



CAN FINANCIAL FREEDOM REDUCE THE EFFECT OF ECONOMIC
VULNERABILITY ON ECONOMIC GROWTH IN SUB-SAHARAN AFRICAN
COUNTRIES?

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Abstract

This article examines the link between financial freedom, economic vulnerability and economic growth for Sub-Saharan African countries covering the period 1995-2015, using the non-stationary panel data method. The results suggest that there is a positive effect of financial freedom on economic growth. On the other hand, the impact of economic vulnerability on growth is negative. Moreover, the empirical results refer to economic vulnerability and financial freedom as important factors in determining the level of domestic production.

Keywords: Economic growth, economic vulnerability, financial freedom, Sub-Saharan Africa, Non-stationary Panel.

I. INTRODUCTION

Many theoretical and empirical studies show that the financial system stimulates economic growth through different services (Levine, 1997)[1]. The natural role of the financial sector is generally to channel savings towards the most productive investment projects. Thus, through an efficient allocation of resources. Schumpeter (1912)[2] shows that financial development has an active role in the success of investment projects and the start of industrialization.

The predominance, during the fifty and sixty decades of the last century, of an economic theory dominated by the liquidity preference theory of Keynes and the growth monetary model of Tobin. This economic vision does not give importance to financial development, insofar as it requires low interest rates, a credit framework and massive state intervention in the financial sector.

The 1970s constituted a general turning point in economic science, considering the questioning of the Keynesian consensus and the emergence of the monetarist theory. This change in global vision affects the conception of the role of finance in development. Thus, as and as economies globalize and liberalize financial flows, the financial system plays a crucial importance in economic activity (Goldsmith, 1969[3].; Gurley and Shaw, 1967[4].; McKinnon, 1973[5].; Shaw, 1973) [6]).

The 1990s were marked by a particular renewal of work on the impact of financial development on economic growth. Thus, a large number of studies, mainly empirical, appear



and justify the positive relationship between these two fields of analysis. These studies are carried out using a wide variety of econometric methods and statistical data.

Similarly, the theory of endogenous growth provides a new theoretical framework that demonstrates a positive correlation between the level of financial development and the growth of the real sector.

The Pagano model (1993) [7]. shows that the channels through which financial factors can stimulate growth are essential for a country seeking to develop its financial system in order to improve its economic growth.

According to Levine (2005)[8]., financial development goes beyond the concept of financial liberalization insofar as it takes into account the financial sector as a whole and integrates all the factors that contribute not only to its proper functioning, but also to impact on growth and development. There does not seem to be any study that explicitly tests the link between financial freedom and economic growth.

According to Cariolle et al. (2015)[9]., economic vulnerability is a country's risk of development being hampered by natural or external shocks (Briguglio, 1995)[10]. Interest in the economic vulnerability of developing countries has become more important since the 1990s This decade characterized by many global crises highlighted developing the vulnerability of countries including the instability of world markets.

We argue in the light of past experience that vulnerability factors play an important negative role in economic development, particularly in the case of Africa.

This work aims to provide a theoretical and empirical evaluation of the relationship between financial freedom, economic vulnerability and economic growth for the case of 33 countries in Sub-Saharan Africa (SSA). We then try to show how financial freedom can reduce the negative impact of economic vulnerability to economic growth in these countries.

To address this issue, we will organize our work in two sections. The first section is devoted to a presentation of a review of the literature. The second section deals with the empirical analysis of the role of financial freedom and economic vulnerability in economic growth in Africa.

II. LITERATURE REVIEW

Well-regulated financial systems are essential to macroeconomic stability. Dynamic financial markets can play a crucial role in allocating resources for productive investment and economic growth.

The empirical literature on the link between financial development and economic growth has boomed since the work of King and Levine (1993) [11]. However, it should be noted that despite the fact that most studies conclude that there is a positive relationship between financial development and growth, a number of studies provide evidence contrary to this assertion.

