



A Study on Assessing Government Size, the Composition of Public Spending on Education and Economic Growth in the USA

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Abstract

The paper aimed to assess the effect of government size and the composition of public spending on education on economic growth in the USA. This study is quantitative in which the data has been gathered from the World Data Bank for the past 60 years from 1960 to 2019. The variables which were considered in the study include government size, GDP growth, Inflation, FDI, GDP (Current US\$), Education expenditure and GEE as % of GDP concerning the USA. In terms of the analysis, the Augmented Dickey-Fuller (ADF) has been used to determine the unity root. Moreover, the effect has been tested through Augmented Dickey-Fuller (ADF) and Bounds test. It has been determined from the analysis that GDP growth is dependent on the first lag while there is a significant effect of government size and public expenditure on education on GDP. It was also found that the controlling effect of inflation was also significant. The results of this study are restricted to the USA. With respect to the implications, there is a huge significance of these results as the government of the USA can ensure economic growth while increasing the educational expenses.

Keywords:

GDP
FDI
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1. Introduction

Countries worldwide have recently faced different episodes of the financial crisis because of the incapacities of their respective government for bridging a deficit between tax revenues and public expenditures. According to the study of [Divino, Maciel, and Sosa \(2020\)](#) the fiscal crisis faced by the countries has common features which are mainly accompanied with the social, political and financial distress because of which the recovery is painful for the society as it is dependent on the government spending and increase in the tax rates. In addition, the performance of the fiscal policy is largely influenced by the association between economy, size of the government, economic growth and public expenditure composition ([Martins & Veiga, 2014](#); [Nartea & Hernandez, 2020](#)). The issues are based on the fact that some of the components pertaining to the public expenditure are found to be more productive in terms of economic activity. Considering this perspective, a country may be able to enhance the economic situation by changing the composition and level of aggregate public spending.

As research study stresses on the positive and healingly role of government and its capacity during the financial crises, research studies have placed a significant amount of focus on the influence of government size of the economic growth and progression of a country. Research study initiated by [Asimakopoulos and Karavias \(2016\)](#) states that government size has a significant impact on the economic progression. However, the impact of the government size have different variants, for instance, it denoted that an oversized government can exert negative spillover effect which can be caused by an increase in taxes and borrowing enormous amounts of

funds to build large cash reserves. In contradiction of this phenomenon, it is stated that if the government spending too little it can negatively impact the economic progression.

According to Nyasha and Odhiambo (2019) in order to better understand the government size, it is important to understand the indirect and direct arms of government. The authorities and institutions that come under the direct arm are responsible for collecting taxes, allocating it different channels that are further responsible for redistributing it through towards the welfare of the public through subsidies and welfare grants. Purpose of the direct arm is narrow down the distribution of funds to its monetary value. On the other hand, the indirect arm of the government is responsible for determining the cost and benefit associated with the distribution, where the roles span to providing subsidies in form of the tax allowance.

Tehranchian, Abdi Seyyedkolae, Imani, and Zakeritabar (2020) further state there are more on way to actually measure the government size, the most prominent on is an expenditure, revenue, and employment. The government expenditure is mainly determined by the aggregate national accounts. The relationship of government size is denoted as less the government spends the smaller the size of the government is. Economic progression is not the only milestone a government would set for its self rather it is also focused on improving improve the flow of funding towards public spending.

Bexheti and Mustafi (2015) state that education is an important area and its positive impact can be translated as an improved and enhanced education system which results in less unemployment. The less unemployment can further be interpreted as reduced dependence on government relief initiative such as education-based assistance programs, and ultimately means greater tax revenues. Many of the developed countries government mainly focuses on spending generously towards education is because it helps in promoting economic growth. The benefits reaped from the education not only benefits the individual and its family but also positively contributes towards the well-fare of the community as well (Buerger & Harris, 2020). In specific to the USA it is denoted that education has a positive impact on economic progression. It is denoted that public investment towards education can contribute to forming a more productive workforce and a large labour market. In comparison to the least developed or developing nations, it is revealed that education has a positive and significant impact on the social welfare of a country. In the case of the USA a leading economy of the world, educational programs enhance labour participation and increase the labour capacity.

