

# Is Promoting Financial Inclusion through External Aid Effective? Cross-Country Evidence

W. Jean Marie Kébré<sup>1</sup>

<sup>1</sup>(Ministry of Economy Finance and Forecasting; Center for Training, Orientation and Research on Economic Governance in Africa, Burkina Faso)

**ABSTRACT:** Despite many years of financial system reforms aimed at improving its ability to finance the economy, the financial development in developing countries still remains critical and below expectations. These reforms seem to have led to the people's exclusion from the financial system. To address this financial exclusion, WAEMU countries have embarked on a process of promoting financial inclusion with strong support from aid providers. This article analyzes the relationship between external aid and financial inclusion. The main idea of the paper is to assess the capacity of foreign aid to promote financial inclusion in WAEMU countries. For that, it focuses on analyzing the relationship between external aid and financial inclusion on one hand et the factors that explain this relationship on the other hand. Using different components of aid, the results show that only aid flows allocated to the financial sector positively and significantly affect the financial inclusion index. They also show a non-linear relationship explaining by the presence of transmission channels. In this regard, among the governance indicators used, only the quality of public administration management proves to be an effective transmission channel.

**KEYWORDS** - Aid, Aid allocated to financial sector, Aid allocated to agricultural sector, financial inclusion.

## I. INTRODUCTION

Financing for development is a major challenge for poor countries because of underlying systemic and structural vulnerabilities, including low levels of income and domestic savings, and weak financial market infrastructure. Indeed, despite years of financial system reforms since the 1990s, marked by efforts at financial repression, the level of financial development in developing countries remains below expectations.

This situation of vulnerability was exacerbated by the 2008 financial crisis, which severely tested the capacity of the financial system to effectively fulfill its role in the economy. It results from the increase in information asymmetry that creates severe problems of anti-selection and moral hazard that affect the efficiency of the financial system in financing the economy [1]. In developing countries, the manifestation of the failure of the financial system has been the increasing exclusion of people from financial services.

In order to address this financial exclusion in the world in general and in developing countries in particular, the G20 countries decided in 2010 to make financial inclusion a priority on the international development agenda. Indeed, the low level of financial inclusion prevents the financial sector from fully playing its role in promoting growth, fighting poverty and reducing inequality [2]. This decision by the G20 was embodied in the Global Partnership for Financial Inclusion and the promotion of national or regional financial inclusion strategies.

This commitment to financial inclusion is supported by the economic literature, which has shown that a financially inclusive economy is more likely to grow rapidly. It has also shown that income inequality tends to decrease when financial inclusion increases [3]. Therefore, in order to ensure that more people are able to participate fully in economic activity and improve their lives, donors must strengthen the financial inclusion of these poor and low-income populations.

Yet, the same interest in financial deepening had led the international community, under the aegis of the Bretton Woods Institutions, to engage developing countries in policies of financial repression, going so far as to make their financing conditional on the implementation of these policies. These reforms were based on the

pioneering findings of Shaw [4] and McKinnon [5] that established a positive link between economic growth and financial development. Thus, throughout the period of the Structural Adjustment Programs and beyond, reforms to deepen the financial system have been prominent in the countries of the West African Economic and Monetary Union (WAEMU) and have conditioned large financial transfers in the form of official development assistance.

Two decades after their implementation, it is clear that these reforms in the WAEMU, despite financial support from donors, have not achieved the expected results in terms of financial development. According to World Bank statistics, domestic credit to the private sector represented only 11.59% of WAEMU GDP over the period 1991-2009. This low level of financial development is reflected in the low use of financial services (22.94%), of which only 7.77% used banking services in 2009.

These results raise questions about the effectiveness of promoting financial inclusion with the support of external aid, as the link between financial development and financial inclusion is strong. Indeed, the IMF [6] defined financial sector deepening as a multidimensional process whereby financial institutions and markets provide a growing range of services and instruments that enable (i) the efficient exchange of goods and services; (ii) rational savings and investment decisions, especially at longer maturities; and (iii) the creation by the financial sector of a wide range of assets to spread risk. Thus, deepening the financial sector should broaden access to financial products and potentially reduce the cost effects of financial services for effective financial inclusion.

This raises the question of how effective the G20 commitment could be in an environment where financial reform efforts supported by external aid have not yielded the expected results. Wouldn't dependence on external resources be an obstacle to promoting endogenous development financing mechanisms, such as financial inclusion?

