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Effects of International Financial Integration on Economic Growth in Developing Countries: Heterogeneous Panel Evidence from Seven West African Countries

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Abstract: From the existing literature, there is no consensus on the effects of financial integration on economic growth. The studies have mostly focused on country samples without taking into account country heterogeneity, or have been limited to a causality study. This paper examines the effects of international financial integration on economic growth in seven West African Economic and Monetary Union's countries (WAEMU)[1], over the period 1980 - 2019. Methodologically, the study applies heterogeneous panel techniques taking into account inter-individual dependence (MG, CCEMG and AMG). The results show that the stock of external debt and the opening of the capital account negatively affect long-term economic growth in the WAEMU region. The country analysis confirms the panel results for Benin, Burkina Faso and Mali. Sectoral misallocation of external capital could be a plausible explanation. The economies of WAEMU countries are mostly dominated by the service sector, which contributes more to their GDP than the productive sectors, i.e. agriculture and industry. While the agricultural sector, which employs a large part of the active population, is still traditional and does not benefit from capital inflows, the industrial sector is still embryonic.

Keywords: international financial integration; economic growth; heterogeneous panel; WAEMU.

JEL classification: F36; F38; F62.

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1. INTRODUCTION

Restricted access to capital has long been presented as one of the main obstacles to the development in the least developed countries. In the early 1970s, there was a renewal of liberal economic theory, which advocated a total liberalisation of financial systems. Authors such as McKinnon (1973) and Shaw (1973) believe that differences in the quantity and quality of services offered by financial systems can partly explain the differences in growth between countries. In particular, they point to distortions in the financial markets, linked to government intervention in the achievement of equilibrium, and take a neoclassical view. Kaminsky and Schmukler (2008) define financial liberalisation as deregulation at three levels, namely the domestic financial sector, the capital account and the stock market : (i) a fully liberalised domestic financial sector is characterised by the absence of controls on lending and borrowing rates, and the absence of credit controls; (ii) liberalisation of the capital account allows firms or banks to borrow freely from abroad; even if the authorities have to be kept informed, authorisations are delivered almost automatically; (iii) a fully liberalised stock market allows foreign investors to acquire domestic securities without restrictions.

In addition, capital account liberalisation has played an important role in international financial integration. International financial integration refers to the links of a given country with international capital markets, and can be assessed *de jure* through the degree of restrictions on cross-border capital movements, or *de facto* through the flows or stocks of such capital. Through the creation of larger financial spaces, international financial integration should improve the regional and global allocation of savings and credit to the most productive investments. In the early 1980s, the WAEMU countries, like other developing countries, adopted strategies to liberalise their economies. This liberalisation concerned both the real sector, through, among other things, the privatisation of state-owned enterprises, and the financial sector, the aim of which was to respond more effectively to the growing need for financing. The financial reforms aimed in particular to clean up the failing domestic banking sector and to attract large international banks and investors.

Statistically, there has been a relative improvement in indicators between 1980 and 2019. Gross stocks of external liabilities and assets, a *de facto* measure of international financial integration, rose from an average of 78.6% of GDP over the period 1980-1989 to around 115% over the period 2010-2019. However, over the same period, the *de jure* index of capital account opening, in average, deteriorated from 0.34 to 0.16 (on a scale of 0 to 1). This situation can be explained by the strengthening of controls on capital flows, which aims to reduce illicit capital flows and the financing of terrorism. These provisions are set out in Article 17 of Regulation N°09/2010/CM-UEMOA on the external financial relations of the West African Economic and Monetary Union (WAEMU) Member States. Article 97 of the WAEMU Treaty of 10 January 1994 had already provided for provisions allowing Member States to impose measures on foreign capital flows for reasons of public security.

Nevertheless, the major challenge for the literature, both theoretical and empirical, is to establish a causal relationship between the degree of international financial integration and the macroeconomic performance of a country. Neoclassical theory states that international financial integration should reduce the cost of capital in initially less endowed developing countries and initiate a process of investment and per capita product growth. Fischer (1998) points out that the free movement of capital facilitates an efficient global allocation of savings

and helps channel resources to their most productive uses, thereby increasing economic growth and prosperity.

In addition, capital mobility expands opportunities to hedge against certain risks, through international portfolio diversification. For Krugman *et al.* (2009), the motive of diversifying the overall portfolio risk is an important factor behind the international exchange of financial assets. To reduce portfolio risk, it is preferable to diversify one's investments rather than invest all one's wealth in a single asset. We owe this principle to the portfolio choice theory of Markovitz (1952) and later to the analysis of Tobin (1958). A country's openness to international capital flows thus gives it more opportunities for international diversification, which allows investors to reduce their overall portfolio risk.