In the case of the US, the current government spending is estimated at \$4.829 trillion where the federal budget for the current year which covers 2021 (The Balance, 2020). Despite sequestration for curbing the spending of government, the deficit has been increasing with the effort of government in order to enhance the growth of the economy.

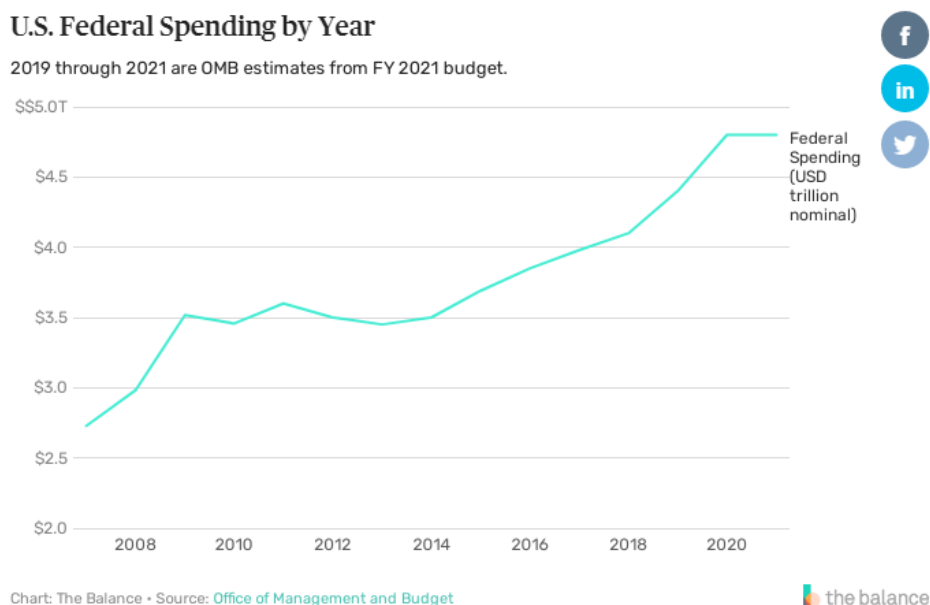


Figure-1. US federal spending.

Source: The Balance (2020).

After acknowledging the scope of the US federal spending it is important, understand the breakdown of the US federal spending and the sources that help in improving the government size. According to Tax Policy Center (2019), the 50% of the government spending is formed on the basis on individual income tax, in fact from 1950 it is considered as the singular and important most source of the federal spending. Apart from the individual tax income, there are varied sources which include the corporate income tax, social insurance and excise tax. Nonetheless, depending on the importance of state, USA allocates its federal spending of different

area. The highest of the public spending is devoted towards the social security around \$1 trillion, which is further distributed to retirement benefits and facilitation of veterans. The second breakdown includes the Medicare and market place subsidies around 25% of the budget is allocated towards Medicare. And final distribution includes the Defence and international security, it is denoted that around \$697 billion is spent on national security and conducting overseas contingency operations.

Concentrating on the important aspects of the study, which is to assess the composition of federal spending on education. An article initiated by [Resilient Educator \(2020\)](#) analyses the 10 years spending trends in US education. It is noted that in the last 10 years education remains the least interest area for public spending allocators, less than 3% of funds from an entire budget of \$3.8 in 2015 is allocated towards education. In the respect of this issue of public spending studies have not come up with conclusive evidence on the composition of public spending and if public spending has any significant impact of economic growth. Although [Nyasha and Odhiambo \(2019\)](#) have emphasised of the relation of public spending and economic growth it has not been able to provide much detail on the significance of public spending in the context of education.