The objective of this paper is to analyze the capacity of external aid to promote financial inclusion in WAEMU countries. Specifically, it focuses on:

- ✓ Assess the relationship between external aid and financial inclusion;
- ✓ Analyze the factors that explain this relationship.

The basic assumption underlying this analysis is that foreign aid is a vehicle for promoting financial inclusion. As such, there is a positive relationship between foreign aid and financial inclusion. However, this relationship is non-linear and can be explained by the decrease in marginal return on external aid and the weakness of governance in WAEMU countries.

Our approach deepens the sectoral analysis of aid effectiveness by highlighting its relationship with financial inclusion. It contributes to enriching the economic literature which, to our knowledge, does not address this aspect very much.

The rest of the paper will present a literature review on aid and financial inclusion and some stylized facts on the issue. It will then focus on the econometric approach to understanding the relationship between aid and financial inclusion on the one hand and the explanatory factors of this relationship on the other.

## **II. LITERATURE REVIEW**

Financial inclusion is intrinsically embedded in the dynamics of financial development, which is the process by which a financial system becomes deeper, more accessible, more cost-effective, more stable, more efficient, more internationally open, and more diverse [7]. It defines the ability of individuals and businesses to access a range of useful and appropriate financial products and services at lower cost [8]. Talking about financial inclusion implies the existence of financial exclusion that the promotion of inclusion attempts to address. In this promotion, external assistance could play a key role. This section draws on the literature to establish the theoretical and empirical links between foreign aid and financial inclusion.

### **1. Theoretical review on the role of external aid in financial inclusion**

Financing policy defines the different development financing mechanisms and analyzes their complementarity in order to create the conditions for economic growth that can reduce poverty and inequality in developing countries. In this sense, external aid and financial inclusion are financing mechanisms whose

relationship is rooted in the theoretical underpinnings of the links between financial openness and financial development on the one hand and market failures on the other.

The opening of borders to capital flows and financial services leads to an increase in the supply and investment efficiency of capital, thus contributing to the deepening of the financial sector [9]–[12]. External capital flows allow for increased opportunities for savings and credit for productive investments.

For instance, external assistance can facilitate access by large segments of the population to financial services such as credit, insurance, and contingency instruments, which are essential for poverty reduction. Businesses, especially small and medium-sized enterprises, also need access to credit for the growth they drive. All of these opportunities provided by capital flows (including foreign aid) thus enhance financial inclusion.

However, aid flows can also directly finance the economic activities of populations or enterprises without necessarily going through the financial system. By relaxing the financial constraints of these populations or enterprises, aid flows are likely to reduce the demand for credit on the financial market and thus reduce the development of this market. In this case, aid appears to be a substitute for financial development and thus a brake on financial inclusion.

After all, as Mishkin [1] has pointed out, the financial system is one of the most controlled sectors of the economy, with banks being among the most regulated financial institutions. The notion of financial inclusion is a response to the financial market failures that have led to financial exclusion. Financial exclusion is the inability, difficulty, or unwillingness of certain groups to access the financial services they need [13]. The traditional financial sector has long been reluctant to provide financial services to low-income groups.

In fact, the banking logic, which is subject to often onerous conditions, seems ill-adapted to the needs of the majority of the population with the lowest incomes. These conditions constitute barriers to the financial inclusion of poor and low-income populations. For Demirguc-Kunt and Klapper [14], these barriers emanate from insufficient infrastructure that makes the expansion of banking networks cumbersome. For banks, the dispersion of rural populations (which limits economies of scale) and the inadequacy of conventional means of identification (identity documents, land registry) increase operational and credit risks and require costly strengthening of internal controls. All of this weighs on the profitability of the banking system and results in access costs that are too high for poor people and their small businesses.

Considering these financial market failures that lead to financial exclusion, regulation is needed to enable the expansion of financial products to disadvantaged areas and segments. For Beck and al [15], one of the functions of the regulator is to address these shortcomings by creating an appropriate regulatory framework, improving transparency of information, financial education and consumer protection.

The implementation of these measures constitutes costs that the regulator must bear. In developing countries, the funding mechanism mostly used to implement these measures is external aid. In this sense, aid appears, at first glance, to be a factor in promoting financial inclusion.