Barro *et al.* (1995) demonstrate, however, the non-instantaneous transmission of the effects of the opening of the capital account to the real sector, starting from a Cobb-Douglas type production function. They consider that capital mobility is present in two effects; first, in capital convergence, through the total amount of foreign capital entering the country (foreign debt and foreign direct investment), and second, in the case of technological catch-up, through the composition of foreign capital. While it is true that the speed of convergence (to the steady state) of an open economy under foreign credit constraints is higher compared to that of a closed economy, this speed is likely to be limited and does not deviate greatly from that of a closed economy. Theoretical criticisms, on the other hand, centre around the Lucas (1990) paradox, which points to a greater movement of capital from poor to developed countries in the 1980s. Another criticism is that of the imperfection of financial markets (Stiglitz & Weiss, 1981), which, due to informational asymmetries, do not always lead to an optimal allocation.

Empirically, the relationship between international financial integration and economic growth has been the subject of several analyses in developing countries, providing equally controversial results. Indeed, most empirical studies have failed to find positive effects of financial openness on economic growth. One of the first studies to find a positive link between financial integration and economic growth is that of Quinn (1997). His work was original in that he developed a new index for assessing financial openness (Quinn Intensity Index). Empirical estimates for 64 countries indicate that capital account liberalisation has a positive and significant effect on GDP per capita growth. This study was extended to 94 countries by Quinn and Toyoda (2008), confirming the results of the previous study. Nevertheless, criticism is often levelled at *de jure* measures of financial integration, as a country can liberalise its capital account without benefiting from the capital flows characteristic of financial integration. Prasad *et al.* (2003) use capital stocks as a percentage of GDP as an indicator of financial globalisation, which is considered more stable than flow variables and preferred to *de jure* measures.

Furthermore, with a sample of 76 countries, they are unable to draw a clear conclusion about the macroeconomic impact of financial globalisation. Mougani (2011), in the context of African countries, uses as measures of financial integration, the net capital flows/GDP ratio and the FDI/GDP ratio. The results show that the impact of external capital flows on growth remains mixed, and the author stresses that the contribution of financial integration would depend mainly on the initial conditions and policies implemented in each country. Ray (2012), in the context of India, shows instead that there is a causal relationship from economic growth to international financial integration. Misati *et al.* (2015) analyse the relationship in two African regions (COMESA and SADC) and find mixed and regionally varying results. While

two of the indicators of financial integration are significant in the COMESA region, only one indicator is significant for SADC. The *de jure* financial openness index has a significant negative effect on growth in the COMESA region, while FDI and portfolio investment flows have a positive effect. In SADC, only FDI flows have a significant positive effect. Finally, Saafi *et al.* (2016) take a sample of 19 emerging and developing countries and perform a country-by-country analysis. They find that international financial integration is a cause of economic growth in 06 countries and a reverse causality in 09 countries, with 04 countries showing a neutral result.

The research finds its interest in the controversial results of studies undertaken in developing countries, and recent theoretical developments whose application to WAEMU countries would add to the literature. Moreover, integration through capital markets is a major development policy issue for the countries of the zone, with the adoption of the new regulation of financial relations introduced in 2010. The latter intend to take advantage of the wave of international financial integration, and this study will help identify avenues for new economic policy directions. To this end, and in contrast to several studies on the subject, a range of indicators of international financial integration is used, to take account of the specificity of their effects on economic growth. The study also takes into account the heterogeneity of the countries in the panel, and provides insights into country-specific factors that may influence the relationship between international financial integration and economic growth.

The rest of the article is structured around three points. The 2nd Section presents the methodological approach for analysing the long-run relationship between international financial integration and economic growth, based on heterogeneous panel techniques. The 3rd Section presents the results and comments, and the 4th Section concludes.

2. METHODOLOGICAL APPROACH

This part is devoted to the presentation of the data and the models for analysing the long-term relationship between the different panel variables.

2.1 Data and sources

The analysis covers seven WAEMU countries over the period 1980-2019, Guinea-Bissau being excluded for lack of data. The data are extracted from several sources for the construction of the database. Thus, the data relating to international financial integration are extracted from the Lane and Milesi-Ferreti (2017) database, updated in 2021, for the *de facto* measures, and from the updated KAOPEN database of Chinn and Hiro (2008) for the *de jure* measure. Starting from the *de facto* measures, we construct the global index of international financial integration by summing the stocks of foreign assets and liabilities in relation to GDP; we also include in the analysis the stocks of external debt and foreign direct investment.

The *de jure* measure takes into account the existence or not of regulatory restrictions on international capital movements, but also the intensity with which these are implemented; the normalised index varies from 0 to 1, with the highest value symbolising perfect financial integration. We use the IMF's multidimensional index (Sahay *et al.*, 2015) to capture the level of domestic financial development. This indicator takes into account the development of financial markets on the one hand, and financial institutions on the other; it also has the advantage of incorporating the dimensions of access, efficiency and depth of financial

systems. The variables as human capital, gross fixed capital formation (as % of GDP) and public consumption (as % of GDP) are taken from the Penn World Table (PWT). The other variables, real GDP per capita growth, inflation and trade openness are taken from the World Bank's World Development Indicators database.

