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Public Expenditure and Economic Growth: Evidence from the Developing Countries

Deepti Ahuja[1], Deepak Pandit[1,2]

Abstract

Regardless of theoretical grounds that presumed a positive relationship between government spending and economic growth, the extant research on this nexus is inclusive. This article re-examines the relationship between public expenditure and economic growth using more copious panel data set covering 59 countries in 1990–2019. Our empirical results confirm the unidirectional causality between economic growth and government expenditure where the causation runs between public spending and GDP growth. The results at large support the Keynesian framework that asserts the importance of government expenditure in stimulating economic growth. Further, the analysis reveals that after considering all the control variables such as trade accessibility, investment and inflation public spending positively affects economic growth. With regards to control variables, it was found that investment has a significant and positive bearing on economic growth. Evidence from the regression estimates further displays that trade openness encourages evolution in developing countries. However, population growth and unemployment have a detrimental effect on economic growth.

Keywords

Economic growth and government expenditure, Wagner's law, Keynesian Macroeconomic Theory

Introduction

Government expenditure is a significant component of economic policy, utilized by the governments as an operative policy tool to promote strong and sustainable growth. It aims at stimulating economic growth through budgetary expansion that will boost private sector spending, thereby bringing in growth through the multiplier effect. However, government spending is a double-edged sword (Ahmad & Loganathan, 2015). While it could result in a higher GDP, the overall economic development might be hindered by crowding-out effects. Thus, when the government increases expenditure at the expense of higher taxes or borrowings then it could affect the permanent income of consumers, lowering the public consumption.

A fundamental question in growth theory that intrigues researchers and policymakers over the last century is between government spending and economic growth, which has a higher impact on the other? At the theoretical level, there have been, essentially speaking, two main directions of exploration: Wagner's law and Keynesian Macroeconomic

Theory. Wagner's law emphasizes economic growth as the principal determinant of increase in public sector expenditure, wherein growing economy would provide an opportunity to generate additional tax revenue, thus creating fiscal space for more government disbursement and subsidies (Wagner, 1958). Conversely, in the Keynesian framework, it is the government spending that regulates the rate of economic progression. This perspective overstates the significance of government expenditure and affirms a positive impact of public expenditure on GDP growth.

Even on the empirical front, the causal relationship between economic advancement and government expenditure is not unanimously agreed upon. The results have been varied across the countries owing to socio-economic conditions, time-period used and the various research methodologies employed. Most of the previous literature employ Granger causality test and techniques such as bivariate and trivariate error-correction models (ECMs) to provide insights into the direction of causality. Further, the results were confined to a small number of countries. The present study aims to re-examine the causal

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connection between government disbursement and economic progression by employing a more copious panel data set covering 1990 to 2019, in the context of 59 developing countries on their way to becoming global economic superpowers in terms of GDP. Further, the emerging consumer markets are today outspending the American consumers; their global consumption share has gone up to 35 per cent as compared to the American`s share of 28 per cent. Although the developing countries experienced slower per capita GDP since 2015, they have the strongest fundamentals amongst other regions that could help them dominate global growth. This article adds to the existing literature by employing both Granger causality test and panel regression technique to a large data set of developing countries. Furthermore, the regression results are expected to be robust since control variables such as inflation, population and investment are considered while determining the impact of government spending on economic growth. It is believed that the results would provide comprehensive implications for economic development.

The rest of the article is organized as follows: The second section offers an assessment of the literature on the nexus between economic growth and government spending; the third section delineates data and the empirical methodology to be applied; the fourth section discusses the empirical analysis and the last section concludes with, among other things, a discussion on the study's restrictions.

Literature Review

To provide collective insights related to the relationship between government expenditure and economic growth, an exhaustive search of the literature is done as mentioned in Rana and Sharma (2016). Determinants related to economic growth in emerging markets appeared in previous literature (Dhiman et al., 2020; Sharma & Dhiman, 2016) and accordingly the review has been carried out on these concepts, that is, government spending and economic growth.

