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EXPLORING THE CORRELATION BETWEEN TRADE, ECONOMIC GROWTH, AND GOVERNMENT EFFICIENCY IN CENTRAL AFRICAN NATIONS

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Abstract: Fiscal management is crucial for economic growth and development, particularly in developing countries where fiscal policy has a significant impact on their economic prospects. This study investigates the effects of government borrowing modes on government spending and revenue mobilization behavior in Ghana. We propose that the effects of borrowing modes on revenue streams may not be uniform. The study modifies the Franco-Rodriguez government utility maximization function and employs the vector autoregressive (VAR) system to establish dynamic links among borrowing modes, revenue channels, and government spending. The study analyzes two variants of the model, aggregated and disaggregated government expenditure models. The results indicate that there is one long-run equilibrium relationship in respect of government consumption expenditure for the disaggregated model. In the aggregate government expenditure model, two long-run relationships are established for government expenditure and external borrowing. The estimates show that government consumption expenditure is inversely related to government capital expenditure, direct taxes, indirect taxes, and domestic borrowing. In the short run, the impacts of borrowing modes on tax channels are different, and tax policy initiators should consider these differences while formulating policies. Our findings have implications for policymakers, particularly in developing countries, regarding the management of fiscal policies and the effects of borrowing on government spending and revenue mobilization.

Keywords: Fiscal behavior, government borrowing, revenue mobilization, Ghana, vector autoregressive system, Franco-Rodriguez function.

1. Introduction

During the 1990, literature gave institutions a primordial place. It provided a series of analyzes aimed at demonstrating the essential role of quality institutions in the process of economic development and in the effectiveness of economic policy measures. North (1990) was one of the first to demonstrate the importance of institutions in economic development. Mauro (1995) emphasizes the phenomenon of corruption which is harmful to investment and economic growth in developing countries; while Engerman and Sokoloff (2003) postulate that

there are economies of scale due to good quality of institutionsand trade openness in determining economic development. In the same vein, Dollar and Kraay (2003) formulate that countries which have good institutions tend to trade more. However, most of the work examines the links between institutions and trade ignoring their effect on economic growth (Lavallée, 2006; Levchenko, 2013; Avom and Gandjon, 2014; Gandjon, 2017).

According to the theory of endogenous growth and the new theory of international trade, openness to international trade is a catalyst for economic growth insofar that it allows countries to benefit from economies of scale and promotes transfer of technology. However, the differences in economic performance observed between rich and developing countries over the past three decades have put the positive effects of trade openness on economic growth into perspective (Sachs and Warner, 1995). Thus, any poor quality of national institutions could further harm contributed to countries weakness economic growth that could truly miss it integration into world trade.

In this background, using annual data, this paper analyses whether efficiency in terms of policy execution and the quality regulation matters on the relationship between trade and economic growth in Central African countries. Objective of this paper is to provide an overview of the role of regulation quality and government efficiency in the relationship between trade openness and economic growth, the question that could be raised here is why this research remains relevant for the economy of Central African countries.

One reason mentioned, is the choice of the political dimension of institutions that is justified by controversies of the work and the scarcity of to our knowledges which analyzed the effectof the quality of political institutions especially the effectiveness of thegovernment efficiency and regulationqualityon trade and growth. Indeed, these two indicators seem mixed when compared to the statistics of the WorldGovernance Indicators (WGI, 2017) and in view of other countries with a quality institution appreciate (Tranparency, 2010). Moreover, considering these indices, these indicators in terms of political governance have progressed relatively compared to previous years (Transparancy, 2016).

The rest of the paper is organized as follows: the second section reviews the existing literature. The third section shown the methodological framework used. The fourth section presents the various results and discussions obtained.The last partconcludes this work.

2- Literature review

Trade is a central concern in macroeconomics in view of the controversies existing literature. There is a growing and clear interest on the relationship between trade openness and economic growth. Some work works havebeen devoted to this analysis. The studies are divided into two categories.