## **2. Empirical review of aid as a determinant of financial inclusion**

The empirical literature has identified several explanatory factors for financial inclusion that can be grouped into three categories: supply factors, demand factors, and institutional factors [16]. However, to our knowledge, this literature is very poor on the relationship between external aid and financial inclusion.

The studies that are closer to the question rather analyze the effect of financial openness on financial development. In this sense, while some authors came to conclusion that financial openness is beneficial to the banking sector and plays a key role in financial development [10], [12], [17], the results of other authors condition this beneficial effect on a consistent trade openness [18]. However, Baltagi and al [19] warned that simultaneous openness could be detrimental to financial development.

However, some studies highlight the harmful effect of financial openness on the financial system, which can even lead to its instability. Thus, Stiglitz [20] and Peek and Rosengren [21] have shown that financial openness

can destabilize the local banking sector by causing the disappearance of some domestic banks and/or by facilitating the import of external shocks. Detragiache and al [22] and Gormley [23] have concluded that financial openness, especially in the banking sector, leads to segmentation of the domestic credit market, with possible negative effects on the level of credit extended. In that sense, Allegret and Azzabi [24], in an analysis of a panel of 112 countries between 1975 and 2007, came to the conclusion that financial openness has negative effect on the activity of financial intermediaries and the development of stock markets for emerging and developing countries. The results for the subgroup of emerging and frontier countries are more conclusive. They unambiguously supported a positive relationship between financial openness and financial development. Taking the specific case of foreign aid, Kébré [25] showed that aid has a negative effect on financial development; suggesting that in the Economic Community of West African States (ECOWAS) countries, foreign aid is an obstacle to financial deepening.

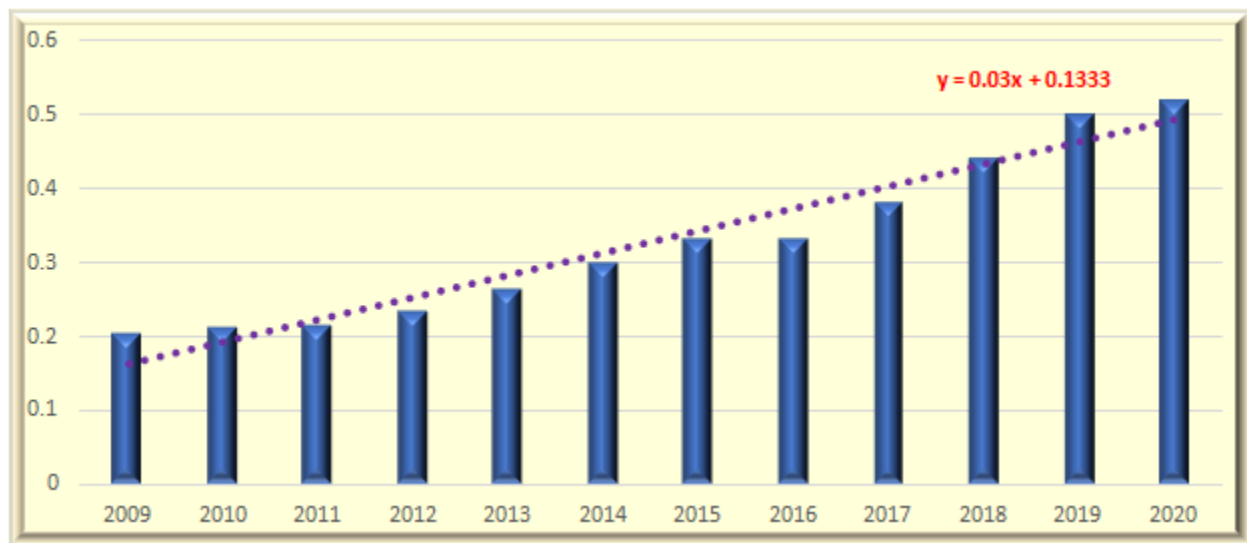
### III. STYLIZED FACTS ABOUT FINANCIAL INCLUSION AND ITS RELATIONSHIP TO AID

#### 1. Some characteristics of financial inclusion in the WAEMU

Financial inclusion is a concept that embodies various dimensions, including access to and use of financial services, as well as aspects such as affordability, utility, quality, and awareness of financial services and products. Its measurement requires several parameters. At the WAEMU level, financial inclusion is defined as the permanent access of populations to a diversified range of appropriate financial products and services, at affordable costs and used effectively and efficiently [26].

