

Analysis of the Effects of Economic Freedom on Economic Growth in WAEMU Countries

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Abstract

this study analyzes the effects of economic freedom on economic growth in the WAEMU zone. In this perspective, economic growth is approached by real GDP per capita and the level of economic freedom is apprehended by the concept of economic freedom according to the Fraser Institute. The relationship between the variables was tested on a panel data from the eight WAEMU countries over the period 2005 - 2019 using the Fraser Institute index. To solve the problems related to the heteroscedasticity and the autocorrelations of variables, the feasible generalized least squares (FGLS) method is used. The results show that the economic freedom indexes as well as some of its sub-components, the sound money and the level of regulatory efficiency, make a positive and statistically significant contribution to growth in WAEMU countries.

Keywords: Economic freedom, Economic growth, Panel data, FGLS, WAEMU
JEL: C13; O11; O43; O47.

1. Introduction

Economic growth is defined as the secular growth in real per capita income. However, there is a difference between economic growth and economic development. Both terms imply long-term growth in per capita income in the countries. In developed countries, when per capita income increases, we talk about economic growth. On the other hand, when per capita income increases in the developing countries, we talk about economic development. Economic development does not only imply economic growth in per capita income but it implies also a transformation of society, that is, a transformation at the level of institutions. Easterly and Levine (1997) note that conventional factors such as physical and human capital and labor do not fully explain economic growth in Africa and instead emphasize the institutions. Modern theories of economic growth emphasize economic freedom as a factor for economic development and prosperity in countries (Justesen, 2008; Kacprzyk, 2016).

Thus, in the 1990s in particular, one of the important research topics in the economic growth literature has been the relationship between economic freedom and economic growth, in other words, the impact of institutions on the economic performance (Sirowy and Inkeles, 1990; Przeworski, 2009). Economic freedom as well as political and civil freedom are the pillars of the institutional political structure of a country and therefore institutions are among the main factors that explain the differences in living standards between countries.

There are generally four institutions that measure a country's level of economic freedom: the Fraser Institute, the Heritage Foundation, the Freedom House and the Scully and Slottje (1991). Of these four institutions, the Fraser Institute and the Freedom House produce datasets for each year. The index of economic freedom calculated by the Fraser Institute covers areas relating to the size of government, the legal system and property rights, the sound money, the freedom in the international trade and the regulatory system (Gwartney and al., 2000). The Index of Economic Freedom produced by the Heritage Foundation is measured using indicators divided into four groups: the rule of law (property rights, judicial efficiency, integrity of government), the size of the government (weight of taxes, public spending, fiscal health), the regulatory efficiency (business freedom, labor freedom, monetary freedom) and the market openness (commercial freedom, investment freedom, financial freedom).

African countries, in particular those located in the south of the Sahara, are concerned by a problem of economic underdevelopment through economic freedom defined as the absence of State restriction on the production, the distribution and consumption of goods and services beyond the limitations necessary for individuals (Beach and Miles, 2006). The WAEMU countries are not spared. Thus, the objective of our study is to analyze the effects of economic freedom on the economic growth of these countries. The

WAEMU is composed of the eight countries which are the Benin, the Ivory Coast, the Burkina Faso, the Guinea Bissau, the Mali, the Niger, the Senegal and the Togo. The zone is based on a regional integration which promotes the freedom of movement of people, the capital and the goods and services.

To the best of our knowledge, the existing economic literature in economic freedom has not yet considered the case of the WAEMU. In other words, the effects of economic freedom on economic growth in the countries of the WAEMU zone have not been the subject of any previous empirical study. Hence, in addition to contributing to the macroeconomic literature on the relationship between economic freedom and economic growth, this study identifies which of the components of economic freedom defined by the Fraser Institute contribute positively and significantly to the economic growth of the WAEMU countries.