For the first category, trade openness has a positive effect on economic growth. It highlights the important role of trade openness as a factor that promotes long-term growth in improving well-being through increased productivity (Frankel and Romer, 1999; Abessolo, 2005; Busse and Koniger, 2012). Regard the second category, trade openness has no significant effect on economic growth if it is separated from quality institution (Constantinos and al, 2014; Vitola and Senfelde, 2015; Votsoma et al, 2020). Drawing on studies by Dollar and Kraay (2003), Balogoun (2016) assesses the effect of trade openness on poverty in developing countries. It shows that to a large extent trade openness reduces income inequalities. However, the growth channel, relayed by the theoretical literature, remains insignificant. He concludes that the analysis of the transmission channel, through nonlinear regressions suggests that the impact of trade openness on poverty does not come from the effects of the redistribution income on economic growth, but rather from otherinstitutionalvariable.

Conversely, Mathew and al (2014) separately analyze trade openness and the quality institution on economic growth in Sub-Saharan Africa using the Least Square Dummy Variables (LSDV) and the Generalized Moments

Method (GMM) on the period 1985-2012. The study is significant considering the fact that trade openness and institutions exert to some extent a positive influence on the economic growth of African countries. The results indicate that the institutions had a positive and significant impact on economic growth but trade openness was not very significant on the economic growth of African countries.

In Africa, Dinkneh and Yushi (2016) find that Africa-China trade openness has a positive and robust effect on the real GDP growth of African countries. This trade of Africa-China interacts with the political institutional and human capital of Africa. It effect is positive and significant. Therefore, it needs Africa strong domestic absorption capacity in order to reap the technology improving effect of trade with China. These results therefore provide evidence that trade openness and the quality of institutions are an important to economic growth for Africa.Hence, Niyongabo (2007) hypothesizes that openness policies can be more effective if they benefit from good quality political institution in developing countries. Using the Ordinary Least Squares (OLS), he concludes that good governance and the adoption of open trade policies act interactively and are positively associated with increasing income, reducing inequalities and the cushioning of trade shocks.

Meanwhile,Krenz (2016) studies the two-way relationship between political institution and trade. To this end, itworks covers 87 countries and spans the period 1990-2007. Using the Co-integration method, the results conclude that the political institutional framework has a positive long-term effect on trade. This report is robust to different evaluation methods. The estimators report unbiased evaluations for cointegrating variable, even under the presence of endogenous repressors. In addition, the results confirmed a long-term causality from institutions to trade. He concludes that an improved political institutional framework is a cause of increased trade exchange. However,Mina and Ndikumana (2007) explore that one of the causes limiting the growth in the degree of trade in Africa may be weak institution. Their results of Arellano Bond method (GMM) assessments on panel data from African countries show that institutions play an important role.

They find that the common effect of institutions and trade has a U shape, suggesting that while trade has the high levels of expansion institution play an important role in harnessing the trade engine that drives economic growth

Whereas, Linh Bun (2009) uses a regression by the Least Squares Method (OLS) in panel.He examines the effect of openness on the growth of the ten countries of the Association of South-east Asian Nations. He also combines the quality institution and trade. Its results suggest that trade and the quality of political institutions positively affect economic growth and find that the good quality of institutions has a greater effect on economic growth.

In contrast, using the GMM method, Kilishi and al (2013) first assess the quality of institutions and economic growth in Africa, addressing two questions: Do institutions matter in Africa? If so, what are the interaction effects of institutions on growth? To this end, it shows that political institutionis important in promoting growth. This improvement in the quality of institutions affects the growth rate through the quality of standardization, the legal framework and political stability. Thus, according to him, improving the standardization quality of trade agreements may have more of an effect on growth than in isolating them. Finally, they find that institutional factors become much more important associated with trade openness on economic growth.

3. Methodology

This paragraph successively sets out the economic growth model to be estimated, the data and their sources as well as the model estimation strategy.