The aim of the study is to access the government size, the composition of public spending on education and economic growth in the context of the USA.

- To analyse the impact of public spending on the economic growth of the USA.
- To determine the composition of public spending formulated by USA government.
- To analyse the impact of education on economic growth.
- To recommend a public spending strategy for improving the effectiveness of education in terms of economic growth.

2. Literature Review

For any economy to thrive it is immensely important that government spending that is sourced from the individual and public taxes is allocated fairly and on ministries such as education so it contributes to the social welfare of the nation. In often cases the USA and European countries are view as successful and accomplish countries that have improve the economic status and have shown vital sign of economic improvements. In order to better understand the relationship between government size and economic growth research study initiated by [Schmidt and Wigerstedt \(2019\)](#) provides empirical evidence with the context of the EU. In order to compute more specific and focused results study considers the impact of government spending on economic growth and progression from 2000 to 2017. The study denotes that with fair distribution and allocation of public funding many of the European countries have deployed themselves.

[Hajamini and Falahi \(2018\)](#) conducted an economic analysis in order to understand the positive effect of government size on economic growth. The study states that government size and economic growth have remained a controversial issue. As the government would focus and priority can vary, the controversy mainly revolves around the fact that public spending refers to taxes payer money and therefore it should be allocated towards the economic progression. The public spending is considered as a vital source of funding, whereas borrowing money for public projects is not at all vital and beneficial, because public project such as education and health are not meant for the purpose of generating revenue and rather they are for public welfare. However, if a government borrows finances for public spending it results in the increase of financial costs of investment. In order to understand the government size and economic growth to consider the relation of a variable in the context of 14 European countries from 1995 to 2014. The empirical evidence of the study denotes a nonlinear relationship of economic growth and government expenditure in light of U shaped Barrow curve.

As the prime purpose of this study to explore the relation of economic growth and public spending in the USA, it is important to review it in the context of the USA. [Mitchell \(2005\)](#) provides conclusive evidence of the impact of several of government financing method on the economic progression. Instead of just focusing on the positive relation size of government and economic growth the research study enlisted several reasons for a relation denoting a negative impact. The most prominent negative effect is caused by displacement cost, the displacement cost refers to the loss of revenue and its negative effect can be translated as every dollar spend means a dollar loss in in-productive. Additionally, the negative effect loss includes the behavioural penalty cost which means that the government discourages economically attractive choices. The conclusive evidence the study reaches is that regardless of the public spending being financed through taxes or borrowing government spending imposes high displacement and extraction cost. In the context of the USA, it is denoted that large government projects reduce the economic rate and economic growth therefore the following hypothesis proposed.

H1: Government size significantly influences the economic growth of the United States.

The other important variable of this study is education, according to [Hua \(2016\)](#) education is regards as most vital, and the important sector as it is important to ensure a successful implementation of any public strategic. It is profoundly stated that in many countries education is considered a vital tool for eliminating poverty. Research study initiated by [Tomić \(2015\)](#) analyzes the role of education in the European Union and BRICS. It denotes that knowledge is a key factor in the development and progression of an economy. And in

the process of benefiting out of knowledge education is consider and regarded as an important tool. In an extensive investigation of the process of utilizing education for the purpose of economic progression, it is conclusive stated that many of developed market economies prioritize investment on the human resource through their national strategy. It is profoundly stated that many of the leading economies generously allocate funds for education in their public spending strategy. The importance of dedicating a portion of public spending towards is stressed by Adam Smith, who states that a nation depends on labour employed in the production and productivity of the labour. In addition, the labour can only show productivity in an organization, institution or country invest in its human resource. In a nutshell, the research study reveals that education mainly supports in empowering the people and human resource of a country to work towards economic stability. In this modern era, education is considered a vital tool as it facilitates the process of technological development which ultimately allows a country to gain a competitive edge. In the case of the European Union, Japan, USA and BRICS there was a positive correlation between public expenditure allocated towards education and economic growth. The relationship between public spending and education is translated as a 1% increase in government expenditure on education leads to a 1% increase in economic growth.