The extant literature has given different theoretical arguments and empirical evidence regarding the relationship between economic growth and government spending. The first one involves the Keynesian view in the government size-led growth. As per the Keynesian school of thought, increase in government spending boosts domestic consumption, especially during economic downturns, when the free market forces fail to maintain equilibrium owing to rigidities in the labour market. This clearly reflects that Keynes favours expansionary fiscal policies for countries who are struggling with the recessions. The other view is the Wagner's law, stating the causality running between economic growth and government expenditure. He cites three rationales for such relationship: (a) the growth of the economy enable the state

to expand social and welfare expenditure, (b) the administrative and protective functions performed by the government for public that substituted the private activity and (c) government interference is necessary to manage accepted monopolies. Therefore, in Wagner's view, government spending is an important determinant of economic growth and not vice versa.

Several research works have explored the effect of government expenditure on economic growth using various econometric tools and diverse measures of government spending (Chandran et al., 2011; Dogan & Tang, 2006; Ebaidalla, 2013; Loizides & Vamvoukas, 2005). Gangal and Gupta (2013) found a unilateral relationship between government disbursement and GDP in India in 1998–2012. Shocks from either variable had a positive impact on the other. Loizides and Vamvoukas (2005), one of the few trivariate studies conducted on this subject at the time of publishing, compared the ratio of GNP and public spending in three countries—Ireland, the United Kingdom and Greece. They have used bivariate and trivariate ECMs in the Granger causality framework. Three separate models were used: one with unemployment, one with inflation and one without either. The results showed that the government spending results in economic growth in the short run in all countries, while the same result holds true for two countries (i.e., Ireland and the United Kingdom) in the long run. Dogan and Tang (2006) revisited the association between the public spending and economic growth in five South East Asian countries, that is, Indonesia, Singapore, Philippines, Malaysia and Thailand. The study used the Granger causality test. The findings reveal unidirectional causality in the case of the Philippines. Similarly, Pradhan (2007) found that public sector spending drives economic growth in India, Nepal and Bhutan. The relationship between government expenditure and national income was explored in Sudan over the period from 1970 to 2008 (Ebaidalla, 2013). The results confirm the Keynesian theory, where causation was found running between government spending and economic growth.

Other studies displayed causation between economic growth and government spending, confirming the Wagnerian hypothesis and implying that government disbursements are not of primary importance. Islam (2001) studied the link between government expenditure and real per capita GDP in the USA over the period of 1929–1996. The results were consistent with the Wagner's law. Tang (2001) and Al-Faris (2002) employed econometric techniques such as multivariate co-integration and Granger causality to assess the nexus between public expenditure and GDP progress. They also arrived at the same conclusion, thus confirming the manifestation of unidirectional causality between economic growth and government expenditure. Loizides and Vamvoukas (2005) found that Wagnerian hypothesis concurs with trivariate and bivariate models in a case study in Greece. Further, Akitoby et al. (2006) explored Wagner's law in developing countries.

They too found the evidence of the Keynesian theory. Samudram et al. (2009) examined the causal relationship between public sector expenditure and economic growth. The results indicated that unilateral Granger causation exists between economic growth and various categories of government expenditure such as education, agriculture and defence. Srinivasan (2013) reconsidered the relationship in India over the period of 1973–2012. The results lent support to Wagner's law. Using panel data techniques, Biyase and Zwane (2015) assessed Wagner's law in African countries during 1990–2005. The results established the presence of unidirectional causality from economic growth to government expenditure in the mentioned countries. Thabane and Lebina (2016) also found the existence of unidirectional causal flow from economic growth to government expenditure.

There is another set of studies that found the evidence of bidirectional Granger causality between the government expenditure and economic growth (Ahmad & Ahmad, 2005; Dritsakis & Adamopoulos, 2004; Huang, 2006; Wu et al., 2010). Using multiple econometric techniques—such as panel Granger causality test, bivariate and trivariate ECMs and co-integration—these studies lending support to both views, that is, Keynes theory and Wagner's law. This suggests that there is bidirectional causality between government spending and economic growth. Finally, there are some studies that pointed out the absence of causality between the government spending and economic growth (Balaji, 2011; Dogan & Tang, 2006; Pradhan, 2007; Ray & Ray, 2012; Verma & Arora, 2010).