The overall level of financial inclusion is captured through the Financial Inclusion Index. The methodology used for its determination is based on the approach proposed by Sarma [27] and enriched by that of Camara and Tuesta [28] to ensure adequate weighting of the different dimensions of financial inclusion.

Over the 2009-2020 period, the synthetic index of financial inclusion in the union improved progressively from 0.205 in 2009 to 0.52 in 2020, with an increasing trend as described by the equation in the following graph.



Source: Author, based on BCEAO data

Fig. 1 : Evolution of the Financial Inclusion Index in the WAEMU from 2009 to 2020

This behavior of the synthetic index is explained by the indicators of access, use and intermediation margin.

The degree of the population's access to financial services is assessed through: (i) the overall demographic penetration rate of financial services, which measures the number of service points available per 10,000 adults; and (ii) the overall geographical penetration rate of financial services, which assesses the degree of proximity, i.e. the number of service points available in an area of 1,000 km<sup>2</sup>. These two indicators have grown over the period, indicating a clear improvement in the population's access to financial services.

As for usage, the overall financial services usage rate measures this dimension. It measures the percentage of the adult population with an account at a financial institution or an e-money account. The overall financial services usage rate increased by 4.01 percentage points. The statistics show that e-money has made a significant contribution to the use of financial services in the WAEMU.

The intermediation margin measures the affordability of financial services. It measures the difference between the lending rate and the deposit rate. Over the period, the intermediation margin has declined from 3.6 percentage points in 2009 to 1.46 percentage points in 2020. Despite this dynamic, the average cost of financing, estimated at 2.22 percentage points, remains relatively high in the WAEMU. High intermediation margins may affect the banking system's ability to allocate resources. In this regard, high lending rates can lead to adverse selection resulting in credit rationing [29]. Similarly, relatively low deposit rates do not sufficiently reward savers, leading to undesirable saving behavior [30], [31].

## **2. External aid to support financial inclusion**

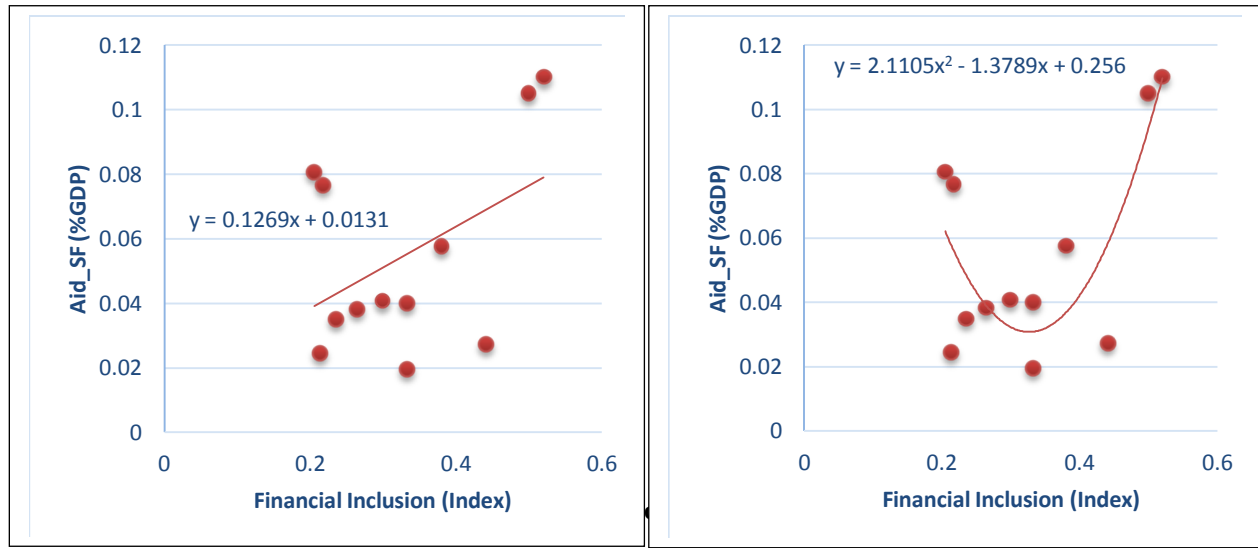
To act on the consolidation of financial inclusion and development, donors position themselves in direct support of the actors or in support of the strengthening of regulations.