Research initiated by [Carpentier \(2006\)](#) provides a conclusive and specific context in relation to the allocation of funds from public spending towards economic growth of USA. It is denoted that in the late 90s the investment on education vastly increase as it leads to positive development in the socio-economic environment of a country. [Obi, Ekesiobi, Dimnwobi, and Mgbemena \(2016\)](#) addressed the education outcome of public spending. It states that regardless of the geographical position in most of the advance economies education is considered an important priority as its support in the rapid transformation of the economy. The education not only favourably works as a poverty alleviation tool but it improves countries global representation and enhance the employment rate hence following hypothesis is proposed.

H2: Government size significantly influences the composition of public spending on education United States.

In addition to this, public spending on education is also dependent on the foreign direct investment of the country. It is due to the reason that the increased FDI results in the increase of funds for the country. It has also been argued in the study of [Ali and Malik \(2017\)](#) that the FDI helps the country to increase its expenses on the general public. In this manner, the control effect of FDI has been tested on the among the relationship of government size with the composition of public spending on education United States and economic growth of the United States.

H3: FDI controls the relationship between government size and economic growth of the United States significantly.

H4: FDI controls the relationship between the composition of public spending on education and economic growth of the United States significantly.

Moreover, inflation also plays a vital role in terms of increasing or decreasing the expenditure of government on public education. It is due to the reason that increased inflation will reduce the expenses of the government. It has also been stated in the study of [Mehrara, Soufiani, and Rezaei \(2016\)](#) that the expenditure of the government is dependent on the rate of inflation in the country. Therefore, the control effect of inflation has been tested on the among the relationship of government size with the composition of public spending on education United States and economic growth of the United States.

H5: Inflation controls the relationship between government size and economic growth of the United States significantly.

H6: Inflation controls the relationship between the composition of public spending on education and economic growth of the United States significantly.

3. Method

3.1. Variables Description

The variables taken for measuring government size is the average government expenditure as a percentage of GDP, government expenditure on education and real GDP of the USA.

3.2. Unit Root Test: Augmented Dickey-Fuller (ADF)

The study deals with the analysis of the government size, the composition of public spending and economic growth in the USA. The study has gathered time series data pertaining to the variables of the study from 1990-2019. Therefore, for testing the stationarity of the data, Augmented Dickey-Fuller (ADF) has been carried out because it is necessary to highlight that ADF forms the basis of the suppositions through the null hypothesis which exhibits the unit-roots.

$$\Delta a_t = \mu_0 + \mu_1 t + \mu_2 a_{t-1} + \sum_{i=1}^n \alpha_i \Delta a_{t-1} + \varepsilon_t$$

In the above equation, Δ can be identified as the difference operator. In the meantime, ε_t can be regarded as the random error of stationary. Moreover, the variable α refers to all the independent variables of the study. Furthermore, a_t reflects non-stationary series.

3.3. Autoregressive Distributed Lag (ARDL)

For the econometric assessment, the ARDL has been considered for this study which is regarded as the important constituent for the single equation regression.

$$P_t = \pi + \alpha XA_t + \theta_t$$

In the above equation, P_t signifies the variable under investigation which is the dependent one whereas, XA represents the independent variables used in this study. Moreover, θ_t represents error terms though α is parameter estimate. Furthermore, the mathematical model for the developed ARDL is also presented as followed:

$$\Delta P_t = \pi 1 + \sum_{i=1}^{m1} \theta_{1i} \Delta P_{t-i} + \gamma_1 P_{t-1} + \gamma_2 XA_{t-1} + \theta_t$$