It is evident from the extant literature that there has been no conclusive evidence for either of the theories. This is because not only are various variables at play in different situations but because the natures of the economies that are being studied are also different. In this article, we have studied emerging countries, which are driving the global economic growth.

Research Methodology

As mentioned earlier, the study has been carried out in the context of developing countries (Appendix A) that are emerging as a global economic power. Globally it is observed that the balance of economic power is diverting from advanced countries to rapidly growing developing economies. These economies are playing a vital role in the global trade owing to the rising shares in GDP and trade. Over the last two decades, trade and foreign investment flows have increased among the developing countries. The emerging-market multinationals have made their way to advanced economies (Rana et al., 2020). They have established sovereign funds, increased their foreign reserves' holdings and attracted substantial foreign investment. These changes are the result of growing economic integration and interdependence among countries.

Given the increasing importance of developing countries, this study attempts to examine the association between public expenditure and economic growth in these countries. However, the sample of developing countries taken in the article depends on the frequency, availability and quality of data series. Accordingly, a panel data set of 59 countries were taken for empirical analysis (Appendix A). The study mainly spreads from 1990 to 2019. The study period taken for addressing the research question depends on the availability of relevant information and data. For example, for countries such as Bhutan, Peru, Russian federation, data on study variable, that is, government expenditure was available from 1990.

The study utilizes the secondary data of public finance and other economic variables from World Bank and International Monetary Fund (see Appendix B). Assessing the aforementioned research question, annual frequency has been used. Even though it was more comprehensive to examine these issues on short frequency data, this was not possible because of data unavailability. Thus, the study period mainly spreads over 1990–2019.

Table 1. Studies on the Relationship Between Economic Growth and Government Spending

Studies	Research Methodology	Direction of Causality
Dogan and Tang (2006), Blankenau et al. (2007), Chandran et al. (2011)	VECM, bivariate and trivariate error correction models within a Granger causality, Granger-causality test	GE $\longrightarrow$ EG
Tang (2001), Al-Faris (2002), Dritsakis (2004), Sideris (2007), Taban (2010), Lamartina and Zaghini (2011), Srinivasan (2013), Biyase and Zwane (2015)	Panel unit root, co-integration, and Granger-causality approach, ARDL bounds tests, various panel data techniques	EG $\longrightarrow$ GE
Singh and Sahni (1984), Ahmad and Ahmad (2005), Tang (2009), Wu et al. (2010)	Granger's causality test, bounds testing for co-integration and the leveraged bootstrap simulation approaches, together with the MWALD causality test, panel Granger-causality test	EG $\rightleftarrows$ GE
Afxentiou and Serletis (1996), Verma and Arora (2010), Afzal and Abbas (2010), Ray and Ray (2012)	Granger's causality test, ECM; SIMS test, standard Granger Procedure	EG $\neq$ GE

Source: The authors.

Various methodologies have been employed in the extant literature to study the relationship between economic growth and government spending (see Table 1). In this article, the Granger causality test has been used to determine the relationship between GDP and public sector disbursement. This method test whether the lag value of variable explains current changes in other variable. This method determines the following two equations (Dhiman et al., 2020; Farzanegan, 2014; Shahbaze et al., 2013; Stern, 2011):

$$d(\log GE_{it}) = \alpha + \beta_1 d(\log Y_{it-1}) + \mu_{it}, \quad (1)$$
$$d(\log Y_{it}) = \alpha_o + \beta_0 d(\log GE_{it-1}) + \mu_{it}, \quad (2)$$

where log *GE* and log *Y* are the change in the log of government expenditure and real gross domestic output (GDP) and μ_{it} is the stochastic error term. Further, log Y_{it-1} and log GE_{it-1} are the lagged values of change in the log of government expenditure and real gross domestic output (GDP). Subscripts *i* and *t* denote the country and period, respectively.