2.2 Heterogeneous panel model

We have long series to analyse the long-term relationships between the different variables. We estimate an econometric model of economic growth as follows:

$$g_{it} = a_0 + IFI_{it}\beta + +X_{it}\alpha + \varepsilon_{it} \quad (1)$$

where g_{it}, IFI_{it} and X_{it} represent, respectively, economic growth, a vector of international financial integration variables and a vector of control variables of country i in period t ; ε_{it} represents the error term. For the estimations, the techniques of analysis of long term relations on heterogeneous panel data are retained by taking into account the cross-sectional dependence. The MG (Mean Group) estimators of Pesaran and Smith (1995), the CCEMG (Common Correlated Effects Mean Group) of Pesaran (2006) and the AMG (Augmented Mean Group) of Eberhardt and Teal (2010) offer interesting perspectives for the analysis of cointegration relationships on panels of countries with relative heterogeneity and cross-sectional dependence. The AMG estimator of Eberhardt and Teal (2010) provides unbiased estimates in cases of cross-sectional dependence, and is presented by the authors as an alternative to the CCEMG estimator of Pesaran (2006). The AMG estimator takes into account non-stationary variables and multifactor error terms. Moreover, unlike the CCEMG approach, it treats common unobservable variables as a common dynamic process. This common dynamic process can be presented as follows:

$$y_{it} = \beta_i x_{it} + \mu_{it} \quad (2)$$

with $\mu_{it} = \alpha_{1i} + \lambda_i f_t + \varepsilon_{it}$ et $x_{it} = \alpha_{2i} + \lambda_i f_t + \gamma_i g_t + e_{it}$; the x_{it} and y_{it} are observable variables; β_i is the country-specific slope for the observable regressors; the μ_{it} represents the unobservable regressors ; ε_{it} and e_{it} are error terms (white noise type); $\alpha_{.i}$ represent group fixed effects, i.e. time-invariant heterogeneous characteristics; f_t and g_t are unobserved common factors that may exhibit non-linearity and non-stationarity; and λ_i represent factors that exhibit time-varying heterogeneity and cross-sectional dependence. The model is estimated in two steps:

- First step (i):

$$\Delta y_{it} = b'\Delta x_{it} + \sum_{t=2}^{T} c_t \Delta D_t + e_{it} \text{ with } \hat{c}_t = \hat{\mu}_t^{\bullet} \quad (3)$$

- Second step (ii):

$$y_{it} = a_i + b_i' x_{it} + c_i t + d_i \hat{\mu}_t^{\bullet} + e_{it} \quad \text{with } \hat{b}_{AMG} = N^{-1} \sum_i \hat{b}_i \quad (4)$$

The first step (i) represents a standard OLS regression with T - 1 dummy years in first differences, from which the dummy year coefficients (renamed $\hat{\mu}_t^{\bullet}$) are collected. In the second step (ii), $\hat{\mu}_t^{\bullet}$ is included in each of the N standard country regressions which also include a linear trend term to capture omitted idiosyncratic processes evolving linearly over time; the

estimates are averaged across countries using the MG approach of Pesaran and Smith (1995). As for the CCEMG estimators, they focus on the estimation of $\hat{b}$ The CCEMG estimators focus on the estimation of the coherence and not on the nature of the unobserved common factors or their factor loadings; they do not provide an explicit estimate for the unobservable factors f_t. In addition to the panel analyses, the MG, CCEMG and AMG estimators provide us with country specific results allowing for a specific analysis. In the presence of individual panel dependence, heterogeneity, non-stationary variables and multifactor error terms, the power of the AMG estimator outweighs the other two estimators (MG and CCEMG).

3. MAIN RESULTS

3.1 Descriptive analysis

The results for the descriptive statistics (mean, standard deviation, minimum and maximum) are presented in the following Table no. 1.

Table no. 1 – Descriptive statistics of the data

Variables	N	mean	sd	min	max	skewness	kurtosis
Economic growth (%)	280	0.665	4.225	-19.18	18.18	-0.551	6.468
De facto financial integration (% of GDP)	280	91.28	39.49	18.23	270.8	1.334	6.057
Foreign direct investment (% of GDP)	280	10.89	9.890	0.468	61.02	1.882	8.242
External debt (% of GDP)	280	57.23	25.95	13.85	207.9	1.280	7.027
KAOPEN *de jure* index (0 - 1)	272	0.238	0.114	0.164	0.477	0.936	1.894
Financial development (0 - 1)	280	0.109	0.0261	0.0489	0.195	0.548	2.967
Trade (% of GDP)	280	42.62	14.30	15.79	99.29	0.884	4.157
Human capital index (value)	280	1.307	0.230	1.014	1.919	0.737	2.449
Gross Fixed Capital Formation (% of GDP)	280	0.143	0.0651	0.0120	0.464	0.521	4.619
Public consumption (% of GDP)	280	0.172	0.0727	0.0698	0.577	1.938	8.407
Inflation (%)	280	4.693	8.916	-24.41	56.28	2.747	13.83