In addition, the short term and long-term dynamics for the concerned ARDL has been accessible through the subsequent mathematical models:

$$\Delta P_t = \pi 2 + \sum_{i=1}^{m2} \alpha_{2i} \Delta P_{t-i} + \sum_{j=0}^{n2} \alpha_{2j} \Delta XA_{t-j} + \theta_{2t}$$

$$\Delta P_t = \pi 3 + \sum_{i=1}^{m3} \gamma_{3i} \Delta P_{t-i} + \sum_{j=0}^{n3} \alpha_{3j} \Delta XA_{t-j} + \phi \varepsilon_{t-1} + \theta_{3t}$$

At this point, ϕ signifies a statistically significant coefficient which is corrected for error.

3.4. Bounds Testing

The Bound test is another procedure which is being taken into consideration for this study. The bound test is a powerful statistical tool that is used for the evaluation of the relationship with respect to time series data that is also jointly co-integrated. This technique is applied to evaluate the short and long-run association between the variables.

4. Results and Analysis

4.1. Descriptive Statistics

Table 1 depicts the descriptive statistics of the variables which have been considered in this study. On the basis of the below Table 1, it can be determined that the mean value for government size (as the % of GDP) is 20.13 which implies that the average government size of USA for 60 years is 20.13%. Additionally, the standard deviation for government size is determined to be 2.74 which depicts that the government size of USA will deviate from 2.74%. On the other hand, the mean value for GDP growth (Annual %) is 3.43 which depicts that the average GDP growth of USA for 60 years is 3.43%. In addition to this, the standard deviation for GDP growth as an annual percentage is computed to be 2.53 which posits that the GDP growth of the USA for 60 years will deviate from 2.53%. In contrast to this, the mean value for inflation as the annual percentage is determined to be 3.72 which depicts that the average inflation of USD for 60 years is 3.72%. However, the standard deviation for inflation of USA is computed to be 2.77 which posits that the inflation of the USA for 60 years will deviate from 2.77%. Moreover, the mean value for FDI net inflows was obtained as 0.973 which depicts that the average value for FDI net inflows of USA for 60 years is 0.973%. Additionally, the standard deviation for the FDI net inflows was computed to be 0.88 which implies that the FDI net inflows of USA for 60 years will deviate from 0.88%. Lastly, the mean value for the GEE of GDP was obtained to be 4.55 which depicts that the average value for GEE of GDP for the USA is 4.55%. In contrast to this, the standard deviation for GEE of GDP was computed to be 0.593 which posits that the GEE of GDP for the USA will deviate from 0.593%.

4.2. Augmented Dickey-Fuller (ADF)

Based on the previous patterns, the testing of the unit root is considered to be the significant notion for the purpose of forecasting and calculating the values. In addition to this, the ADF is also regarded as the scenario of no accidental shift with regards to the drift pertaining to the occurrence of a systematic pattern. As per the study of Paparoditis and Politis (2018) it is challenging to assess the future values on the basis of the historical data using conventional inferential statistics. In this manner, the researcher has used the Augmented Dickey-Fuller (ADF) for the purpose of detecting the unit root.

Table-1. Descriptive Statistics.

| Variable | Obs | Mean | Std. | Min | Max |
|--|-----|--------|-------|--------|--------|
| Government Size (%) | 60 | 20.132 | 2.741 | 14.551 | 26.159 |
| GDP Growth Rate (%) | 60 | 3.435 | 2.534 | -2.536 | 9.587 |
| Inflation Rate (%) | 60 | 3.720 | 2.778 | -0.355 | 13.549 |
| FDI to GDP (%) | 60 | 0.973 | 0.889 | -0.009 | 3.405 |
| Education Expenditure to GDP (GEE) (%) | 60 | 4.551 | 0.593 | 2.926 | 5.424 |

Table-2. Augmented Dickey-Fuller (ADF).