Finally, a regression model has been applied for a detailed analysis of the GDP–government expenditure nexus. Regression analysis is the most commonly used method in empirical research that estimates the value of dependent variable on the basis of the fixed value of independent variables. One of the most extensive methods used in regression analysis is ordinary least square because it subliminally appeals to our intuition and mathematically more modest than other methods (Gujarati, 2009). Thus, in this study, panel regression was used for the necessary assessment.

$$d(\log X_{it}) = \alpha + \beta_1 d(\log Y_{it}) + \beta_2 (z_{it}) + \pi_i + \alpha_t + \mu_{it}, \quad (3)$$

where *X* and *Y* are the change in the log of real gross domestic output (GDP) and government expenditure and μ_{it} is the stochastic error term. Subscripts *i* and *t* denote the country and period, respectively. *Further, whether X and Y will be dependent or independent variable would depend on the results of the Granger causality test.* The vector Z comprises the control variables (revenue, debt/GDP ratio, population, trade openness, inflation and unemployment) that have been used in several studies on government expenditure. Several studies have used these control variables while examining the determinants of economic growth (Afonso & Jalles, 2014; Barro, 1996; Muinelo-Gallo & Roca-Sagalés, 2013). Total investment has been considered as an apparatus of economic progression (Barro, 2003). Therefore, the expected sign of investment is positive. While the Tobin–Mundell hypothesis stated that expected inflation causes portfolio adjustment, thus exerting pressure on the rate of interest and raising investment and growth, studies such as Barro (1991), Castelló-Climent (2010) and Muinelo-Gallo and Roca-Sagalés (2013) found that inflation negatively impacts economic growth. Finally, trade expansion (Petrakos & Arvanitidis, 2008) is expected to

raise economic growth as a country with competitive advantage tend to export more, increasing the developmental gains from trade that contribute to a high level of economic growth.

The fixed-effect method is used for a panel of 59 developing economies. The fixed-effects model control for the unobserved country-specific difference, disregarding the omitted variable bias of cross-section data. In addition, important economic changes (macroeconomic and structural changes), which have arisen over time within the country, can also be controlled.

Empirical Analysis

The results of the Granger causality test are presented in Table 2. These results help to decide the direction of causality. The findings reveal that an increase in the share of government expenditure has a statistically significant effect on the growth rate. On the other contrary, changes in the output growth have no influence on government expenditure. Thus, the causality runs from government expenditure to economic growth. These results are in consistent with the findings of Dogan and Tang (2006) and Blankenau et al. (2007).

Before proceeding to estimate panel data, we tested for heteroscedasticity and serial correlation conditions. To examine whether there exists heteroscedasticity, the white test is applied. The test statistics reveal that for the given sample, the *p*-value is insignificant (as shown in Table 3). This indicates that there is no evidence of heteroscedasticity. Furthermore, the study conducted the Durbin–Watson test to detect the manifestation of serial correlation. The value of the Durbin–Watson statistics is 1.75 which suggests that the model is free from serial correlation.

Table 4 outlines the results of panel regression examining the effect of government spending on economic growth. Without controlling a set of autonomous variables used in the previous literature, Column I shows that the relationship between public sector spending and economic growth is positive and substantial. Even when control variables such as revenue, population and trade are included in the estimation, as shown in Column II, the result does not change. It was established that that increase in government expenditure has a significantly positive impact on economic evolution. It also concurs with the Keynesian theory that states that an increase in government spending will derive economic and social progress.

Table 2. Granger Causality Test

Null Hypothesis	*F* Prob > *F*
Government expenditure does not cause an increase in GDP	3.85 0.0552**
GDP does not cause increase in government expenditure	0.54 0.6754

Source: The authors.

Note: * and ** significant at the 1% and 5% level respectively.