The organization of the rest of the work is as follows: Section 2 addresses the literature review; Section 3 presents the methodology used to analyze the effects of economic freedom on the economic growth in WAEMU countries; Section 4 analyzes the estimation results and finally Section 5 concludes the work.

2. Literature Review

The existing relationship between economic freedom and economic growth has been the concerns of numerous debates, hence, giving rise to several studies that mainly provide information on the role of economic freedom on the level of economic growth. Following the empirical literature, there is a consensus that economic freedom has a positive effect on economic growth. Thus, Gwartney and Lawson (2004) by carrying out an analysis on aggregate index reveal the positive effect of economic freedom on economic growth. Islam (1996) supports the idea that there is a positive relationship between economic freedom and per capita income in all low, middle and high income countries. Similarly, Levine and Renelt (1992) and Sturm and Haan (2001) find a positive relationship between the level of economic freedom and economic growth. Ayal and Karras (1998) examine the relationships between development and the disaggregated factors that constitute elements of freedom in common terminology. On a sample of 58 countries for which the data cover the period 1975 to 1990, they analyze the correlation between GDP growth and economic freedom. The estimated correlations are statistically and significantly positive or not significant. The results of their study show that aggregating economic freedom improves growth both through increased total factor productivity and through capital accumulation. Assadzadeh (2014) shows through the analysis of a panel data from the MENA countries that institutions, especially economic freedom, independently play an important role in economic development. He argues that the aggregate index of economic freedom is positively correlated with economic growth. Khalid and al. (2010) show that the level of economic freedom positively and significantly affects the GDP per capita of the members of the countries of the South Asian Association for Regional Cooperation (SAARC). Moreover, the impact of two control variables, the trade openness and the foreign direct investment, on the growth in five SAARC member countries are also positive and statistically significant. The results according to the authors suggest that the existence of free private markets where individuals make decisions on their behalf is very conducive to the economic growth of SAARC countries.

With the creation of the indices, which measure the level of economic freedom of countries, and the easy access to the data, the number of studies examining the relationship between economic growth and economic freedom has rapidly increased. However, these studies have also been exposed to a great deal of criticism. Of all the criticisms, the most striking refers to the fact that there is a fortunate relationship between the variables. One of the oldest studies done to challenge that fortunate relationship is the causality analysis conducted by Farr and al. (1998). The authors question the relationship between economic growth and the level of GDP and thus reveal a causal relationship. In addition, as a result of the analysis, they discover that this relationship is bilateral. Vega and Alvarez (2003) investigate the current causality through various panel data analysis showing the impact of economic freedom on economic growth. In the study conducted by Dawson (2003), the causality is also questioned once again and it is found that the causality is two-sided. The study in which Carlsson and Lundstrom (2001) investigate the direction of the causality alleges that economic growth engenders economic freedom.

3. Methodology

3.1 The empirical model

Based on the work of Cemil and al. (2014), the model used for our study can be written as follows:

$$\ln GDP_{it} = \beta_0 + \beta_1 \ln SG_{it} + \beta_2 \ln LS_{it} + \beta_3 \ln SM_{it} + \beta_4 \ln FIT_{it} + \beta_5 \ln REG_{it} + \beta_6 IDE_{it} + \beta_7 \ln GFCF_{it} + \beta_8 \ln TO_{it} + \beta_9 \ln LE_{it} + \beta_{10} PS_{it} + \beta_{11} ED_{it} + \beta_{12} \ln POP_{it} + \varepsilon_{it} \quad (1)$$

The variables are expressed in their natural logarithmic forms except for the indicators expressed as rates (IDE, PS and ED). The letter "ln" used in front of the variable symbols indicates that the logarithmic transformation has been performed on the series of associated variables. The parameters β_1 to β_{12} represent the coefficients to be estimated for the countries of the WAEMU while ε_{it} is the global residual of the model. A panel data has two dimensions (spatial and temporal): one for individuals (or any unit of observation) and one for time. They are usually indicated by the subscript i and t , respectively. It is often interesting to identify the effect associated with each individual, that is to say, an effect which does not vary over time, but which varies from one individual to another. This effect can be fixed or random.