3.1. Econometric specification

The specification of the neoclassical growth model developed by Mankiw and al (1992) considers human capital and physical capital. The model can be expressed as follows:

Y t( ) □ A t K t( )( )□L t( )1□□ 0□ □□ 1

The Cobb-Douglas production function (Y) depends on physical capital (K), labor force (L) and the level of technology (A). Inspired by this previous function, the neoclassical model of Mankiw and al (1992) is formulated as follows: The global functional form allows us to establish the following relation

Direct relation:□PIB□it □ □B0 B PIB1□□it□1□B OUV2□□it □B X3□ □it □ □□ □it it

Indirect relation:□PIB□it □ □B0 B PIB1□ □it□1□B OUV2□ □□B IP3□□□B X3□ □it □B IP OUV4□ □ □it □ □□ □it it

Or B^0□□. B^4 are parameters of the model variable. X is the control variable; PI * OUV is the interactive variable between trade and the quality of political institutions (government efficiency and regulation quality), OUV is trade openness, u is the country specific, e is the error term.

3.2. Variables

The real economic growth rateis a percentage to take into account purchasing power parity to allow comparison between countries (Greenaway and al, 2012). Trade openness measures the proportion of a country total income that is linked to international trade. Government efficiency measures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from policy, the quality of policy development and execution, and the credibility of government policies (Kaufmann and al, 2004). Regulatoin Quality captures perceptions of government capacities to formulate and enforce sound policies and regulation that enable and encourage the promotion of private sector development (Kaufmann et al, 2004; Koeniger, and Silberberger, 2015). Public expenditure measured by final public consumption as a percentage of GDP, this variable allows us to take into account the effect of fiscal policy in our analyses by virtue of Keynesian teachings (Levine and Renelt, 1992, Sachs and Warner, 1995; Edwards, 1998). The rate of inflation measures the annual growth rate of the consumer price index (CPI), the CPI is one of the best measures of inflation for economies heavily dependent on import prices. This variable takes into account macroeconomic stability.

In the economic literature, we talk about the rate of inflation when the index is not specified (Romer, 1991). Gross Fixed Capital Formation is the aggregate that measures, in national accounts, the investment (acquisition of production goods) in fixed capital of the various resident economic agents. Formerly called gross domestic investment, it consists of expenditures for additions to the tangible fixed assets of the economy plus the net changes in inventorie (Yanikkaya, 2003, Wacziarg and Welch, 2008).Natural resource measures natural rent by the difference between the selling price of natural resources and their operating costs (Devarajan and Wolfgang, 2013; Mondjeli and Tsopmo, 2017). The active population measures the rate of increase of the active population. This variable takes into account the role of the labor factor in economic activity. Indeed, a demographic expansion increase the proportion of the population considered as non-productive, mainly those of children and seniors. The table 1 shows summary variables.

Table 1: variables

Variable	Concept	Component	Measurement indicator	Sign	Source

Dependent variable	Economic activity	Economic growth	Real GDP rate in annual%		WDI
Control variable		Investment	Gross fixed capital formation as% of GDP	(+)	WDI
		Natural resource	natural resource Total in% of GDP	(+)	WDI
		Population	Annual population growth rate in%	(-)	WDI
		Public expenditure	Public expenditure as% of GDP	rate(+/-)	WDI
		Trade	Sum of exports and imports of goods and services(%GDP)	(+)	WDI
		Government Efficiency	Inflation rate (+ /-) annual in %		WDI
		Quality regulation		(+)	WGI

Government Efficiency Index
Regulation index
Source: the author

3.3. Data and Study Area

Data was acquired from several sources including: (i) the World Governance Indicator (WGI, 2018), (ii) World Bank Development Indicators (WDI, 2018); and (iii) data from the International Monetary Fund (WEO, 2018). The sample covers a few countries in Central Africa (Cameroon, Congo, Gabon, Guinea and Chad). The incorporation of these five countries in the same sample can be justified by their strong historical and cultural roots, in addition to the economicies of being part of the customs and monetary union.

