



The Influence of Tax Revenue, Government Expenditures, Fiscal Decentralization, Carbon Emission and Exports on Economic Growth of Developing Countries

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ABSTRACT

Nowadays, high economic growth is a significant task for the betterment of society, every country worldwide, and the researchers' attention. Therefore, the present study aims to examine the role of tax revenue, government expenditures, fiscal decentralization, carbon emission, and exports on developing countries' economic growth. The data has been gathered from the World Development Indicator (WDI) for the year 2008-2019 from fifteen emerging developing countries worldwide. The present study executed the robust standard error and generalized method of moment (GMM) to check the association between tax revenue, government expenditures, fiscal decentralization, carbon emission, exports, and developing countries' economic growth. The results revealed that all the predictors such as tax revenue, government expenditures, fiscal decentralization, carbon emission, and exports have positive nexus with developing countries' economic growth. These outcomes help the developing countries' regulators focus on the foremost factors that could enhance the country's economic growth.



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1. Introduction

The world has become a global village. The rapid changes in the world required rapid response from the countries to meet the changing demands. The literature on economic growth is increasing on rapid growth (Khan & Nawaz, 2010). The increasing competition badly crushes the country, which failed to go parallel with the world. The survival of any country depends upon the economic conditions of the country. The direction of the economy matters a lot for the future of the country. The economy's right direction also strongly impacts the standard of living of the country's people.

On the other hand, there is a direct relationship between the economic direction and living standards. Numerous factors impact the country's economic condition, i.e., government revenue, expenditures, imports, exports, carbon emission, inflation, etc. In this decade of open, accessible economy, countries are dedicated to enhancing their citizens' quality of life. And the standard of life derives mostly from macroeconomic stability. Thus, every country's primary goal is to raise the Gross Domestic Product-GDP (Shittu, Hassan, & Nawaz, 2018).

Taxes play a crucial role as a source for economic planning and development, even economic policies are focused on projected tax revenues, and tax policies are a fundamental component of any country's economic policy. To maintain its global competitiveness and growth, each government must produce tax revenues to finance significant ex-government spending. The planet has now become a global village to maintain the market competitively, and every government requires a competitive tax system such that money, skilled labor, and technologies are attracted, critical elements for optimizing economic development. Fiscal federalism researchers are particularly interested in the partnership between fiscal decentralization and economic development, and this topic has obtained various theoretical and methodological studies in recent years. According to the principle of fiscal federalism, fiscal competitiveness contributes to practical distributive effects, which can inevitably foster higher growth rates (Baskaran & Feld, 2013).

Furthermore, decentralization is claimed that localized experiments contribute to more legislative developments; and expertise drives policymakers, thus restricting their capacities to over-tax people to deliver productive public goods. Theoretical literature models still support the nexus between decentralization and development, but the impact's trajectory is less well established. The study proposed that decentralization on development depends on the varying need for public goods from both young and elderly, and decentralization creates motivation to invest in human resources when still young (Martinez-Vazquez & McNab, 2003; Rodríguez-Pose & Ezcurra, 2011). There are an adequate decentralization level and necessary changes that improve growth if the predominant level varies from the optimized level. IN addition to this, fiscal rivalry contributes to decreased democratic development and lower economic growth due to decentralization. The private capital stocks are constant, and that economic development is guided only by the public accumulation of capital. Increased mobility of tax bases results in increased frequency of policy innovation and economic development.

The Copenhagen Conference on Climate change came to an end without any clear promise or a new agreement to curb greenhouse gases emissions from any industrialized and emerging economy. However, studies to create a statistically significant nexus between CO2 emission and economic activities in developed economies are worthwhile because of increased CO2 emission in developing countries, particularly in emerging economies such as China and India. Standard economic models do not offer a straightforward response about whether the cause or consequence of CO2 emission is economic development (Bakhtyar, Kacemi, & Nawaz, 2017). Studies that define the nexus between CO2 consumption and production take two fundamental approaches. The studies analyze the role of CO2 emission inside the standard output function system to economic activities (Bouznit & Pablo-Romero, 2016; Riti, Song, Shu, & Kamah, 2017). A demand-side methodology examines the interaction between

the usage of resources in a three varied CO₂ emission demand model between gross domestic product (GDP) and energy prices. Both previous research types in this area adopt one or the other strategy and establish energy-saving strategies accordingly. Therefore, both models' adaptation to a nation or community of countries offers more robust forecasts and essential policy consequences. Carbon pollution is also one of the essential energy usage bi-products (Sarkar, Al-Amin, Mustapa, & Ahsan, 2019). Literature proposed that there is a strong association reported between government expenditure and the economic growth of the country. The government spends the revenue collected. The case if there is an imbalance between government revenue collection and spending, this will directly affect the country's economy.