Source: authors' calculations

It can be noted that over the study period (1980 – 2019), the average growth rate of per capita GDP is 0.66%, with a minimum of -19.18% and a maximum of 18.16%, recorded respectively in Niger in 1984 and Mali in 1985. As regards international financial integration indicators, the WAEMU countries have an average debt stock of 57.23% of GDP, compared to an average stock of foreign direct investment of 10.89% over the period. The overall *de facto* financial integration indicator (IFI) averages 91.28%, with the highest level of 270.8% reached in 2015 by Burkina Faso, and the lowest of 18.23% also achieved in 1980 by Burkina Faso. The KAOPEN capital account opening index remained on average low at 0.238. We also note a high variability of the different observations, both in time and space between countries. Table no. 2 below shows the average evolution of key indicators over five decades. We note a positive and continuous evolution of per capita growth from the 1980/1989 decade to the 2010/2019 decade. The global index of international financial integration took a breather in the decade 2000, before a sharp recovery in the last decade. While the stock of foreign direct investment has experienced a positive and sustained trend over the period, the stock of foreign debt has declined. This could be due to the decline in public debt in the early 2000s, following the Heavily Indebted Poor

Countries initiative. Finally, controls on international capital movements have tightened over time, resulting in a decline in the KAOPEN index from one decade to the next.

Table no. 2 – Average change in key indicators

Period	1980-1989	1990-1999	2000-2009	2010-2019
Economic growth	-1,007847	0,4247002	0,5589242	2,439049
International financial integration	78,61563	91,54873	85,01645	115,2906
Foreign direct investment	6,970055	6,011747	9,473416	21,75817
External debt	62,21257	69,12112	52,83534	49,22747
KAOPEN Index	0,3476307	0,2876769	0,1643452	0,1643452

Source: authors' calculations

3.2 Results of preliminary tests

In this section, we present the cross-sectional independence, unit root and cointegration tests.

The results of the preliminary tests are presented in Tables no. 3 to no. 6 below. The Pesaran (2004) cross-sectional dependency test results are presented in Tables no. 3. The results at the variable level do not allow us to accept the null hypothesis of independency between the individuals in the panel (the probabilities associated with the tests are all lower than 0.05). We conclude that there is a strong cross-sectional dependency in the evolution of the respective variables.

Table no. 3 – Results of the Pesaran cross-sectional dependency test

Variable	Test CD	p-value
Economic growth	5.69	0.000
Financial integration	10.35	0.000
Foreign direct investment	19.27	0.000
External debt	11.10	0.000
Financial development	4.57	0.000
Human capital	27.61	0.000
Domestic investment	6.19	0.000
Public consumption	11.12	0.000
Commercial opening	6.40	0.000
Inflation	13.81	0.000

Note: Null hypothesis: cross-sectional independency

Source: author's construction

The results of the cross-sectional independency test guide the choice of the unit root test. When there is cross-sectional dependency, as presented in Tables no. 3, second generation tests are preferred to first generation tests[2]. The unit root test of Pesaran (2003) was therefore chosen for this analysis and the results are presented in Table no. 4. All international financial integration variables are stationary in first difference. The other variables are stationary at level, with the exception of the human capital variable, which is stationary at second difference. However, this stationarity of different orders does not represent a problem for cointegration studies and the variables can be combined to analyse their long-term evolution.

Table no. 4 – Results of Pesaran panel unit root test (2003)

Variables	Level		First difference		Decision
	Constant	Constant + trend	Constant	Constant + trend	
Economic growth	-4.321 (0.000)	-4.231 (0.000)	-	-	I(0)
De facto financial integration	-1.953 (0.314)	-2.636 (0.187)	-3.940 (0.000)	-3.989 (0.000)	I(1)
De jure financial integration	1.865 (0.969)	3.194 (0.999)	-2.890 (0.002)	-2.297 (0.011)	I(1)
Foreign direct investment	-2.011 (0.258)	-2.852 (0.062)	-4.216 (0.000)	-4.239 (0.000)	I(1)
External debt	-2.102 (0.182)	-3.023 (0.020)	-4.107 (0.000)	-4.051 (0.000)	I(1)
Financial development	-1.862 (0.408)	-2.432 (0.391)	-4.465 (0.000)	-4.382 (0.000)	I(1)
Human capital	-1.274 (0.923)	-0.659 (1.000)	-0.732 (0.998)	-2.367 (0.467)	I(2)
Domestic investment	-1.815 (0.460)	-2.223 (0.638)	-4.885 (0.000)	-4.913 (0.000)	I(1)
Public consumption	-2.499 (0.022)	-3.358 (0.001)	-	-	I(0)
Commercial opening	-1.637 (0.657)	-2.299 (0.548)	-5.057 (0.000)	-5.057 (0.000)	I(1)
Inflation	-4.674 (0.000)	-4.658 (0.000)	-	-	I(0)

Note: Probabilities in parentheses. Null hypothesis: Presence of a unit root.