The contribution of the financial system in financing African economies is very limited. Overall, Africa is characterized by underdeveloped financial systems. Banking systems are



too liquid, low intermediation and highly concentrated. They constitute an oligopolistic structure, credit costs are high and therefore access to credit is very low. Capital markets are also underdeveloped. They are liquid and narrow, they do not offer long-term financing to investors. The financial systems of SSA also suffer from a deficiency in terms of regulation and innovative financial instruments to improve the financing of small and medium enterprises (Dahou et al., 2009[12]; Guide and Pattillo, 2006[13], Standley 2010[14].). Their financial systems do not adequately finance economic growth despite the recent rise in financial markets.

The situation is better in North Africa than in SSA (Kauffmann, 2005[15].). Depending on their level of financial development, the countries of North Africa are better ranked than the countries of SSA.

Caprio and Klingebiel (1996) [16] show that among 54 developing countries that have experienced banking crises, sub-Saharan Africa accounts for 43% of the sample, compared to 22% for countries in Latin America, 11% for countries Asia, 17% for countries in transition, 7% for Middle East and North African countries. They show that in the case of a structural banking crisis, SSA is the most affected compared to other regions. Not only banking crises weaken economic growth but have an indirect negative impact on the relationship between the evolution of the financial system and economic growth.

In reality, the gap in financial development between North Africa and SSA countries is explained by an uneven level of development of the institutional and regulatory framework. The underdevelopment of the financial system in SSA can explain in part the great vulnerability of economic growth to external shocks in this region.

Indeed, the economic vulnerability of SSA countries present an interesting problem to the extent that it affects these economies. Guillaumont (2014) [17] defines vulnerability as: "Vulnerability, at the macro level (as at the micro level), is the risk for a country to be hampered by exogenous shocks, either natural (e.g. droughts) or external (e.g. fall in terms of trade). Structural vulnerability includes only factors that do not depend on a country's current policies, being entirely determined by exogenous and persistent factors; while general vulnerability also includes the effect of current and future policies, and therefore changes more rapidly".

To a large extent, the vulnerability of low-income countries is unintended because it is the result of their exposure to external shocks. Moreover, it can be modified by the will of the country, which gives it the political character. Finally, the instability of economic conditions is at the origin of the exogenous "shocks".

Considering the heightened vulnerability of Africa, we must consider that it is a significant obstacle to economic growth.

Many studies have focused on the impact of economic volatility on growth (Cariolle et al., 2015) [18]. In fact, the economies of SSA are more unstable compared to other developing countries. However, this instability has reduced African growth.

It seems that financial freedom plays a central role in explaining the effect of the economic vulnerability on economic growth.



Regarding financial freedom, Heritage Foundation has defined it as the independence of financial sectors according to five levels: the degree of government intervention in the financial sector through direct and indirect ownership, the government regulation of the financial services, the importance of financial capital in the market development, the government authority in the allocation of credit and the opening to foreign competition.

Ideally, the financial environment of a nation must have the minimization of the government intervention level, the allocation of credits in the market conditions, the prohibition of ownership of financial institutions by the government, the permission to banks to conduct foreign exchange transactions and authorization to foreign institutions to allocate their services as if they were national institutions.

Indirectly, financial freedom can promote financial development and hence economic growth. This work is distinguished from others by studying the direct effect of financial freedom and its interaction with economic vulnerability on economic growth in SSA countries.

III. METHODOLOGY

In this section, we examine the impact of financial freedom and economic vulnerability on economic growth for a sample of 33 countries in sub-Saharan Africa (Angola, Benin, Botswana, Burkina Faso, Cameroon, Chad, Congo Democratic Republic, Congo Republic, Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe) using data of 21 years (1995-2015). To do this, the choice of variables is based firstly on the theoretical and empirical arguments justifying the economic growth of a given country and also on the availability of data. We identify a general econometric model to examine the dynamics of growth and its determinants. Based on the different models (Mankiew, Romer & Weil, 1992[19], Levine, 2005, Guillaumont, 2014[20].), our model can be presented as follows:

$$GDP_{it} = \alpha + \beta_1 EVI_{it} + \beta_2 CAP_{it} + \beta_3 SEDU_{it} + \epsilon_{it} \quad \text{eq(1)}$$

$$GDP_{it} = \alpha + \beta_1 FF_{it} + \beta_2 CAP_{it} + \beta_3 SEDU_{it} + \epsilon_{it} \quad \text{eq(2)}$$

$$GDP_{it} = \alpha + \beta_1 EVIFF_{it} + \beta_2 CAP_{it} + \beta_3 SEDU_{it} + \epsilon_{it} \quad \text{eq(3)}$$

where, "i" indicates the countries (i = 1, 2, ..., N) and "t" represents the time (t = 1, ..., T);