Interventions to increase financial inclusion focus on providing financial services and supporting better access to financing. To this end, in order to promote access to financial services for the population and fight against financial exclusion, external aid contributes to the creation of diversified financial products, adapted to the needs of the population (agricultural financial products, housing, micro-insurance and mobile banking services). This support from donors is materialized through the establishment of lines of credit for the promotion of these adapted products and guarantee mechanisms.

According to data from the International Aid Transparency Initiative [32], external aid received in the WAEMU in support of banks and financial services increased from US\$73.42 million in 2009 to US\$175.90 million in 2020, with an average increase of 52.26%. This aid represented an average of 0.15% of total aid received. Its evolution over the period has been erratic with a low in 2010 of US\$23.03 million and a high of US\$175.90 million in 2020.

However, it is important to note that it is not only financial sector support that contributes to promoting financial inclusion. Support for sectors such as agriculture, livestock, and small and medium-sized enterprises can also contribute, because of the potential connections that such support makes between these sectors and the financial system.

Figure 2 shows the relationship between external aid and financial inclusion. It shows a general increasing trend, but with non-linear dynamics. This non-linearity suggests the existence of a threshold effect and/or the existence of transmission channels. The econometric analysis that follows will further support these initial results of the graphical analysis.



**Source :** Author, based on IATI data

**Fig. 2:** Linking aid to financial inclusion

#### IV. ECONOMETRIC ANALYSIS OF AID’S EFFECT ON FINANCIAL INCLUSION

##### 1. Analytical model and technical issue

The model for analyzing aid effect on financial inclusion draws on models for analyzing its determinants. In this regard, Naceur & al [33] identified two constraints to the development of financial inclusion which are structural and political factors. To assess the effects of these factors, they used a dynamic model to better support the potential for correlation with policy variables. Their model is as follows:

$$FI_{i,t} = \alpha FI_{i,t-1} + S'_{i,t}\beta + P'_{i,t}\gamma + \mu_{i,t} \quad (1)$$

Where  $FI_{i,t}$  is the level of financial inclusion in country  $i$  at period  $t$ ,  $S$  is a vector of structural variables, and  $P$  is a vector of policy variables. The error term takes into account fixed and variable effects and independent, mean zero error terms.

Our model builds on this model by highlighting the explicit role of foreign aid as an economic policy variable. Foreign aid as an explanatory variable of financial inclusion ensures the financing of the financial sector regulation policy which may require huge structural investments. It is therefore considered an economic policy variable that can affect the level of financial inclusion. Under these conditions, our model is as follows:

$$FI_{i,t} = \alpha FI_{i,t-1} + S'_{i,t}\beta + P'_{i,t}\gamma + \delta A_{i,t} + \mu_{i,t} \quad (2)$$

$A$  represents the aid received per country.

In the specification of this model, the lagged IF variable included on the right side of the equation is endogenous to the fixed effects in the error term. The regressor depends on country-specific effects. OLS and fixed effects estimates for such specifications would suffer from dynamic panel bias as shown by Nickell [34]. The strategy to circumvent this endogeneity problem is to use the difference GMM estimator described by Arellano and Bond [35]. The latter use the first difference transformation to expunge fixed effects, and use the upper lags of the endogenous regressors as internal instruments. However, in unbalanced panels, this transformation could result in a significant loss of data.

In addition, Blundell and Bond [36] found that if the regressor has high persistence (i.e., an absolute value close to 1), GMM difference estimators perform poorly. This is because at high persistence, the regressor behaves like a random walk and past values do not provide sufficient information about future changes.

Therefore, higher order lags of the regressors are weak instruments for differentiated variables [37]. The preferred estimator in this case is the system GMM estimator developed by Arellano and Bover [38] and Blundell and Bond [36]. In this case, instead of removing fixed effects by differentiating (or directly orthogonalizing) the regressors, the instruments are instead differentiated to make them exogenous to the fixed effects. These higher order differences then serve as internal instruments for the regressors. The estimation technique used in this paper is the system GMM estimator as developed by Roodman [37].

## **2. Variables and data sources**

For our analysis, we use data for the 8 WAEMU countries over 12 years (2009-2020) from 3 sources. These data relate to financial inclusion variables, structural variables, economic policy variables and external aid.

The financial inclusion variables are obtained from the BCEAO database. The indicator used for this analysis is the synthetic financial inclusion index. The interest in this index is that it takes into account all the different dimensions of financial inclusion. The data covers the period 2009-2020.