3.1.1 The dependent variable

The dependent variable represents the economic growth measured by real GDP per capita (GDP) in the WAEMU countries. We use real GDP per capita as stipulated in the macroeconomic literature. The growth rate of real GDP per capita is an economic quantity that measures the evolution of real GDP. It is expressed as a percentage.

3.1.2 The independent variables

The independent variables that represent the index of economic freedom formulated by the Fraser Institute consist of five components which are: (1) the size of the Government (SG). The first two components which are the government total consumption expenditure (as a percentage of total consumption) and the transfers and subsidies (as a percentage of GDP) capture the extent to which countries rely on individual choices and markets rather than the political process to allocate resources and produce goods and services. The third component assesses the extent to which countries rely on private enterprise and the free market rather than state corporations to produce goods and services. The fourth component is based on the top marginal tax rate and the income threshold at which it applies. (2) The Legal System and Property Rights (LS): The protection of persons, contracts and rightfully acquired property are central elements to both economic freedom and civil society. Indeed, the legal system is the most important internal function of the state. (3) The Sound Money (SM): Money is essential to exchanges. The absence of sound money reduces gains from trading and erodes the value of property held in monetary instruments. Sound money is essential in order to protect the right to property and, therefore, economic freedom. (4) The Freedom to International Trade (FIT): In a world of high technology and low cost communications and transportation, the freedom to trade across national borders is a key ingredient of economic freedom. Finally, (5) The Regulation (REG): When regulation limits access to markets and interferes with the freedom to engage in voluntary trade, it reduces economic freedom. Regulatory restrictions that limit free trade in credit, labor and product markets are included in the index. Bureaucracy can stifle business expansion, entrepreneurship and job creation.

The expected signs of these explanatory variables are positive, that is, the economic freedom variables have a positive effect on economic growth.

3.1.3 Control variables

The control variables in the analysis were introduced based on the empirical literature (Cemil and al. 2014). These variables of economic growth are: (6) Foreign Direct Investments (FDI): These are the net inflows of investments intended for the acquisition of management rights in companies located in countries other than countries of origin of the investor. It represents the sum of reinvested capital, profits, other long-term capital

as well as short-term capital presented in the balance of payments. (7): Gross Fixed Capital Formation (GFCF): Gross fixed capital formation, as a percentage of real GDP, represents investments in new assets or replacement of worn-out fixed assets of business entities, as well as net changes in stocks. (8): Trade openness (TO): Market openness, expressed as a percentage of GDP, is the sum of exported and imported goods and services, calculated as a percentage of gross domestic products. (9): Life Expectancy (LE) is a statistical indicator that measures the average length of life in a society. (10): Political Stability (PS) measures the perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from around -2.5 to +2.5. (11): External Debt (ED): The external debt of a country designates all the debts that are owed by a country, a state, companies and individuals included, to foreign lenders. Finally, we have as control variable (12) the active population (POP) which includes the working population and the unemployed.

According to the macroeconomic theory, the expected signs of these control variables can be positive or negative on the dependent variable.

3.2 Method of estimation

In the panel data approach, the relationships between the variables can be studied through three different models (the least squares, the random effects and the fixed effects) based on the assumptions concerning the characteristics of the terms error and the constant terms in the estimated regression models. The first of these is the method that contains a common constant. This is the method of pooled ordinary least squares (POLS). Petersen (2009) remarks in the case of the existence of a serial correlation and the heteroscedasticity of the residuals, that the estimate of the standard deviation is not precise and, therefore, the inferences will not be valid. When the variances are not minimum or efficient, the confidence intervals are not reliable. Therefore, the significance of the coefficients studied using the norm, the variance and the student t-statistic of the OLS of fixed effects regression are not appropriate.