2. Literature Review

There are numerous ways to fulfilling this goal, one of which is the expansion of exports. An important topic in this sense instantly disrupts economists and analysts' and researchers' minds, whether the promotion of exports contributes to enhanced economic growth or whether economic growth stimulates export expansion/growth. Therefore, economists have varying opinions at various periods, and literature has offered scholars and policymakers a discussion since the last few decades (Guntukula, 2018; Osabohien et al., 2019). One scholar's panel proposed the export-led hypothesis of development, whereas the other advocates an export-led hypothesis. Besides, current literature indicates that the promotion of exports contributes to economic growth and that economic growth stimulates exports, i.e., the bidirectional causality between exports and economic growth. The theory of export-led development typically illustrates the export / economic growth relationship. The researchers claim that supporting exports through policies such as export subsidies or depreciation of the exchange rate would increase economic development. The essence of the neoclassical theory underlying the export-led growth hypothesis is that foreign market competitiveness encourages economies of scale and improves productivity by investing capital in industries that have a competitive advantage in that region. These optimistic externalities stimulate development in the economy (Ali, Ali, & Dalmar, 2018; Bakari & Mabrouki, 2017). The claim that economic growth encourages export growth; on the opposite is focused on the premise that productivity increases generate competitive benefits in some industries that inevitably contribute to export growth. Also, countries with fast growth rates and relatively low absorption rates inevitably need to export surplus output. Several reports suggest a bi-directional interaction between these factors to make exports liable for industrial growth and exports for positive growth.

The opinion that exports play a decisive function in economic development is nothing new. It focuses on Adam Smith and David Ricardo's classic economic theories, which claim that foreign exchange plays a vital role in economic development and that specialization has economic benefits. Neoclassical economics claims that foreign market rivalry encourages economies of scale and improves productivity in the fields where the country has a competitive advantage by concentrating capital. These optimistic externalities stimulate development in the economy. These theoretical claims surrounding nexus export-economic development have been empirically tested at various periods by economists and scholars (Bakari & Mabrouki, 2017; Hameed, Iqbal, & Devi, 2012).

Using error correction modeling and multivariate Granger causality, the study explored the causal relationship between exports and production growth in the Greek economy's empirical sense. To verify the robustness of the effects, a sensitivity study dependent on impulses is carried out. The method for calculating outcomes is rigorous and demonstrates that the ELGH is not accurate for Greece. The empirical results also indicate a clear and stable trigger of growth in production to long-term export efficiency (Hameed et al., 2012; Panas & Vamvoukas, 2002).

One study examined Granger-causality in Portugal from 1865 to 1998 between exports, imports, and economic development. The imported variable's role in analyzing export-production causalities is illustrated, allowing direct causality, indirect causality, and false causality between export growth and output growth to be examined. The analytical findings do not support a unidirectional causality among the considered variables. There is a feedback link between growth in export production and a rise in import output. More surprisingly, between import-export growths, there is no significant causality. Both findings seem to confirm the hypothesis that the growth of production during this time for the Portuguese economy revealed a related form of dual economy and minimal intra-industry purchases (Hameed et al., 2012).

The theoretical structure lets us catalog the various forms that taxes could contribute to growth in production. Firstly, higher taxes will reduce the investment rate or net capital stock growth by high corporate- and individual income tax rates, high efficient tax rates on capital gains, and inadequate depreciation provisions. Secondly, tax policy may also inhibit productivity growth by reducing development; if subsidies (negative tax) occur, they may improve research practices whose spillover effects can theoretically strengthen existing labor and capital efficiency. Third, taxes can decrease the opportunity to work, decrease workforce participation and working hours, or even establish the prejudicial option of jobs or the acquisition of schooling, skills, and training. Fourthly, substantial labor taxes can distort the productive usage of human resources by deterring employees from work in the sectors with high social efficiency, yet heavy taxation and fifthly, by distorting investment from the high-tax sector into low-tax sectors (Egbunike, Emudainohwo, & Gunardi, 2018; Siddiqui, 2010).