The structural variables relate to the economic factors that determine financial inclusion as described in the literature. These include per capita income, population density, and the level of the informal economy [33]. We also have the level of education and cell phone and internet penetration [39], [40]. The data on these structural variables come from the World Bank database (World Development Indicators) and cover the analysis period for the 8 WAEMU countries.

The economic policy variables relate to the quality of macroeconomic management, the quality of public administration, and the margin of financial intermediation. To these variables should be added official development assistance that can contribute to financial sector regulation. The external aid used in this analysis is the total aid allocated to the country, that allocated to the agricultural sector and that allocated to the financial sector. The data on these variables come from the World Bank database and the International Aid Transparency Initiative (IATI) database on foreign aid.

Details on all these variables are presented in Table 1.

## **V. INTERPRETATION OF RESULTS**

The main results of the estimates are reported in Tables 5 and 6. These tables is preceded by tables of stationarity, cointegration and correlation matrix tests to ensure the quality of the estimates. Table 5 reports the results of the estimates of financial inclusion determinants by capturing the linear effect of total aid, aid to the agricultural sector, and aid to the financial sector. The table 6 captures the non-linear effects of these different types of aid. Across these regressions, we find that the p-values of the Arellano-Bond statistics validate the estimation results; the AR(1) being significant and the p-values of the AR(2) being sufficiently high. Similarly, the p-values of the Hansen tests confirm that the instruments are appropriate in each of the regressions.

Regarding the linear effect, the estimation results show that total aid and aid to the agricultural sector have a negative and significant effect on financial inclusion, while aid to the financial sector has a positive and significant effect. Thus, 1% increase in total aid and aid allocated to the agricultural sector leads to 0.0017% and 0.0092% decrease in the financial inclusion index, respectively. With respect to aid to the financial sector, a 1% increase in aid leads to a 0.0441% increase in financial inclusion.

Such results suggest that total aid and aid allocated to the agricultural sector are detrimental to financial inclusion in the WAEMU zone. This is because external aid provides alternative financing (alternative credit products) to the traditional financial system. Under these conditions, by widening access to financing, aid promotes the relaxation of the financing constraint on WAEMU economies by replacing the financial sector. This has the effect of crowding out traditional financing. On the other hand, by intervening directly in the financial sector, external aid provides direct support to the sector and thus promotes the growth of financial inclusion. In this way, it

strengthens the sector by enabling it to promote appropriate and accessible financial products. This last result is consistent with Mishkin's [1] analysis, which shows that financial openness has a positive effect on financial development, and thus on financial inclusion, through the deepening of banking sectors.

The main conclusion from these results is that aid only promotes financial inclusion when it is integrated into the mainstream financial system. Direct donor interventions to support people's access to finance, through the implementation of projects, create a disincentive to traditional finance. These parallel approaches to the financial system do not contribute to the promotion of financial inclusion in the WAEMU zone.

Through the analysis of non-linear effects, we attempt to investigate the dynamics of the relationship between aid and inclusion by looking for the existence of a threshold effect and the existence of transmission channels. The estimation results in Table 6 indicate a sustained dynamic in the relationship between financial inclusion and aid, regardless of the type of aid. Indeed, when introducing the squares of total aid, aid allocated to the agricultural sector, and aid allocated to the financial sector, the results show continued evidence of the linear effect. The effect of the squares of total aid and agricultural sector aid remains significantly negative on financial inclusion, while that of the square of financial sector aid remains significantly positive. Thus, contrary to the statistical analysis that suggested the presence of a threshold effect in this relationship, the econometric analysis reveals the consistency of the sign of the effect of aid on financial inclusion, regardless of the amount of aid received or allocated.

Concerning the test of the existence of transmission channels, the results of the estimations show that the quality of public administration management appears to be an effective transmission channel of aid's effect on financial inclusion. Indeed, by introducing the cross variable of aid and quality of government management into the model, we find a positive and significant effect on financial inclusion. Thus, the interaction variables of aid (total aid, agricultural sector aid and financial sector aid) with the quality of government management variable all provide positive and significant effects on financial inclusion. These results could explain the non-linear trend detected in the statistical analysis. They suggest that an effort to enhance governance in terms of the quality of public administration management is an effective channel for improving the impact of aid or transmitting that impact on financial inclusion. They thus reinforce previous results showing that the quality of governance and institutions is essential to aid effectiveness [25], [41]–[43]. It is most likely these results of the interaction of aid with governance that would justify the non-linear dynamics of the relationship between aid and financial inclusion that the statistical analysis described. They suggest that a minimum threshold of governance in terms of the quality of administrative management is required to improve the aid effect on financial inclusion.