3.4. Estimation Methods

The conclusions of Chang and al (2005) has marked the literature that examines how trade openness and institutions interact, seeking a possible role for policy complementarities. Although, they did not give the specific application, he asserts that the essence of the analyses can be extended for the analyzer of complementarity between trade and other reforms. To achieve our objective of analyzing the effect of government efficiency and the quality of regulation in the relationship between trade and economic growth, this research uses an empirical methodology based on the method of instrumental variables (IV - GMM) over the period 1995-2017. The decision to use this method is justified by correcting for heteroscedasticity in order to best compensate for the endogeneity of certain improvement variables (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Blond, 1998; Roodman, 2009).

4. Empirical results

Table 2 below shows the result. Overall, the instrumental variable used in our regression are valid since the Hansen / Sargan test does not allow rejecting the null hypothesis of validity of the instrument in level and in difference (p-value> 0.05). In addition, we find that there is no second order autocorrelation of the errors of the difference equation AR (2), because Arellano and Bond second order autocorrelation test accepts the hypothesis no lack of second-order autocorrelation (p-value> 0.05). The arbitrage is done by comparing the value provided

automatically by the conversion associated with the evaluated Wald value, which facilitates the analyses. It will therefore suffice to compare the discussion associated with the Wald-statistic with the 5% threshold used.

If the conversation associated with W-Statistics was selected at 5%, then the H0 hypothesis will be rejected in favor of the alternative hypothesis according to which the regression is globally significant. In this case, the Wald statistic is less than 5%, so the null hypothesis is rejected and the model is globally significant.

Table 2: Estimation of interaction termsthe components of political institution andtrade on economic growth

Dependent variable	Real annual economic growth			
	System dynamic panel-data estimation (GMM-type)			
	Model (1)	**Model (2)**	**Model (3)**	**Model (4)**
Lagged growth (-1)	0.007* (0.34)	0.290** (2.10)	.322*** (2.82)	0.267** (1.69)
Trade	.154*** (9.74)	.135*** (7.68)	.148*** (9.85)	.139*** (7.32)
Population	-1.973 (-0.32)	6.464 (1.52)	8.389** (1.91)	9.027* (1.72)
Public expenditure	0.136*** (-3.89)	0.601*** (-3.87)	0.603*** (-7.05)	0.429*** (-3.84)
Inflation	0.298*** (-3.37)	0.197*** (-4.57)	0.188*** (-3.53)	0.222*** (-4.16)
Natural resource	-0.653 (-0.89)	.191*** (2.66)	0.163 (1.51)	0.252** (2.04)
Private investment	-3.456 (-0.98)	2.800 (1.09)	2.974 (1.98)	0.861 (0.30)
Government efficiency	0.069 (0.86)	0.066* (1.61)	0.058 (1.49)	0.169* (1.56)
Regulation	0.022 (0.66)	0.014 (0.42)	-0.011 (0.34)	0.149* (0.65)
Government efficiency *Trade	///	.103*** (3.81)	//	1.559 (0.23)
Regulation* Trade	//	//	.098*** (4.84)	0.101 (2.92)
Constant	4.161 (0.09)	-44.263 (-1.40)	53.190** (-2.33)	-57.011 (-3.92)
Interaction terms	(No)	(Yes)	(Yes)	(Yes)
Observations	95	90	90	90
AR(1) p-value	0.3296	0.4531	0.3488	0.0982
AR(2) p-value	0.4096	0.3244	0.4927	0.574
Wald p_value	0.0000	0.000	0.000	0.000
Countries	5	5	5	5

Note: ***: significant at the 1% level; **: significant at the 5% level; *: significant at the level of 10%

In Table 2, column 1, 2, 3, 4, there are a positive relationship between trade openness and economic growth.

Column (1) shows a positive impact of trade openness on economic growth. The coefficient associated with trade is

0.154, which suggests that an increase of 1 unit in the trade openness rate leads to an increase economic growth of 0.154 unit. This result, which at first glance seems to join the conclusion of Frankel and Romer (1999) and Ho and Iyke (2018). Indeed, they highlight the important role of trade openness as a factor that promotes long-term growth. Among the effects favoring economic growth, several authors support the preponderant place that the process of trade openness plays in improving well-being by boosting productivity.