Source: author's construction

The second generation cointegration test (Westerlund, 2008) is used following the unit root tests. results are presented in Tables no. 3. We use the international financial integration variables in different equations. The test provides four statistics: the Ga and Gt statistics or *Mean Group tests* consider, under the null hypothesis of non-cointegration for at least one individual, that the parameters of the error correction term may be different between the individuals in the panel; the Pa and Pt statistics or *Panel tests* which are based on the hypothesis that the error correction term is identical for all the individuals, the rejection of the null hypothesis implying that the series are cointegrated for all individuals in the panel. The results make it possible to reject the null hypothesis of the absence of cointegration, both at the level of the group of countries and at the panel level.

Table no. 5 – Results of the Westerlund (2008) cointegration test

	(IFI)	(KAOPEN)	(IDE)	(DEBT)
Gt	-3.959*** (0.003)	-3.940*** (0.000)	-3.886*** (0.000)	-4.186*** (0.000)
Ga	-26.414** (0.020)	-23.955*** (0.002)	-24.963*** (0.001)	-27.532*** (0.000)
Pt	-9.710*** (0.009)	-9.251*** (0.003)	-9.509*** (0.001)	-9.895*** (0.000)
Pa	-22.009** (0.032)	-22.300*** (0.000)	-23.015*** (0.000)	-24.064*** (0.000)

Note: Probabilities in parentheses. Null hypothesis: No cointegration.

Source: author's construction

Finally, in Table no. 6 we present the results of the slope homogeneity test of Pesaran and Yamagata (2008). These results reveal a problem of heterogeneity. In the specification of the models, the cross-sectional dependence and heterogeneity of the coefficients must be taken into account to avoid estimation bias.

Table no. 6 – Pesaran and Yamagata (2008) slope homogeneity test

Model 1 (*de facto* integration)		**Model 2 (*de jure* integration)**	
Statistics	P-value	Statistics	P-value
$\tilde{\Delta}$ 2.455	0.014	$\tilde{\Delta}$ 1.849	0.064
$\tilde{\Delta}_{adj}$ 2.789	0.005	$\tilde{\Delta}_{adj}$ 2.109	0.035
Model 3 (IDE)		**Model 4 (DEBT)**	
Statistics	P-value	Statistics	P-value
$\tilde{\Delta}$ 1.970	0.049	$\tilde{\Delta}$ 2.516	0.012
$\tilde{\Delta}_{adj}$ 2.238	0.025	$\tilde{\Delta}_{adj}$ 2.858	0.004

Null hypothesis: homogeneity of the slope

Source: author's construction

These different tests have allowed the choice of estimators adapted to long-term relationships on heterogeneous panels. The individual dependence, the no stationarity of several variables and the strong heterogeneity of the countries lead us to favour the results of the AMG estimators in the analyses.

3.3 Econometric results

The main results are presented in Table no. 7. The overall trend is that international financial integration negatively and adversely affects economic growth. Thus, in the long run, capital account openness and the stock of foreign capital negatively affect real GDP per capita growth; the effect is of greater magnitude for the *de jure* capital account openness index. These results do not confirm those found by Quinn (1997) and Quinn and Toyoda (2008) who find positive effects of *de jure* financial integration on economic growth. However, Quinn's (1997) de jure index has been much criticised in the literature and we prefer Chinn and Hiro (2008) index. Following the critique of Lucas (1990), capital account opening has not produced the expected results in developing countries, and has most often resulted in capital flight from the latter. Sectoral misallocation of external capital could also be a plausible explanation. The economies of WAEMU countries are mostly dominated by the service sector, which contributes more to their GDP than the productive sectors, i.e., agriculture and industry. While the agricultural sector, which employs a large part of the active population, is still traditional and does not benefit from capital inflows, the industrial sector is still embryonic.

Table no. 8 summarises the results of estimations with the external debt and the stock of foreign direct investment (FDI), which constitute the bulk of international capital movements in the zone. The previous conclusions, i.e. the negative and significant effect is verified for the external debt stock variable. FDI stocks have a negative but insignificant effect. The external liabilities of WAEMU countries are concentrated in debt (with a high participation of governments) valued on average at 57.23% of GDP, while the stock of FDI is worth only 10.89% on average over the period 1980 - 2019. Debt remains a burden for states and is often

seen as a key determinant of structural deficits. On an unsustainable path, the debt burden can divert governments' efforts to promote the productive sectors of their economies. The evolution of the stock of external debt (see Table no. 2) is also indicative of its weight for countries that benefited from debt relief following the HIPC (Heavily Indebted Poor Countries) initiative in the early 2000s. Indeed, the stock of external debt fell from around 69% in the 1990-1999 decade to around 52% and then 49% respectively in the 2000-2009 and 2010-2019 decades. Thus, while the structural adjustment programmes (SAPs) advocated private initiatives with minimal state involvement in the economy and incentives for foreign capital inflows, the HIPC initiative aimed to relieve states of the burden of debt servicing and allow them to accompany the private sector.