Table 3. Heteroscedasticity Test

F-statistic	1.23	Prob. *F*(129,772)	0.2345
Obs. *R^2	160.58	Prob. chi-square(129)	0.2176
Scaled explained SS	4,534.23	Prob. chi-square(129)	0.0000

Source: The authors.

Note: * is the mutiplication sign that is drawn from running the model in eviews. Therefore, there is no need to specify the significance of * in this table.

Table 4. Relationship Between Economic Growth and Government Spending

Change in Log of GDP	Model 1 GDP	Model 2 GDP	Model 3 GDP per Capita	Model 4 GDP per Capita
Government spending	**0.217* (0.027)**	**0.003* (0.001)**	**0.245* (0.029)**	**0.002* (0.001)**
Government revenue		0.146* (0.018)		−0.176* (0.022)
Terms of trade		0.002** (0.001)		0.001*** (0.001)
Investment		0.080* (0.017)		0.091* (0.0207)
Population		−0.254* (0.030)		0.040 (0.036)
Inflation		−0.001 (0.001)		−0.001 ** (0.001)
Unemployment		−0.002* (0.001)		−0.004* (0.001)
Adj. *R^2*	0.45	0.87	0.46	0.88
Observations	1,573	1,013	1,574	1,013
Countries	59	59	59	59

Source: The authors.

Note: Standard errors are given in parentheses. The statistical significance of the coefficients is as follows: *** significant at the 10% level, ** significant at the 5% level and * significant at the 1% level.

However, population growth has an expected negative sign with a noteworthy impact on economic growth. This indicates that, with the increase in population, some proportion of country's investment that was used to increase capital per worker gets diverted to generate capital for new workers. Therefore, the high rate of the population tends to have a negative impact on growth. Similarly, the coefficient of inflation is negative however, in our empirical analysis, it appears to be insignificant. This can be due to problems of collinearity with the other macroeconomic variables such as investment and government spending that are incorporated into the equation.

In developing economy, one of the main determinants of economic growth is the trade openness. It has been argued in the literature that as the country's economy opens up and integrates with the international market, countries likely to witness high economic growth owing to the allocation of new technology and innovative aids that aids to exploit the comparative advantage by increasing exposure to competition. Thus, terms of trade entered the regression equation with a significant positive sign. This thus indicates that trade openness exacerbates economic growth across developing countries. The impact of globalization is substantial at 1 per cent.

Models 3 and 4 display the robustness of the results were checked by employing an alternative definition of output, that is, alteration in the log of real GDP per capita. The econometric outcomes show that the estimated coefficients are significant and positive, signalling positive link between economic growth and total expenditure. Thus, results are largely in line with the conclusions drawn from the benchmark Equation (3) where real GDP was used as a reliant variable.

Discussion and Conclusion

The liaison between public expenditure and economic growth has been a subject of debate and discussion in the economic literature since the 19th century. While Wagner Law claims that government expenditure increases with economic growth, the Keynesian analysis highlights the importance of government expenditure in promoting economic growth. From the economic policy point of view, therefore, it becomes critical to study the linkage between GDP growth and public spending. The present research thus sought to achieve this research objective in the context of developing countries by employing both Granger Causality Test and Panel Regression analysis over the period 1990–2019.

The results indicate that the association between GDP and government spending is unidirectional where causality

runs from government expenditure to national income. The empirical results strongly supported the Keynes theory, stating that with any rise in government spending, there will be surge in the economic growth. This shows that public spending in developing countries acts as a means of 'making the pie larger' by increasing GDP growth. This argument is supported by the success experienced by most of the developing countries during the Global Recession of 2008. The stimulus measures helped these countries to not only recover from the global economic crisis but also bring the fiscal policy to the mainstream of economic development. Accordingly, these findings serve as an empirical justification to the argument advocated by Keynes. The regression estimates also demonstrated the economic growth is positively associated with the total investment and tax revenue. Further, the results indicate that trade openness significantly influences economic growth with an expected positive sign across developing countries.