Thus, the issues of the heteroscedasticity and the serial correlation have to be resolved. It should be noted that to eliminate the problems of the heteroscedasticity and the serial correlation of the residuals, we can use the methods of feasible generalized least squares (FGLS) and the panel correlated standard errors (PCSE). Beck and Katz (1995) indicate that using the FGLS method for panels with a short time period and a large number of section units is not possible. They propose the least squares coefficient with the modified panel standard deviation. Also the efficient advantage of the FGLS over the PCSE is slight at best, except in the extreme cases of cross-correlation, only when the number of periods (T) is at least twice the number of section units (N). As in our study the period is larger than the cross-section number (the number of countries), in the case of the heteroscedasticity and the serial correlation of the residuals, the FGLS method is used. Thus, tests for the presence of individual effects and the validation of the model are briefly presented.

3.2.1 Test for the presence of individual effects

This test consists of checking whether there is the presence of individual effects in the data or not. These effects can be represented by an intercept specific to each individual ui . We then seek to test the null hypothesis $H : ui = 0$ in the regression $Y_{it} = \gamma + \beta X_{kit} + ui + e_{it}; e_{it} \sim iid$. The null hypothesis of this test is that there is only one common intercept and no individual effect (Leblond and Belly-Ferris, 2004). If the null hypothesis is rejected, then individual effects are included in the model. Otherwise, these individual effects are excluded from the model: it is a pooled model. It is estimated by the OLS on compiled data.

3.2.2 Model validation tests

Three different tests are carried out to validate the model of our study, which are: (1) the Jacques Bera error normality test according to the null hypothesis that the errors follow a normal law and the alternative hypothesis of non-normality of errors. (2) The Woodbridge error autocorrelation test under the null hypothesis of no residual autocorrelation, and (3) the Breusch-Pagan heteroscedasticity test under the null

hypothesis of the presence of homoscedasticity. In case of heteroscedasticity, we will calculate the robust Eicker-White variances (Ouellet, Belly-Ferris and Lebond, 2005).

3.3 Characteristic data

In this study, the data used is annual and globally covers the period from 2005 to 2019 for WAEMU eight countries. They come from the database of the World Bank and the Fraser Institute. The data on the policy variable, i.e. those relating to economic freedom, are taken from the Fraser Institute database. Regarding the explained variable and the control variables used in this study, they come from the World Bank's World Development Indicators. Due to the availability of data, the study uses a balanced panel of the eight WAEMU countries over the period 2005 - 2019. Finally, the choice of the study period is important based on the availability of data from the Franc Zone. We are assured of a better availability of continuous data from 2005 to 2019.

4. Empirical results

The results of the tests for the presence of the individual effects and for the model validation are presented in Table 1.

Table 1: Model Validation Tests

Test	P-value	Marging of error	Null hypothesis	Conclusions
Fisher homogeneity	0.0000	0,05	Rejected	Presence of individual effect
Breusch-Pagan Hteroscedasticity	0.0000	0,05	Rejected	Presence of heteroscedasticity
Woodbridge error autocorrelation	0.0008	0,05	Rejected	Presence of autocorrelation
Normality of Errors	0.5008	0,05	Accepted	Absence of normality

Source: author's calculations

The analysis of Table 1 indicates that there is a presence of individual effects in the data from the Fisher's homogeneity test. The Woodbridge error autocorrelation test, the Breusch-Pagan heteroscedasticity test and the error normality test show the presence of autocorrelation and heteroscedasticity and the absence of error normality, respectively. Thus, our model is validated.