| Augmented Dickey-Fuller test statistic | t-Statistic | Prob.* |
|--|-------------|--------|
| Government Size | -1.861 | 0.350 |
| GDP Growth Annual | -4.483 | 0.000 |
| Inflation Annual | -2.398 | 0.142 |
| FDI net Inflows of GDP | -2.294 | 0.173 |
| GEE of GDP | -3.227 | 0.018 |

The above Table 2 shows the Augmented Dickey-Fuller (ADF) of the variables which have been considered in this study. The null hypothesis of the Augmented Dickey-Fuller (ADF) depicts that there is the presence of unit root in the data while the alternate hypothesis depicts that there is no presence of unit root in the data. Therefore, it can be determined on the basis of the above table that there is the presence of unit root in Government size as $t = -1.861$ [$p = 0.35$] which is above the threshold of 0.05. On the other hand, the GDP growth annual was determined to have no presence of unit root as $t = -4.483$ [$p = 0.00$] which is below the threshold of 0.05. In addition to this, it has also been determined that there is the presence of unit root in Inflation annual as $t = -2.398$ [$p = 0.142$] which is above the threshold of 0.05. Moreover, there is also the presence of unit root in FDI net Inflows of GDP as $t = -2.294$ [$p = 0.173$] which is also above the threshold of 0.05. Furthermore, there was no presence of unit root in GEE of GDP as $t = -3.227$ [$p = 0.0185$] which is below the threshold of 0.05.

4.3. Bounds Testing

In terms of the ARDL bounds test, it has been identified that F-statistics was 10.641 while the t-value is determined to be -6.832. The study of Pesaran, Shin, and Smith (2001) suggested that the criteria of bounds test is that the values for F-statistics and t-statistics higher than their critical scores. Concerning this study, the f-statistics of 10.641 is higher than all the critical values of I(1), for instance, at 1% significance level, the critical value of 5.83 is below 10.641 indicating the presence of a long-run relationship Table 3. In this manner, the null hypothesis has been rejected which shows portrays that there are no levels of relationship. Therefore, the relationship between the variables exist.

Table-3. Bounds testing.

| Model: F (GDP Growth Annual, Government Size, Inflation Annual, FDI, Net Inflows of GDP, GEE of GDP) | | | | | | |
|--|--------|--------|--------|--------|--------|--------|
| Optimal Lag Length: ARDL (1,1,0,0,2) | | | | | | |
| F = 10.641 | | | | | | |
| | 10% | | 5% | | 1% | |
| | I(0) | I(1) | I(0) | I(1) | I(0) | I(1) |
| F | 2.567 | 3.743 | 3.073 | 4.375 | 4.232 | 5.803 |
| t | -2.543 | -3.648 | -2.876 | -4.028 | -3.541 | -4.773 |

4.4. Autoregressive Distributed Lag (ARDL)

As it has been determined from the above Augmented Dickey-Fuller (ADF) test that there was mixed stationery among the variables as several variables contain a unit root, therefore, the ARDL model has been conducted (Oluseyi, Olasehinde, & Eweke, 2017).

Table-4. Autoregressive distributed lag model for LPI (Long Run).

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|------------------------|-------------|------------|-------------|--------|
| Long-Run | | | | |
| Government Size | -0.375*** | 0.128 | -2.92 | 0.005 |
| Inflation Annual | -0.207** | 0.097 | -2.13 | 0.038 |
| FDI net Inflows of GDP | -0.079 | 0.321 | -0.25 | 0.805 |
| GEE of GDP | -2.953*** | 0.707 | -4.17 | 0.00 |

Note: *Significant at 10%; **Significant at 5%; ***Significant at 1%

Therefore, it can be determined from Table 4 that Government size is significant in the long run as $B = -0.375$ [$p = 0.005$] which is significant at 0.01. These findings are consistent with the study of Mitchell (2005). In addition to this, the Inflation annual was also significant in the long run as $B = -0.207$ [$p = 0.038$] which is

significant at 0.05. Moreover, the FDI net Inflows of GDP was also insignificant in the long run as $B = -0.07$ [$p = 0.805$] which is above the threshold of 0.1. Lastly, the GEE of GDP was significant in the long run as $B = -2.95$ [$p = 0.00$] which is significant at 0.01.