The tax system differs worldwide, with the primary motivation for optimum revenue at minimal inflation. Various nations have different taxation philosophies and different collection methods; in the same way, countries use different resources that impact development differently. The overall tax scheme's diverse uses vary worldwide, which is the crucial explanation for maximum taxes with limited inflation (Babatunde, Ibukun, & Oyeyemi, 2017). Different countries have different taxation ideologies and methods of collection; similarly, countries use different tools that have different effects on growth (Castles & Dowrick, 1990; Ofurum, Amaefule, Okonya, & Amaefule, 2018)

Tax policy also influences the high personal income tax conduct of investors promoting entrepreneurial investment. The low corporate rate of personal taxes facilitates risk-taking (Amri, Masbar, & Aimon, 2019). The studies offer proof of risk-taking prohibited by a progressive personal tax system (Ogbonna & Appah, 2016) and discuss the various possible

influences on the tax structure's economic operation and seek good empirical evidence for these tax consequences U.S. income tax returns results from 1964 to 1993. The study also performed in a cross-sectional data collection from 1970 to 1998 nation analysis, which regulates several other determinants/covariates of economic growth; notice that corporate tax rate is substantially inadvertent concerning economic growth (Lee & Gordon, 2005).

The study used annual data from 1965 to 2001, explored the relationship between the rate of expansion, gross savings ratio to GDP, to the marginal, direct tax rate and tax revenue, which found a one-way causal relationship between the marginal direct tax rate and the rate of economic development, with the path from the marginal direct tax rate to the rate of There is also a one-way causal link between the gross savings ratio and GDP and marginal direct tax as well as tax returns, varying from gross savings to the factors mentioned above. In contrast, the causal correlation between the pace of economic growth and the ratio of gross savings to GDP does not exist. Conversely, the marginal direct tax rate is bilaterally causal to the tax revenues (Anastassiou & Dritsaki, 2005; Aydin & Esen, 2019).

Perhaps the most significant challenge in the analytical study of the effects of fiscal decentralization is to find a reliable indicator of the degree of decentralization that prevails in a given nation. Many reports take a fiscal view and take steps focused on a sub-federal income or expense ratio of overall government income and expenditure. These measures are typically established based on the IMF's Government Finance Statistics (GFS) dataset, particularly in cross-country studies. The GFS steps include a misleading representation of the "real" degree of decentralization is a well-known downside. There is a related issue on the revenue side. While the data may suggest a high degree of decentralized taxes since a significant proportion of the public sectors pooled tax revenues flow to sub-federal governments, their ability to assess tax rates or bases might be insignificant autonomously. In other terms, the great importance of GFS decentralization steps does not mean a great deal of sovereignty. One of the literature studies also presented evidence on decentralization and is based on the OECD (1999) approach (Stegarescu, 2005). An analysis of the effect of fiscal decentralization on economic growth by tackling these problems while at the same time utilizing a collection of decentralization steps capturing the "real" level of fiscal decentralization with the addition of logically expands the steps as they (a) are constructed following the same classification method, (b) is applicable in 23 countries and, most notably, (c) are available as a broad annual panel over the duration from 1975 to 2001 (Thornton, 2007). This data collection enables the usage of panel data approaches and allows us to run various robustness checks.

The investigators discover unidirectional causalities from power generation to energy use (Kareem, Olusegun, & Samuel, 2017). Additional analysis has centered on both developed and emerging countries. However, these findings do not unambiguously infer the causality path between CO2 emission and economic development. This may be because of three different reasons. Second, the analyses vary in the econometric approaches used. Second, various details from different countries and periods are taken into account. Third, the non-stationary of data may cause issues. Any experiments have unidirectional causality between production and energy use. Another study also reviews Australia's data on the oil, GDP, and the job sector also finds unidirectional causality from production to CO2. Studies often found a unidirectional causal association between energy use and production.

The correlation between government spending and economic growth has been a continuous topic in economic development debates. The prominent Wagner Act of 1958 notes that government expenditure is elastic in revenue and that the ratio of government spending to income continues to increase with economic growth. In addition, the government's non-military public goods and facilities, such as schooling, housing, and regulation, are also deemed critical influences in economic development (Dai, Zhang, & Huang, 2016; Mladenović, Sokolov-Mladenović, Milovančević, Marković, & Simeunović, 2016).