The results have important implications for the academics and policymakers. The emergence of Keynesian economics during the 1930s was heralded as a paradigm shift in economic thought that places emphasis on the self-balancing mechanism of market forces. Keynes argued that government involvement via fiscal policy is critical for economic stability. Government expenditure, in particular, could function as an important regulator that could be used to stimulate the economy. The results support the conventional Keynesian argument of expansionary fiscal policy. Public sector expenditure can be seen as a useful policy aid that could help to balance the economy during good and bad times. From a practical point of view, several implications arise, from the results of the study. The policymakers can use this information to identify the likely effects and implications of increased government expenditure on economic progression.

Given that the present research has explored the association between total spending and economic progress across developing countries, some caution is required while generalizing the derived results beyond the countries used. Due to unavailability of data, the entire group of developing countries listed by international organizations are not covered. Therefore, the findings of this study will be specific to this group of developing countries. Another drawback of the study pertains to the selection of variables and data sources. Although the control variables were selected after an extensive literature survey, several other critical variables and instruments may exist, which may provide better insight into the impact of public sector disbursement in developing countries. The extant literature on the association of government spending with economic growth is inconclusive; hence, different results may be achieved with some different measure of economic growth, public spending, control variables and instruments. Therefore, appropriate caution should be exercised while generalizing the derived results beyond the specific measures used. Further, the analysis could also suffer from the endogeneity problems. To deal with endogeneity issues, there is a need to identify the relevant instruments and pathways that could be explored in the future research.

Appendix A

Table A1. Sample of Countries used in the Analysis

Albania	Cameroon	Islamic Republic of Iran	Pakistan
Algeria	China	Jamaica	Paraguay
Angola	Colombia	Jordan	Peru
Argentina	Comoros	Kenya	Phillipines
Armenia	Costa Rica	Kyrgyz Republic	Romania
Azerbaijan	Djibouti	Lesotho	Russia
Bangladesh	Ecuador	Libya	South Africa
Belarus	Egypt	Malaysia	Srilanka
Belize	El Salvador	Maldives	Sudan
Bhutan	Gabon	Mauritius	Thailand
Bolivia	Ghana	Mexico	Turkey
Botswana	Guatemala	Morocco	Ukraine
Brazil	Honduras	Namibia	Vietnam
Bulgaria	India	Nicaragua	Zambia
Cabo Verde	Indonesia	Nigeria	

Source: World Bank.

Appendix B

Table B1.

Variables	Description (1990–2019)	Sources
Real GDP per Capita	GDP per capita is the total gross domestic product of a country divided by the total population.	World Development Indicators, World Bank
Real GDP growth rate	GDP is the sum of gross value added by all resident producers in the economy. It is measured in the US dollar.	World Development Indicators, World Bank
Government spending	Public expenditure. It is measured as a percentage of GDP.	International Monetary Fund (GFS)
Tax Revenue	Tax revenue refers to compulsory transfers to the central government for public purposes. It is measured as % of GDP.	World Development Indicators, World Bank
Unemployment	Unemployment refers to the share of the labour force that is without work but available for and seeking employment.	World Development Indicators, World Bank
Population	Annual growth rate of population	World Development Indicators, World Bank
Inflation	Annual percentage change in the consumer price index	World Development Indicators, World Bank
Investment	Total value of the gross fixed capital formation and changes in inventories and acquisitions fewer disposals of valuables for a unit or sector (as % of GDP)	World Economic Outlook, International Monetary Fund
Terms of trade	Net barter terms of trade index are calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year	World Economic Outlook, International Monetary Fund

Source: The authors.

References

Afonso, A., & Jalles, J. T. (2014). Fiscal composition and long-term growth. *Applied Economics*, *46*(3), 349–358. http://doi.org/10.1080/00036846.2013.848030

Afxentiou, P. C., & Serletis, A. (1996). Government expenditures in the European Union: Do they converge or follow Wagner's Law? *International Economic Journal*, *10*(3), 33–47.

Afzal, M., & Abbas, Q. (2010). Wagner's law in Pakistan: Another look. *Journal of Economics and International Finance*, *2*(1), 12.