GDP: is the GDP per capita (in constant dollars of 2010) logarithm;

CAP: is the capital accumulation per capita logarithm;

SEDU: is the secondary schooling rate logarithm;

FF: is the financial freedom logarithm;

EVI: is the economic vulnerability index logarithm;

EVIFF: is the interaction between economic vulnerability index and financial freedom;

($\beta_1, \beta_2, \beta_3$): vector of the coefficients to estimate and ϵ_{it} : is the error term.

In the following, we will try to regress these functions using the non-stationary panel method for a sample of 33 Sub-Saharan countries covering the period (1995-2015).

The variables used in our work are: the real GDP per capita as an endogenous variable for our sample. We calculate the physical capital stock by using the method described by Van Pottelsberghe (1997)[20]: $K_t = I_t + (1 - \delta)K_{t-1}$; Where, I_t is the Gross Fixed Capital Formation



and δ is the capital depreciation rate ($\delta=6\%$)¹. The initial physical capital stock K_0 is equal to the initial investment I_0 divided by the sum of the yearly growth rate of the investment I_t and the physical capital depreciation rate δ : $K_0=I_0(\rho+\delta)$. The physical capital stock per capita is the physical capital stock calculated, divided by the total population. Human capital refers to the totality of the capacities learned by individuals and which increase their productive efficiency. We use secondary enrollment as a proxy of human capital. The index of economic vulnerability measures macroeconomic instability. The degree of financial freedom determines the non-government intervention in the financial system.

GDP per capita, gross fixed capital formation and secondary school enrollment are extracted from annual data from the World Bank database (WDI, July 2017). Vulnerability index data are take out from the FERDI database. The data of financial freedom are extracted from the database Heritage Foundation.

Estimation

A cointegration analysis of panel data provides a natural conceptual framework for examining the relationship between economic growth and its determinants.

Panel unit root test

The study of stationarity of all variables is a necessary step in any study. In this study, we used the procedure of testing stationarity in panel model that are provided by Peasaran and Shin (2003) [21]. These are the most commonly used, when the time dimension is limited. The authors propose tests that can detect the presence of a unit root in models using Fischer-ADF statistics.

TABLE I: UNIT ROOT TEST RESULTS USING IPS METHOD

	<i>GDP</i>	<i>EVI</i>	<i>FF</i>	<i>EVIFF</i>	<i>CAP</i>	<i>SEDU</i>
<i>At level</i>	3.307	0.419	-0.599	-0.633	-1.173	2.091
<i>First difference</i>	-9.834***	-5.696***	-6.613***	-6.425***	-8.629***	-4.424***

***, **, * at 1, 5 and 10 percent significance, respectively.

Source: Author's calculations based on IPS test results.

IPS tests lead to the conclusion that all variables are not stationary in levels. The variables in the equation becomes stationary after a first differentiation, therefore they are all integrated in the same order (1).

Having established that all series are integrated of the same order (1), we test the existence of a stable long-term linear relationship between these series for each equation.

Cointegration test

To study the existence of a cointegration relation, we refer to Pedroni studies (1999, 2004), whose the null hypothesis is to test the absence of cointegration based on the test of unit roots on the estimated residues. Pedroni (2004) [22] developed seven tests of cointegration on panel data. Applying the test of this author brings us to the following result:

¹According to Hall R. E. Jones and C. I (1999).