Table no. 7 – International financial integration and economic growth

Dependent variable: *Real GDP per capita growth*						
Variables/Methods	**MG**		**CCEMG**		**AMG**	
De facto financial integration	0.0129		-0.0591*		-0.0324***	
	(0.0144)		(0.0316)		(0.0118)	
De jure financial integration		-3.990		-11.96		-9.928***
		(3.567)		(15.93)		(2.896)
Financial development	26.06	16.88	10.87	14.94	33.73**	26.94
	(21.54)	(24.73)	(14.81)	(18.79)	(14.64)	(16.98)
Human capital	0.598	-4.108	31.91	31.74	-5.227	0.0294
	(2.284)	(3.127)	(69.18)	(51.38)	(4.984)	(2.777)
Domestic investment	23.84***	19.73**	32.82***	25.26***	18.65**	26.13***
	(6.273)	(8.383)	(12.12)	(6.847)	(7.387)	(8.276)
Government consumption	-21.29	-13.78	-8.299	-5.893	-5.490	-2.629
	(20.14)	(16.67)	(20.79)	(17.77)	(14.43)	(14.23)
Trade openness	0.0840	0.0690	0.0203	0.0271	0.0988**	0.0523
	(0.0534)	(0.0485)	(0.0756)	(0.0797)	(0.0427)	(0.0411)
Inflation	-0.0539	-0.0414	-0.0995***	-0.0552*	-0.0386	-0.0384
	(0.0351)	(0.0388)	(0.0338)	(0.0300)	(0.0251)	(0.0262)
Constant	-8.687*	-0.157	27.32	-2.100	-6.998	-10.88**
	(4.865)	(4.933)	(22.48)	(18.38)	(5.600)	(4.507)
Observations	280	272	280	272	280	272
Number of countries	7	7	7	7	7	7
CD-test	2.82	2.58	-3.01	-2.88	-3.59	-3.44
P-value	0.005	0.010	0.003	0.004	0.000	0.001

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: author's construction

Other variables appear relevant for the explanation of economic growth in the WAEMU area. The domestic investment variable positively and significantly affects economic growth, the result being robust for all equations and estimators. Policies should therefore be more directed towards domestic capital accumulation which is the main source of growth. Financial development also has a significant and positive effect on economic growth.

Table no. 8 – Effects of FDI stocks and debt stocks on economic growth

Dependent variable: ***Real GDP per capita growth***						
Variables/Methods	**MG**		**CCEMG**		**AMG**	
Foreign Direct Investment	-0.0957		-0.157		-0.0617	
	(0.0809)		(0.118)		(0.0733)	
External debt		0.00771		-0.128*		-0.0581***
		(0.0204)		(0.0757)		(0.0172)
Financial development	20.66	30.43	-0.936	7.739	40.38***	35.61**
	(20.22)	(22.09)	(12.02)	(16.91)	(13.70)	(17.42)
Human capital	7.073	3.393	63.02	144.0*	7.922	-2.487
	(5.076)	(2.812)	(92.75)	(83.57)	(6.204)	(4.252)
Domestic investment	19.38***	26.01***	21.17*	35.21**	20.25***	16.19*
	(7.145)	(6.997)	(10.83)	(14.34)	(7.205)	(9.088)
Government consumption	-20.59	-18.20	-7.176	-1.308	-0.0997	-2.372
	(18.70)	(20.09)	(18.56)	(21.41)	(14.28)	(14.36)
Trade openness	0.0966*	0.0895*	0.0124	0.0116	0.0857**	0.104***
	(0.0578)	(0.0514)	(0.0667)	(0.0803)	(0.0367)	(0.0391)
Inflation	-0.0599	-0.0473	-0.0817***	-0.116**	-0.0294	-0.0342
	(0.0376)	(0.0386)	(0.0249)	(0.0520)	(0.0229)	(0.0284)
Constant	-13.87**	-12.71*	-11.67	-14.24	-24.10***	-10.08*
	(6.371)	(6.647)	(23.55)	(42.00)	(8.086)	(5.894)
Observations	280	280	280	280	280	280
Number of countries	7	7	7	7	7	7
CD-test	3.27	2.90	-3.03	-2.77	-3.33	-3.55
P-value	0.001	0.004	0.002	0.006	0.001	0.000

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: author's construction

The panel results provide interesting evidence of the perverse effects of international financial integration on the growth of WAEMU countries. To take into account the heterogeneity of the effects, we propose a country analysis. Table no. 9 provides the results of the regressions by country. The analysis is done for each indicator of international financial integration retained above. Significant and negative effects are found in three countries (Benin, Burkina Faso and Mali). The rest of the countries show negative but non-significant coefficients. These results are more significant for external debt than for FDI stocks and the de jure capital account opening index. External debt stocks therefore have perverse effects on the economic growth of these countries. Factors not taken into account in the analysis may provide some justification for this heterogeneity of results across countries. These factors could include institutional quality, governance, absorptive capacity and other structural factors.