Table 2: Results of the model regression for the WAEMU countries

Variables	Coefficients	P > z	Significance
LnSG	.3228112	0.333	-
LnLS	.2403987	0.424	-
LnSM	1.934447	0.050	**
lnFIT_	-.6578441	0.245	-

lnREG	1.83532	0.000	***
lnGFCF	-.5821919	0.001	***
LnTO	.597567	0.000	***
LnLE	2.163835	0.009	***
PS	.0543314	0.383	-
ED	-.0022943	0.469	-
LnPOP	.7798262	0.056	**
IDE	-.0102547	0.538	-

N = 120 ;T = 20 ; R²= 0.4488 ;Prob > F = 0.0000

***Significant at 1% **Significant at 5% *Significant at 10% -Not significant

Table 2 presents the results of the specification function of the model of the effects of economic freedom on economic growth for the WAEMU zone. We can first note that for the independent variables the signs of the estimated coefficients are for the most part in conformity with the macroeconomic theory with the exception of the variable of freedom of international trade. However, of all these variables, only the sound money and regulation system variables are significant, respectively at the 5% and 1% threshold. Thus, a 1% increase in the sound money and in the regulation system variables generates an increase of 1.93% and 1.83%, respectively in economic growth in the countries of the WAEMU zone. Regarding the control variables, only the GFCF variables, trade openness and life expectancy are significant at the 1% level, while the labor force variable is significant at the 5% level. The expected signs are respected, either positive or negative. The signs are positive for the variables TO, LE, PS and POP. The signs are negative for the variables GFCF, ED and IDE. However, the PS, ED and IDE variables are not statistically significant. Thus, the effect of the GFCF variable on economic growth is negative at the level of the WAEMU zone. In other words, in the context of economic freedom, a 1% increase in GFCF leads to a 0.58% decrease in economic growth at the WAEMU level. For the variables TO, LE and POP, an improvement of 1% in these variables increases the economic growth of the WAEMU countries by 0.60%, 2.16% and 0.78%, respectively. Overall, the results obtained indicate that certain aspects of economic freedom have a positive impact on the economic growth of the WAEMU countries. These results are consistent with those obtained by Gwartney and al. (2004), Islam (1996) and Sterm and al. (2001).

5. Conclusion

Many studies have been conducted to analyze the determinants of factors that affect economic growth in the WAEMU countries or in the Franc Zone or in ECOWAS (Hounsou, 2017; Adom and al., 2017; Ayivodji and al., 2019; Vlavourou and Hounsou, 2020; Hounsou, 2021). However, the effects of economic freedom on economic growth in the countries of the WAEMU zone, to the best of our knowledge, have never been the subject of any empirical study. Thus, this study proposes to analyze the effects of economic freedom on the economic growth in WAEMU countries. Economic freedom can be defined as the absence of state restriction on the production, distribution and consumption of goods and services beyond the limitations necessary for individuals (Beach and Miles, 2006). Theoretical and empirical studies in this field generally show that economic freedom can be a factor in explaining differences in economic performance between countries, because it increases productivity, promotes the improvement of an innovative environment and also contributes to the efficient use of resources. Economic freedom in the world according to the Fraser Institute is grouped into five (5) fundamental pillars which are the size of the government; the legal systems and property rights; the sound money; the freedom of international trade and the regulation. These five domains constitute the explanatory variables of our model to which are incorporated seven control variables. This study uses a panel data that covers the period from 2005 to 2019 for the eight WAEMU countries. The

empirical results based on the FGLS method show that the model is globally significant. Regarding the five choice variables, only the SM and REG variables are significant at the 5% and 1% level, respectively. Among the seven control variables, the GFCF, TO, and LE variables are significant at the 1% level and the POP variable is significant at the 5% level.

This study, which is unique in its kind, contributes on the one hand to the existing literature on the relationship between economic freedom and economic growth at the WAEMU level, and on the other hand, identifies the variables of economic freedom from Fraser Institute which positively impact economic growth at the WAEMU countries level. The main difficulty lies in the non-availability of data in the panel. This unavailability of information on certain macroeconomic data on these WAEMU countries, as is often the case for developing countries, led us to limit the choice of macroeconomic variables and the period of the study. Other subsequent studies, while overcoming these difficulties, can also introduce other control variables into the model in order to study their impacts on the economic growth of the WAEMU countries.

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