TABLE II: COINTEGRATION TEST RESULT USING PEDRONI METHOD

Statistics	Equation 1	Equation 2	Equation 3
Panel ν -Statistic	3.200149***	2.448095***	2.302906***
Panel rho-Statistic	0.863721	1.660023	1.816775
Panel PP-Statistic	-3.276141***	-1.687826**	-1.637502**
Panel ADF-Statistic	-6.618104***	-4.790818***	-5.076830***
Group rho-Statistic	2.683386	3.358376	3.168968
Group PP-Statistic	-3.536608***	-1.486154**	-2.391221***
Group ADF-Statistic	-9.205828***	-4.903264***	-5.862194***

***, **, * at 1, 5 and 10 percent significance, respectively.

Source: Author's calculations based on Pedroni test results.

The simulations made by Pedroni show that for values of T higher than 100, the seven statistics give comparable results in terms of potentiality. For smaller sample sizes, the panel-ADF and group-ADF tests have better properties than the other tests. From the results of the Pedroni cointegration tests, we confirm the existence of a cointegration relationship between real GDP per capita and its determinants described by our theoretical model.

Regression and interpretation

The long-term relationship previously detected can be estimated using different methods, but is to choose the most efficient. Kao and Chiang (2000) [23] concluded that the DOLS estimator is the most efficient than the others in estimating cointegration relationships using panel data

TABLE III: REGRESSIONS RESULTS OF DOLS METHOD
(ENDOGENOUS VARIABLE IS GROSS DOMESTIC PRODUCT PER CAPITA-GDP)

Variables	CAP	SEDU	EVI	FF	EVIFF
Equation 1	0.282***	0.135***	-0.355***		
Equation 2	0.238***	0.210***		0.203***	
Equation 3	0.273***	0.176***			0.046***

***, **, * at 1, 5 and 10 percent significance, respectively.

Source: Author's calculations based on DOLS method.

We observe that the accumulation of physical capital and human capital have positive and statistically significant effects on economic growth for the countries of Sub-Saharan Africa in the three models. The positive effect of human capital can be explained by progress made by countries in the context of the Millennium Development Goals (MDG) program.

The macroeconomic instability measured by the Economic Vulnerability Index (EVI) indicates a negative and statistically significant coefficient. Each increase in economic vulnerability index by 1% led to the decline in GDP per capita of 0.35%. This result shows that economic instability has a negative impact on economic growth.

Our regressions indicate a positive and statistically significant coefficient of the financial freedom indicator. Therefore, an improvement in the level of financial freedom of 1% increases real GDP per capita by 0.2%. These results indicate that financial freedom is an important factor in determining the level of domestic production (Akinci et al., 2015) [24].



By integrating the variable of economic vulnerability in interaction with the variable measuring financial freedom (EVIFF), we discover the positive and statistically significant effect of this variable on economic growth. We find that a 1% increase in the interaction variable increases real GDP by only 0.046%. We note that the effect of financial freedom has outweighed the negative effect of economic vulnerability for this sample of sub-Saharan countries.

IV. CONCLUSION

Financial services are also beginning to develop rapidly, often through innovative economic models that take into account the limited financial capacity of sub-Saharan consumers and make full use of the increased penetration of communication technologies. If they reach the poor, these services offer the potential to create sustainable growth. The level of availability of financial services varies greatly from one country to another.

The economies of the SSA countries are still subject to fairly large shocks and remain proportionately exposed to shocks that may be external or internal. The negative effects of these shocks differ from one nation to another and cause economic damage in all developing countries.

Our empirical checks for the SSA countries covering the period (1995-2015) showed that: (i) economic vulnerability has negative effects on economic growth; (ii) financial freedom has a positive impact on the promotion economic growth, (iii) the positive effect of financial freedom has dominated the negative effect of economic vulnerability, and (vi) the link between financial freedom and economic vulnerability is very strong and therefore to promote growth and to reduce instability, sub-Saharan countries must integrate financial freedom into their economic development policy.

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**International Journal of Business Quantitative
Economics and Applied Management Research**

Volume-7, Issue-2, 2022

ISSN No: 2349-5677

Testing Approach", Central Bank of the Republic of Turkey
<https://www3.tcmb.gov.tr/cbr/>.