Table no. 9 – Country level results of the effects of international financial integration.

Ctry	Variables	(MG)	(CCEMG)	(AMG)	Ctry	Variables	(MG)	(CCEMG)	(AMG)
	IFI	-0.0411	-0.211*	-0.071		IFI	0.015	0.020	-0.053
		(0.042)	(0.111)	(0.046)			(0.038)	(0.100)	(0.039)
	KAOPEN	-2.669	-94.43*	-1.353		KAOPEN	12.953	-7.36	-9.145
		(8.233)	(57.25)	(8.345)			(9.355)	(21.12)	(11.717)
BEN	FDI	0.109	0.278	0.161	**NER**	IDE	-0.078	0.038	-.119
		(0.189)	(0.276)	(0.193)			(0.084)	(0.191)	(0.073)
	DEBT	-0.075	-0.549***	-0.128**		DETTE	0.053	0.011	-.033
		(0.051)	(0.123)	(0.056)			(0.051)	(0.106)	(0.054)
	IFI	-0.025	-0.019	-0.042**		IFI	0.025	-0.067	0.007
		(0.018)	(0.024)	(0.017)			(0.053)	(0.083)	(0.050)
	KAOPEN	-16.279	-30.61	-22.21**		KAOPEN	-11.201	-2.373	-12.49
		(10.573)	(70.65)	(8.883)			(11.017)	(49.10)	(10.67)
BFA	FDI	-0.217	-.442	-0.379	**SEN**	IDE	-0.331	-0.405	-.238
		(0.260)	(0.319)	(0.241)			(0.361)	(0.417)	(0.346)
	DEBT	-0.033	-0.054	-0.095**		DETTE	0.036	-0.188	-0.0009
		(0.035)	(0.051)	(0.036)			(0.062)	(0.116)	(0.060)
	IFI	0.007	0.021	-0.017		IFI	0.033	-0.122*	0.006
		(0.029)	(0.042)	(0.024)			(0.035)	(0.062)	(0.034)
	KAOPEN	-1.991	10.60	-9.683		KAOPEN	0	0	0
		(9.707)	(12.97)	(8.622)			(.)	(.)	(.)
CIV	FDI	-0.372	0.182	0.057	**TGO**	IDE	0.126	-0.398	0.086
		(0.332)	(0.341)	(0.292)			(0.121)	(0.261)	(0.114)
	DEBT	0.015	0.029	-0.019		DETTE	-0.022	-0.116	-0.046
		(0.025)	(0.041)	(0.022)			(0.057)	(0.072)	(0.052)
	IFI	0.073**	-0.035	-0.055					
		(0.031)	(0.070)	(0.034)					
	KAOPEN	-8.743	40.46	-14.60					
		(13.253)	(63.28)	(9.526)					
MLI	FDI	0.094	-0.353	0.001					
		(0.292)	(0.363)	(0.209)					
	DEBT	0.079**	-0.027	-0.082**					
		(0.034)	(0.104)	(0.040)					

Note: Standard errors are in parentheses; *** p<0.01. ** p<0.05. * p<0.1. BEN: Benin. BFA: Burkina Faso. CIV: Ivory Coast. MLI: Mali. NER: Niger. SEN: Senegal. TGO: Togo.

4. CONCLUSION

This paper is devoted to the analysis of the long-term effects of international financial integration on economic growth in the WAEMU countries. With observations covering the period 1980-2019, we adopted the methodology of heterogeneous panel analysis in a multivariate system. The results of the Westerlund (2008) cointegration test confirm the existence of a long-term relationship formed by all the variables selected for the study. The main findings are that the external debt stock and the opening of the capital account have significantly negative effects on economic growth in the WAEMU. However, these results are sensitive to country-specific factors; in three out of seven countries, the panel results are confirmed. As a way forward, further investigation into possible transmission channels from international financial integration to economic growth could better explain the contradictions between theoretical predictions and empirical studies. These extensions should also take into account endogenous factors, such as governance and institutional quality, which may present threshold conditions, in order to better account for the effects of international financial integration on economic growth.

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References

Barro, R. J., Mankiw, G., & Sala-i-martin, X. (1995). Capital Mobility in Neoclassic Models of Growth. *The American Economic Review, 85*(1), 103-115.

Chinn, M. D., & Hiro, I. (2008). A New Measure of Financial Openness. *Journal of Comparative Policy Analysis, 10*(3), 309-322

Eberhardt, M., & Teal, F. (2010). Productivity analysis in global manufacturing production. *Economics Series Working Papers, 515*. Retrieved from http://www.economics.ox.ac.uk/research/WP/pdf/paper515.pdf

Fischer, S. (1998). Capital Account Liberalization and the Role of the IMF. In M. B. Riccardi (Ed.), *Should the IMF Pursue Capital-Account Convertibility?* (Vol. 207). Princeton, New Jersey: International Finance Section, Department of Economics Princeton University.