Ahmad, N., & Ahmad, F. (2005). Does government size matter? A case study of D–8 member countries. *Pakistan Economic and Social Review*, *XLIII*, 199–212.

Ahmad, U. G., & Loganathan, N. (2015). The causal nexus between government expenditure and economic growth in Nigeria: evidence from a bootstrap rolling window approach. *The American Journal of Innovative Research and Applied Sciences, 2*(1), 16-24.

Akitoby, B., Clements, B., Gupta, S., & Inchauste, G. (2006). Public spending, voracity, and Wagner's Law in developing countries. *European Journal of Political Economy*, *22*(4), 908–924.

Al-Faris, A. F. (2002). Public expenditure and economic growth in the Gulf Cooperation Council countries. *Applied Economics*, *34*(9), 1187–1195.

Balaji, B. (2011). Causal nexus between public health expenditure and economic growth in four southern Indian states. *IUP Journal of Public Finance*, *9*(3), 7.

Barro, R. J. (1991). Economic growth in a cross section of countries. *The Quarterly Journal of Economics*, *106*(2), 407–443.

Barro, R. J. (1996). *Determinants of economic growth: A cross-country empirical study* (Working Paper No. 5698). National Bureau of Economic Research.

Barro, R. J. (2003). Determinants of economic growth in a panel of countries. *Annals of Economics and Finance*, 4, 231–274. http://doi.org/10.1016/j.jhealeco.2006.07.003

Biyase, M., & Zwane, T. (2015). Economic growth and government expenditures in Africa: Panel data analysis. *Environmental Economics*, *6*(3), 15–19.

Blankenau, W. F., Simpson, N. B., & Tomljanovich, M. (2007). Public education expenditures, taxation, and growth: Linking data to theory. *American Economic Review*, 97(2), 393–397.

Castelló-Climent, A. (2010). Inequality and growth in advanced economies: An empirical investigation. *Journal of Economic Inequality*, *8*(3), 293–321. http://doi.org/10.1007/s10888-010-9133-4

Chandran, G., Rao, R., & Anwar, S. (2011). Economic growth and government spending in Malaysia: A re-examination of Wagner and Keynesian views. *Economic Change and Restructuring*, *44*(3), 203–219.

Rana, S. (Eds.), *Advances in management* (pp. 193–200). Bloomsbury Publishing.

Dhiman, R., Kumar, V., & Rana, S. (2020). Why export competitiveness differs within Indian textile industry? Determinants

and empirical evidence. *Review of International Business and Strategy*. https://doi.org/10.1108/RIBS-03-2020-0021

Dogan, E., & Tang, T. C. (2006). Government expenditure and national income: Causality tests for five South East Asian countries. *International Business and Economics Research Journal*, *5*(10), 49–58.

Dritsakis, N. (2004). Defence spending and economic growth: An empirical investigation for Greece and Turkey. *Journal of Policy Modeling*, *26*(2), 249–264.

Dritsakis, N., & Adamopoulos, A. (2004). Financial development and economic growth in Greece: An empirical investigation with Granger causality analysis. International *Economic Journal, 18*(4), 547-559.

Ebaidalla, E. M. (2013). Causality between government expenditure and national income: Evidence from Sudan. *Journal of Economic Cooperation and Development*, *34*(4), 61–76.

Farzanegan, M. R. (2014). Military spending and economic growth: The case of Iran. *Defence and Peace Economics*, *25*(3), 247–269.

Gangal, V. L., & Gupta, H. (2013). Public expenditure and economic growth: A case study of India. *Global Journal of Management and Business Studies*, *3*(2), 191–196.

Gujarati, D. N. (2009). *Basic econometrics*. Tata McGraw-Hill Education.

Huang, C. J. (2006). Government expenditures in China and Taiwan: Do they follow Wagner's Law? *Journal of Economic Development*, *31*(2), 139–148.