On the other side, many experiments have evaluated the effect of government intervention on economic development, assuming that the government scale has an inverted U association with economic growth. Government unproductive investment would reduce the growth rate GDP. In contrast, the effect of efficient government spending on GDP development is Ambiguous, based on the government's conduct and the expense ratio. So little, so many. Too little. Some later study even supports the negative impact of the public Economic development area (Iheanacho, 2016; Joshua, 2019).

The latest research usually indicates that the law of Wagner can be established, the developed nations are less likely to do so (Akitoby, Clements, Gupta, & Inchauste, 2006). On the opposite, studies from the literature show that government investment may benefit economic prosperity if public sector spending is involved, although it may have a detrimental impact. If only government usage is concerned. However, prior findings were not decided on the relation, due to their disparities, between government expenditure and economic growth. Measurement of government spending in the specification of econometric models. Sample collection (Dudzevičiūtė, Šimelytė, & Liučvaitienė, 2018; Sáez, Álvarez-García, & Rodríguez, 2017).

3. Data and Methodology

The ongoing research aims to explore the impact of tax revenue, government expenditures, fiscal decentralization, carbon emission, and exports on developing countries' economic growth. The data has been gathered from the WDI for the year 2008-2019 from fifteen emerging developing countries named Brazil, Mexico, Russia, Indonesia, India, China, Nigeria, Turkey, Bangladesh, Egypt, Iran, Pakistan, Philippines, Colombia, and South Africa. The variables that this research has selected include the economic growth (E.G.) that is used as a predictive variable and measured as the GDP growth (annual percentage) (Cai & Lu, 2013). In addition, predictors of the research include the government expenditure (G.E.) that is measured as the government expenditure on growth (percentage of GDP per capita) (Wu, Tang, & Lin, 2010), tax revenue (T.R.) that is measured as the tax revenue (percentage of GDP) (Mahmood & Chaudhary, 2013), fiscal decentralization (F.D.) is measured as the ratio of Subnational spending (t) - transfers from subnational to central government (t) and consolidated general government spending (t) (Gemmell, Kneller, & Sanz, 2013), carbon emission (CO₂) is measured as the CO₂ emissions from substantial fuel consumption (percentage of total) (Feng, Chen, & Zhang, 2013) and export (EX) is measured as the exports of goods and services (annual percentage growth) (Zhu & Kotz, 2011).

Table 1
Measurement of Variables

Variable	Measurement	Sources
Economic Growth	GDP growth (annual percentage)	(Cai & Lu, 2013)
Government Expenditure	Government expenditure on growth (percentage of GDP per capita)	(Wu et al., 2010)
Tax Revenue	Tax revenue (percentage of GDP)	(Mahmood & Chaudhary, 2013)
Fiscal Decentralization	Subnational spending (t) - Transfers from subnational to central government (t) / Consolidated general government spending (t)	(Gemmell et al., 2013)
Carbon Emission	CO2 emissions from solid fuel consumption (percentage of total)	(Feng et al., 2013)
Exports	Exports of goods and services (annual percentage growth)	(Zhu & Kotz, 2011)

The constructs have been highlighted in the form of the equation given below:

$$EG_{it} = \alpha_0 + \beta_1 GE_{it} + \beta_2 TR_{it} + \beta_3 FD_{it} + \beta_4 CO2_{it} + \beta_5 EX_{it} + e_{it} \quad (1)$$

Where;

i = Country

t = Time Period

E.G. = Economic Growth

G.E. = Government Expenditure

TR = Tax Revenue

FD = Financial Decentralization

CO₂ = Carbon Emission

EX = Exports

The present study executed the robust standard error because cross-sectional dependence and study have an auto-correlation issue (Hoechle, 2007). In addition, GMM has also been executed to check the association between tax revenue, government expenditures, fiscal decentralization, carbon emission, exports, and developing countries' economic growth.

4. Results and Discussion

The findings firstly exposed the variance inflation factor (VIF) that show the multi-collinearity assumption of regression, and the figures highlighted no multi-collinearity issue exists in the data because the VIF values are less than 5 in all the variables. These values have highlighted in Table 2 shown below:

Table 2
Variance Inflation Factor

	VIF	1/VIF
FD	3.591	.278
CO2	3.344	.299
EX	1.763	.567
TR	1.201	.832
GE	1.104	.906
Mean VIF	2.201	.