Kaminsky, G., & Schmukler, S. (2008). Short-Run Pain, Long-Run Gain: Financial Liberalization and Stock Market Cycles. *Review of Finance, 12*(2), 253-292. http://dx.doi.org/10.1093/rof/rfn002

Krugman, P., Maurice, O., Gunther, B. C., & Matthieu, C. (2009). *International Economics 8, French translation* (8th ed.): Pearson Education France.

Lane, P. R., & Milesi-Ferreti, G. M. (2017). *International Financial Integration in the Aftermath of the Global Financial Crisis* Retrieved from https://bit.ly/40fSbIV

Lluís Carrion-i-Silvestre, J., Del Barrio-Castro, T., & Lopez-Bazo, E. (2005). Breaking the Panels: An Application to the GDP Per Capita. *The Econometrics Journal, 8*(2), 159-175. http://dx.doi.org/10.1111/j.1368-423X.2005.00158.x

Lucas, R. (1990). Why Doesn't Capital Flow from Rich to Poor Countries? *The American Economic Review, 80*(May), 92-106.

Markovitz, H. M. (1952). Portfolio Selection. *The Journal of Finance, 7*(1), 77-91. http://dx.doi.org/https://doi.org/10.2307/2975974

McKinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington DC: Brookings Institution.

Misati, R. N., Ighodaro, C., Were, M., & Omiti, J. (2015). Financial Integration and Economic Growth in the COMESA and SADC Regions. *Journal of African Business, 16*(1-2), 109–127. http://dx.doi.org/10.1080/15228916.2015.1059157

Mougani, G. (2011). Financial Globalization and International Financial Integration: Analysis of Impact of Financial Integration on Activity, Trade Openness and Macroeconomic Volatility in Africa. *African Development Bank Group*(December).

Pesaran, M. H. (2003). *A Simple Panel Unit Root Test in the Presence of Cross Section Dependence*. Retrieved from https://ideas.repec.org/p/cam/camdae/0346.html

Pesaran, M. H. (2004). *General Diagnostic Tests for Cross Section Dependence in Panels*. Retrieved from https://ideas.repec.org/p/cam/camdae/0435.html

Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica, 74*(4), 967-1012.

Pesaran, M. H., & Smith, R. (1995). Estimating Long-Run Relationships from Dynamic Heterogeneous Panels. *Journal of Econometrics, 68*(1), 79-113. http://dx.doi.org/10.1016/0304-4076(94)01644-F

Pesaran, M. H., & Yamagata, T. (2008). Testing Slope Homogeneity in Large Panels. *Journal of Econometrics, 142*(1), 50-93. http://dx.doi.org/10.1016/j.jeconom.2007.05.010

Prasad, E., Rogoff, K., Wei, S.-J., & Kose, M. A. (2003). *Effects of Financial Globalization on Developing Countries: Some Empirical Evidence*. Retrieved from http://www.imf.org/external/np/res/docs/2003/031703.pdf

Quinn, D. (1997). The Correlates of Change in International Financial Regulation. *The American Political Science Review, 91*(3), 531-551. http://dx.doi.org/10.2307/2952073

Quinn, D., & Toyoda, M. A. (2008). Does Capital Account Liberalization Lead to Growth? *Review of Financial Studies, 21*(3), 1403-1449. http://dx.doi.org/10.1093/rfs/hhn034

Ray, S. (2012). Causal Linkage between International Financial Integration and Economic Growth: Evidence from Post Globalized Indian Scenario. *Advances in Asian Social Science, 3*(4), 739-750.

Saafi, S., Mohamed, M. B., & Doudou, M. B. (2016). Causal Nexus between Financial Integration and Economic Growth: Does Nonlinearity Matter? *Journal of Economic Integration, 31*(4), 817-854. http://dx.doi.org/10.11130/jei.2016.31.4.817

Sahay, R., Cihak, M., N'Diaye, P., Barajas, A., Ayala, D., Bi, R., . . . Yousefi, S. R. (2015). *Rethinking Financial Deepening: Stability and Growth in Emerging Markets*. Retrieved from https://ideas.repec.org/p/imf/imfsdn/2015-008.html

Shaw, E. S. (1973). *Financial Deepening in Economic Development*. New York: Oxford University Press.

Stiglitz, J., & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review, 71*(3), 393-410.

Tobin, J. (1958). Liquidity Preference as Behavior Toward Risk. *The Review of Economic Studies, 25*(2), 65-86. http://dx.doi.org/10.2307/2296205

Westerlund, J. (2008). A Panel Cointegration Tests of the Fisher Effect. *Journal of Applied Econometrics, 23*(2), 193-233. http://dx.doi.org/10.1002/jae.967

Notes

[1] Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. In this study, we have removed Guinea-Bissau due to lack of data over a large part of the period.

[2] A third generation of tests takes into account structural breaks and outliers (Carrion-i-Silvestre et al, 2005).