On the other hand, it can be determined with respect to the short run, that the government size and GEE of GDP are both significant as (p -value < 0.05). The results of the short-run effect are evident from Table 5:

Table-5. Autoregressive distributed lag model for LPI (Short Run).

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|--------------------|-------------|--------------------|-------------|--------|
| Short-Run | | | | |
| Government Size | -.558** | .258 | -2.16 | 0.036 |
| GEE of GDP | | | | |
| D1. | -9.298*** | 1.703 | -5.46 | 0.000 |
| LD. | 6.787*** | 1.871 | 3.63 | 0.001 |
| C | 20.141*** | 3.170 | 6.35 | 0.000 |
| R-squared | 82.94% | F-statistic | -6.83 | |
| Adjusted R-squared | 80.04% | Prob (F-statistic) | 0.000 | |

Note: *Significant at 10%; **Significant at 5%; ***Significant at 1%.

5. Discussion

On the basis of the above analysis, it has been determined that the first hypothesis that government size significantly influences economic growth of United States has been accepted as the long-term effect of government size was determined on the economic growth of USA. The study of Mitchell (2005) also states that there is a huge influence of government financing on the economic progress of the country. In addition to this, the second hypothesis that Government size significantly influences the composition of public spending on education United States has also been accepted as the significant influence of government size was determined on public spending on education of United States. Similarly, the study of Carpentier (2006) provides a conclusive and specific context is relative to the allocation of funds from public spending towards economic growth of USA. Moreover, the control of FDI on the relationship among Government size, economic growth and composition of public spending on education United States has determined to be insignificant. The results are opposed by the findings of Ali and Malik (2017) which states that the FDI helps the country to increase its expenses on the general public. Moreover, the control of inflation on the relationship among Government size, economic growth and composition of public spending on education United States has determined to be significant. It also aligns with the findings of Mehrara et al. (2016) that the expenditure of the government is dependent on the rate of inflation in the country.

6. Conclusion

Incompetence in terms of bridging a deficit between tax revenues and public expenditures has led to a fiscal crisis for most of the countries all over the world. In this manner, this study has emphasized over assessing the government size, which is the composition of public spending on education and economic growth in the USA. In this manner, the data has been gathered from the World Data Bank for the past 60 years. The variables which were considered in the study include Government size, GDP growth, Inflation, FDI, GDP (Current US\$), Education expenditure and GEE as % of GDP. In this manner, the unit root has been tested with the help of Augmented Dickey-Fuller (ADF) which determined the presence of unit root in certain variables. Therefore, due to the mixed stationarity of variables, the Augmented Dickey-Fuller (ADF) has been conducted which determined that GDP growth is dependent on the first lag while there is a significant effect of Government size, inflation and GEE of GDP. In addition to this, the Bounds test determined that the relationship among the variables exist.

7. Limitations and Implications

There are several limitations of the study which must be considered by the future researchers. Firstly, the study is restricted to the USA therefore there is limited scope for the results of this study. In this manner, it is suggested for future researchers to increase the scope of the study by considering other countries. The results of this study are significant for the economic development of the USA while increasing the educational expenses in the country.

References

- Ali, M., & Malik, I. R. (2017). Impact of foreign direct investment on economic growth of Pakistan. *Published in*, 3(2).
- Asimakopulos, S., & Karavias, Y. (2016). The impact of government size on economic growth: A threshold analysis. *Economics Letters*, 139, 65–68. Available at: 10.1016/j.econlet.2015.12.010.
- Bexheti, A., & Mustafi, B. (2015). Impact of public funding of education on economic growth in Macedonia: Bamberg University, Bamberg Economic Research Group.
- Buerger, C., & Harris, D. N. (2020). The impact of government contracting out on spending: The case of public education in new orleans. *The American Review of Public Administration*.