The findings also exposed the relationships among the constructs shown in Table 3 correlation matrix, and the results show that no high correlation exists among the constructs because the values are less than 0.90. Besides, all the predictors have a positive association with, E.G., growth. These values have highlighted in Table 3 shown below:

Table 3
Correlation matrix

Variables	EG	TR	GE	FD	EX	CO2
EG	1.000					
TR	0.291	1.000				
GE	0.516	-0.130	1.000			
FD	0.483	-0.041	-0.125	1.000		
EX	0.106	-0.358	0.159	0.529	1.000	
CO2	0.553	0.000	-0.143	0.834	0.470	1.000

The robust standard error results revealed that all the predictors such as tax revenue, government expenditures, fiscal decentralization, carbon emission, and exports have positive nexus with developing countries' economic growth because the beta values have a positive sign 1.64 t-values and less than 0.05 p-values. These links have been highlighted in Table 4.

Table 4
Robust Standard Error

EG	Beta	S.D.	t-values	p-values	L.L.	U.L.
TR	0.821	0.162	5.060	0.000	0.473	1.169
GE	0.429	0.065	6.600	0.000	0.568	0.889
FD	0.127	0.022	5.773	0.000	0.021	0.075
EX	0.128	0.060	2.133	0.002	0.230	0.286
CO2	0.012	0.003	4.790	0.000	0.007	0.018
_cons	4.122	1.264	3.260	0.006	1.411	6.833

The results of GMM has revealed that all the predictors such as tax revenue, government expenditures, fiscal decentralization, carbon emission, and exports have significant and positive nexus with the economic growth of developing countries because probability values are less than 0.05 while t-statistics are more considerable than 1.64. These relationships have been exposed in Table 5.

Table 5
Generalized Method Moment (GMM)

E.G.	Beta	S.D.	t-value	p-value	L.L.	U.L.	Sig
TR	1.17	.201	5.81	.000	.773	1.568	***
GE	.839	.1	8.40	.000	.037	.642	***
FD	.076	.025	3.10	.002	.028	.125	***
EX	.439	.12	3.67	.000	.203	.675	***
CO2	.009	.003	3.19	.002	.003	.014	***
Mean dependent var		1.606	SD dependent var				0.553
Number of obs		163.000	F-test				54.867

*** $p < .01$, ** $p < .05$, * $p < .1$

4.1. Discussion and Implications

These results agree with the previous studies of Ojong, Anthony, and Arikpo (2016), which show that the high rate of generation of revenues from taxes brings improvement in economic growth. The results have revealed that government expenditure is positively linked with economic growth. These results are in line with the previous studies Kurt (2015), where it has been focused that the government of expenditures contributes a lot to economic growth. The results have indicated that fiscal decentralization has a positive association with economic growth. These results are in line with Filippetti and Sacchi (2016) past studies, which reveal the importance of fiscal decentralization to higher economic growth. This study's results have represented that CO₂ emission has positive impacts on the rate of economic growth. These results follow the previous studies of Zhang, Wang, and Wang (2018), which stresses the role of CO₂ emission in attaining higher economic growth. Last, the exports are positively linked with economic growth. These results match with the studies of Yüksel (2017).

There are both theoretical and empirical implications are carried by this paper. I talk about theoretical implications the study adds to the literature on the economy because the study checks the influences of tax revenue, government expenditures, fiscal decentralization, CO₂, and exports on the rate of economic growth. On the other hand, the study makes empirical implications. It gives a guideline to the economic regulators of making improvements in the country's economic growth with favorable tax policies, increased government expenditures, fiscal decentralization, CO₂ emission, and exports.

5. Conclusion and Limitation

In conclusion, it can be said that government revenues from taxes positively contribute to economic growth. The results have revealed that the expenditures committed by the government have a positive relationship with economic growth. Moreover, the paper examines that fiscal decentralization creates motivation in the employees to work in organizations' interest, which results in business performance and thus to economic growth. Besides, this study has proved that the emission of CO₂ also has positive influences on economic growth. Last, exports make a positive contribution to economic growth. The higher the rate of exports, the higher is the rate of economic growth.

Though our study has thrown light on the five elements such as tax revenue, government expenditures, fiscal decentralization, and CO₂ which contribute a lot to the economic growth of the country, yet it has some limitation too as there many other factors which also play a considerable role in the economic growth but not explored by the study. Thus, the future scholars are recommended to include some contributors to economic growth in their studies. Moreover, this paper had adopted a single source of data, while future scholars must utilize multiple data collection sources to collect data.

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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