We tested the validity of the interactive effect between trade and government efficiency on the one hand, and the quality of regulation on the other. The results show that the coefficients of the main interactive variable specified havepositive sign. Column (2) shows a positive effect of the interactive variable between trade openness and government efficiency on economic growth. The coefficient associated with the interactive variable is 0.103, which suggests that a unit increase in trade openness and government efficiency results in economic growth of 0.103 unit. Therefore, trade and government efficiency are complementary. In other words, perceptions of the quality of public services, the quality of the civil service, the degree of its political independence, the quality of policy formulation and execution, and the credibility of government policies reinforce the positive effect of trade openness on economic growth. This result is consistent with the conclusions of Zaouli and Zaouli (2015) and Bonnal (2015). Column (3) shows a positive effect of the interactive variable between trade openness and regulation on economic growth. The coefficient associated with the interactive variable is 0.098, which suggests that a 1unit increase in trade openness and regulation leads to economic growth of 0.098 unit. Consequently, trade openness and the quality of regulation are complementary. In other words, the quality of perceptions of the government capacities to formulate and implement sound policies and regulations to encourage the promotion of private sector development enhances the positive effect of trade openness on the market. This result matches the work of Koeniger and Silberberger (2015) and Mina and Ndikumana (2007).

Regarding the control variable, aunit increase in the population growth rate leads to 8,389 units of economic growth in column (3). This result is consistent with the work of Hanushek and Kimko (2000). However, the coefficient associated with public expenditure is negative. A unit increase in the public expenditure ratio leads to a decrease in growth respectively of 0.136 unit in column (1); 0.601 unit in column (2); 0.603 unit in column (3). These results corroborate with the conclusions of Levine and Renelt (1992) and Edwards (1998). Likewise, the coefficient associated with inflation is negative. Aunit increase in the public expenditure ratio leads to a decrease in growth by 0.238 unit respectively in column (1); 0.197 unit in column (2); 0.188 unit in column (3). These results corroborate with the conclusions of Romer (1991). On the other hand, the coefficient associated with the natural resource is positive. An increase of 1 unit of natural resource rent results in an increase of 0.191 unit of economic growth in column (2). These results corroborate with the conclusion ofMondjeli and Tsopmo (2017).

5. Conclusion

This article examined whether the quality of polical institution, espaciallygovernmentefficiency and the regulation quality, are likely to strengthen the effect of trade on the economic growth of five Central African countries, over the period from 1995 to 2017. To establish this result, we used the econometric model of Mankiw and al (1992). Using the dynamic panel GMM method. Firstly, trade openness positively affects economic growth. Secondly, government efficiency and the quality of regulation reinforce the positive effect of trade openness on economic growth.In order to benefit from growth driven by trade openness, government efficiency and the quality of regulation matter.