- Carpentier, V. (2006). Public expenditure on education and economic growth in the USA in the nineteenth and twentieth centuries in comparative perspective. *Educational History, 42*(6), 683-706. Available at: <https://doi.org/10.1080/00309230600929450>.
- Divino, J. A., Maciel, D. T., & Sosa, W. (2020). Government size, composition of public spending and economic growth in Brazil. *Economic Modelling, 91*, 155-166. Available at: <https://doi.org/10.1016/j.econmod.2020.06.001>.
- Hajamini, M., & Falahi, M. A. (2018). Economic growth and government size in developed European countries: A panel threshold approach. *Economic Analysis and Policy, 58*, 1-13. Available at: <https://doi.org/10.1016/j.eap.2017.12.002>.
- Hua, Y. (2016). The relationship between public expenditure on education and economic growth: Evidence from China.
- Martins, S., & Veiga, F. J. (2014). Government size, composition of public expenditure, and economic development. *International Tax and Public Finance, 21*(4), 578-597. Available at: <https://doi.org/10.1007/s10797-014-9313-4>.
- Mehrara, M., Soufiani, M. B., & Rezaei, S. (2016). The impact of government spending on inflation through the inflationary environment, STR approach. *World Scientific News, 37*, 153-167.
- Mitchell, D. J. (2005). The impact of government spending on economic growth. *The Heritage Foundation, 1813*, 1-18.
- Nartea, G., & Hernandez, J. (2020). Government size, the composition of public spending and economic growth in Netherland. *Journal of Accounting, Business and Finance Research, 9*(2), 82-89. Available at: <https://doi.org/10.20448/2002.92.82.89>.
- Nyasha, S., & Odhiambo, N. M. (2019). Government size and economic growth: A review of international literature. *SAGE Open, 9*(3), 2158244019877200. Available at: <https://doi.org/10.1177/2158244019877200>.
- Obi, C. U., Ekesiobi, S. C., Dimnwobi, S. K., & Mgbemena, E. M. (2016). Government education spending and education outcome in Nigeria. *International Journal of Economics, Finance and Management Sciences, 4*(4), 223-234. Available at: <https://doi.org/10.11648/j.ijefm.20160404.18>.
- Oluseyi, A. S., Olasehinde, T. J., & Eweke, G. O. (2017). The impact of money supply on Nigeria Economy: A comparison of mixed data sampling (MIDAS) and ARDL approach. *EuroEconomica, 36*(2), 123-134.
- Paparoditis, E., & Politis, D. N. (2018). The asymptotic size and power of the augmented Dickey-Fuller test for a unit root. *Econometric Reviews, 37*(9), 955-973. Available at: <https://doi.org/10.1080/00927872.2016.1178887>.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289-326. Available at: <https://doi.org/10.1002/jae.616>.
- Resilient Educator. (2020). 10-Year spending trends in U.S. Education. Retrieved from <https://resilienteducator.com/news/10-year-spending-trends-in-u-s-education/>.
- Schmidt, L., & Wigerstedt, H. (2019). Government size and the effect on economic growth in the EU?
- Tehranchian, A. M., Abdi Seyyedkolae, M., Imani, N., & Zakeritabar, S. Z. (2020). The study of the effect of financial openness measure on the government size in selected countries. *Iranian Economic Review, 24*(3), 723-741.
- The Balance. (2020). How congress really spends your money. The Balance. Retrieved from <https://www.thebalance.com/current-u-s-federal-government-spending-3305763>. [Accessed 7 September 2020].
- Tomić, Z. (2015). Analysis of the impact of public education expenditure on economic growth of European Union and BRICS. *Economic Analysis, 48*(1-2), 19-38.