 reported ρ-values of 0.85 and 0.21 with F-statistics at 0.16 and 1.67. The ρ-values were significantly greater than the critical level of 0.05 therefore the hypothesis was rejected. For the period 1990-2013 the ρ-values reported were also greater than the critical level of 0.05 that is (0.63 & 0.33) thus the hypothesis was rejected. The reverse causality was also rejected in both set of years. In summary, the cointegration and the causality tests have rejcted all the hypotheses of the study. Table 4 shows results of the Granger causality test.

Table 5: Pairwise Granger Causality Test Results

Causality Under Evaluation	Observations	F-Statistic	ρ-values
1960 - 1989			
EXP → GDP	28	0.16	0.85
GDP → EXP	28	1.67	0.21
1990- 2013			
EXP → GDP	22	0.48	0.63
GDP → EXP	22	1.19	0.33

Discussion

According to hypothesis 1, GDP trends positively with education expenditure. From the cointegration test results, the long run comovement of the variables was rejected. This therefore suggests that for the Botswana picture, GDP growth does not move positively with the amount of funds channeled to skills development and education as from 1960-2013. The results are astounding, since Botswana started off as one of the least wealthy countries in the world. The anticipation was that higher dedication to education should move positively with the national output. While the results are astonishing, they are plausible according to the extant literature. According to Sanchez & Cicowiez (2014), it takes time for better education and health to translate into higher productivity if any because graduates and learners have to go through one or more education cycles and improved education and health may pay off several years later. It is plausible that there could not exist a statistically significant relationship between GDP and educational expenditure given that the relationship is expected to hold in a robust data range. In addition, the other fact is unemployment. Sanchez & Cicowiez (2014) flagged that skilled workers can only affect productivity if they are employed by the different sectors of the economy. Botswana registered unemployed rates of 18% between 2010-2013 and most of the graduates are unemployed. This therefore means that graduates contribution to the economic development is limited as most of the skills and knowledge acquired by the graduates from tertiary institutions are not immediately applied in production activities. To add further, Voon (2001) stated that social rates of return to education were found to be smaller at the highest education level in Hong Kong.

Hypothesis 2 postulated that GDP predicts the education expenditure. The results report that there is no causality between GDP and education expenditure. The reverse causality was also rejected. Drawing from Incekara et al (2012) it is reasonable to expect a statistically insignificant causality

relationship for this case because the cointegration test results have dismissed the long run comovement of the variables. Causality could have been witnessed if there was at least one cointegrating equation. Sanchez & Cicowiez (2014) argued that wealth and more rapid economic growth in the midst of the depressed world economy is proving to be significant challenge for many developing economies including Botswana. This is because expansion in social activities such as education requires additional spending effects which may strain public and private budgets. This in the long run, will mean that developing economies will lower their investment spending in education in order to meet their budgets constraints. The long run implication is that this will lead to an insignificant growth in GDP. Despite the rejection of the cointegration and causality test other factors cannot be ignored. In summary of the discussion, results report no relationship between education expenditure and GDP. Deductively, the relationship may change when examining the data in over centuries drawing from Sanchez & Cicowiez (2014).

Conclusion and Practical Implications

This study attempted to determine the long run relationship between GDP and expenditure on education and skills development. The study reports that for Botswana scenario, there exists no statistically significant relationship between GDP and expenditure on education and skills development. While the results are astounding, the extant literature provides reasonable justifications for this anomaly. The lack of a positive affiliation between GDP and expenditure on education has several implications. Firstly, it implies that for a developing economy like Botswana, the country could be channeling funds to education with no increased production. This extrapolates further to mean that the government's budget is being pushed to the limit while there is no payoff from education investment. The government will have to reconsider this investment spending carefully for it to have higher rates of returns. Secondly, the lack of a statistically significant relationship between education expenditure and GDP may mean that the government is not providing enough jobs for the recent graduating classes who are fresh from their universities or vocational training institutions. This case is attached more to Botswana since the government is the largest employer. The third factor is that even though the governments are spending so much money on the education system, there might be a mismatch between what the employer needs and the skills possessed by the students. In essence, governments should consider the programmes each high institution of learning such as University of Botswana has to offer for economic growth and empowerment. It is no use for the government to sponsor students whose degree programmes will not be beneficial to the long run economic growth and sustainability. The fourth factor is closely related to factor number 3. The suggestion is that while governments may select the programmes which may be suitable and congruent with the demands for higher GDP, the quality of the education itself should not be sidelined also. If the quality of the education is very low, it is reasonable to expect low returns to national output in consequence. This will invalidate the anticipated positive relationship between education expenditure and national economic growth. Another sweltering issue which can be drawn from this study is that, if there is no relationship

between GDP and education expenditure, this will obstruct forecastability of the GDP and other macroeconomic variables. While the type of government could play a role in national production and output figures, Botswana has been described as Africa's shining example of democracy, thus political issues may play a minor role in this transaction.

In summation of the entire study, it is sensible to expect no relationship between GDP growth and expenditure on education as drawn from the literature. Governments will have to look at several factors such as the business cycle, diversity of workforce, to forecast long term economic growth. It is proposed that for future studies, panel cointegration and panel causality for different economies should be executed to find out if the relationship will hold from one country to country without segregation in terms of degree of economic advancement.

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