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Appendix

Appendix 1: Statistics

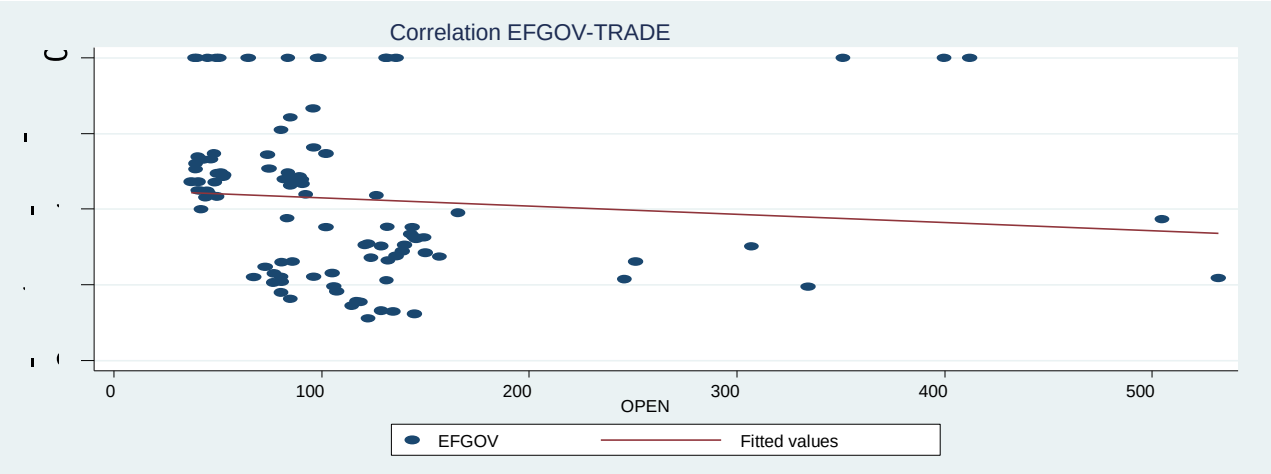
Variable	Obs	Mean		
Growth Economic	70	5.742603	7.495651	37.99873

	Gov efficiency	70	-1.136766	.3386584	-1.721875	-.394153
	Regulation	70	-.9982445	.3280813	-1.490816	-.1646162
WDI (2017)	Trade openness	70	101.5553	49.73676	37.06518	307.0159
	Population	70	2.794799	.4569652	2.204565	3.832788
	Public expenditure	70	11.11555	3.963983	2.736065	20.58012
	Natural resource	70	46.81607	20.87731	4.51427	80.69243
	Inflation	70	3.523465	5.948757	-18.07454	20.47896
	Investment	70	29.41983	11.74087	14.298	64.852

Std. Dev. Min -8.924176 Max

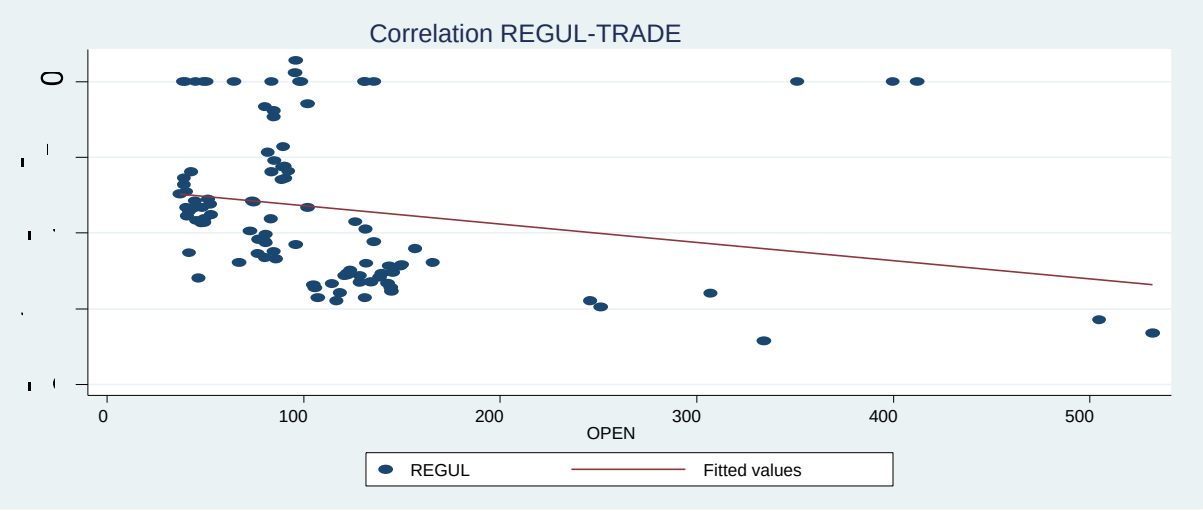
Source:Author by and WGI data

Appendix2: Fitted Values and government efficiency



Source: the author

Appendix 3: Fitted Values and regulation



Source: the author