Islam, A. M. (2001). Wagner's law revisited: Cointegration and exogeneity test for the USA. *Applied Economic Letters*, *8*(8), 509–515.

Lamartina, S., & Zaghini, A. (2011). Increasing public expenditure: Wagner's law in OECD countries. *German Economic Review*, *12*(2), 149–164.

Loizides, J., & Vamvoukas, G. (2005). Government expenditure and economic growth: Evidence from trivariate causality testing. *Journal of Applied Economics*, *8*(1), 125–152.

Muinelo-Gallo, L., & Roca-Sagalés, O. (2013). Joint determinants of fiscal policy, income inequality and economic growth. *Economic Modelling*, 30, 814–824. http://doi.org/10.1016/j.econmod.2012.11.009

Petrakos, G., & Arvanitidis, P. (2008). Determinants of economic growth. *Economic Alternatives*, *1*, 49–69.

Pradhan, R. P. (2007). Causal nexus between government expenditure and economic growth: Evidence from SAARC countries. *Decision*, 34(2).

Rana, S., & Sharma, S. (2016). A review on the state of methodological trends in international marketing literature. *Journal for Global Business Advancement*, *9*(1), 90–107.

Rana, S., Prashar, S., Barai, M. K., & Hamid, A. B. A. (2020). Determinants of international marketing strategy for emerging market multinationals. *International Journal of Emerging Markets*. https://doi.org/10.1108/IJOEM-09-2019-0742

Ray, S., & Ray, I. A. (2012). On the relationship between government's developmental expenditure and economic growth in India: A cointegration analysis. *Advances in Applied Economics and Finance*, *1*(2), 86–94.

Samudram, M., Nair, M., & Vaithilingam, S. (2009). Keynes and Wagner on government expenditures and economic development: The case of a developing economy. *Empirical Economics*, *36*(3), 697–712.

Shahbaz, M., Afza, T., & Shabbir, M. S. (2013). Does defense spending impede economic growth? Cointegration and causality analysis for Pakistan. *Defence and Peace Economics*, *24*(2), 105–120.

Sharma, M., & Dhiman, R. (2016). Determinants affecting Indian textile exports: A review. *Biz and Bytes: An International Journal of Management and Technology*, *6*, 193–199.

Sideris, D. (2007). *Wagner's law in 19th century Greece: A cointegration and causality analysis* (Working Paper No. 64). Bank of Greece.

Singh, B., & Sahni, B. S. (1984). Causality between public expenditure and national income. *The Review of Economics and Statistics*, *66*(4), 630–644.

Srinivasan, P. (2013). Causality between public expenditure and economic growth: The Indian case. *International Journal of Economics and Management*, *7*(2), 335–347.

Stern, D. I. (2011). *From correlation to Granger causality* (Crawford School Research Paper No. 13). The Australian National University.

Taban, S. (2010). An examination of the government spending and economic growth nexus for Turkey using the bound test approach. *International Research Journal of Finance and Economics*, *48*(1), 184–193.

Tang, C. F. (2009). An examination of the government spending and economic growth nexus for Malaysia using the leveraged bootstrap simulation approach. *Global Economic Review*, 38(2), 215–227.

Tang, T. C. (2001). Testing the relationship between government expenditure and national income in Malaysia. *Analisis*, *8*(1&2), 37–51.

Thabane, K., & Lebina, S. (2016). Economic growth and government spending nexus: Empirical evidence from Lesotho. *African Journal of Economic Review*, *IV*(1), 86–100.

Verma, S., & Arora, S. (2010). Does the Indian economy support Wagner's law? An econometric analysis. *Eurasian Journal of Business and Economics*, *3*(5), 77–91.

Wagner, A. (1958). Three extracts on public finance. In R. A. Musgrave & A. T. Peacock (Eds.), *Classics in the theory of public finance* (pp. 119–136). Macmillan.

Wu, S. Y., Tang, J. H., & Lin, E. S. (2010). The impact of government expenditure on economic growth: How sensitive to the level of development? *Journal of Policy Modeling*, *32*(6), 804–817.

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