## **VI. CONCLUSION**

The paper aimed to analyze the effect of aid on the promotion of financial inclusion in the WAEMU region. To this end, the study first focused on analyzing the direct relationship between external aid and financial inclusion. The results show that only aid flows allocated to the financial sector positively and significantly affect the financial inclusion index. Total aid and aid to the agricultural sector have a significantly negative effect on financial inclusion.

These results do not fully support the hypothesis that aid only promotes financial inclusion if it is allocated to the financial sector. The mechanism being that aid flows to the financial sector would provide it with cheaper financial resources for the development of appropriate and accessible financial products for the majority.

The study then focused on further analysis of the relationship dynamics between aid and financial inclusion. The results do show a non-linear relationship, but this is not the signature of a threshold effect. Rather, this non-linear relationship is the signature of the presence of transmission channels of the effect of external aid on financial inclusion. In this regard, among the governance indicators used, only the quality of public administration management proves to be an effective transmission channel. Through the quality of public administration channel, external aid, whether allocated to the agricultural or financial sector, positively affects financial inclusion in the WAEMU zone. However, the effectiveness of total aid and aid to the agricultural sector on financial inclusion requires a minimum threshold of governance improvement in terms of the quality of public administration management. The current level of the quality of public administration management allows external aid to contribute to the promotion of financial inclusion, but an improvement in this quality would further enhance its effectiveness.



In light of these results, it is important to note that external aid could indeed be a factor in promoting financial inclusion in WAEMU economies. To this end, it should be channeled into the financial system and not used to set up parallel institutions to finance the economies, as is the case with some development projects and programs. In addition, improving the quality of governance would be an effective channel for aid to promote financial inclusion.

**Results tables**

**1. Table 1: Description of analysis variables**

Variable	Definition	Unit of measurement	Effect expected	Source
<b>Financial inclusion</b>				
<b>IF</b>	Financial Inclusion Summary Index (Permanent access of populations to a diversified range of adapted financial products and services at affordable costs and used effectively, efficiently and efficiently)	Index		BCEAO
<b>External aid</b>				
<b>Aid_financial</b>	Official development assistance allocated to banks and financial services	% GDP	(+)	IATI
<b>Aid_agri</b>	Official development assistance allocated to the agricultural sector	% GDP	(+)	IATI
<b>Aid</b>	Total Official Assistance Received	% GDP	(+)	IATI
<b>Structural variables</b>				
<b>Income</b>	GDP per capita	current US\$	(+)	WDI
<b>Density</b>	Population Density	Number per Km2	(+)	WDI
<b>Informal</b>	Costs of business start-up procedures	% GNI per capita	(-)	WDI
<b>Education</b>	Elementary school completion rate (% of relevant age group)	%	(+)	WDI
<b>Mobile</b>	Mobile Phone Subscriptions	% population	(+)	WDI
<b>Internet</b>	Internet users	% population	(+)	WDI
<b>Policy variables</b>				
<b>Inflation</b>	Consumer Price Index	% annuel	(-)	WDI
<b>Quality_macro</b>	EPIN macroeconomic management ranking (1=low and 6=high)	score	(+)	WDI
<b>Quality_admin</b>	EPIN Quality of Public Administration Ranking (1=low and 6=high)	score	(+)	WDI
<b>Spread_int</b>	Spread measures the interest rate differential (lending rate minus deposit rate, %)	%	(-)	WDI

Note : **EPIN** : Annual World Bank assessment of country policies and institutions

**2. Table 2 : Stationarity test results**

Variable	LL = Levin-Lin-Chu Test		Decision
	Coefficient	P-value	
FI	-0.4442	0.3284	I(1)
Aid	-1.183	0.1184	I(1)
Aid_agri	-0.4344	0.332	I(1)
Aid_financial	-0.2412	0.4047	I(1)
GDP_cap	-2.6166	0.0044	I(0)
Informal	-5.707	0.0001	I(0)
Density	0.3061	0.6202	I(1)
Education	-3.3789	0.0004	I(0)
Mobile	-2.2617	0.0119	I(0)
Internet	2.3754	0.9912	I(1)
Spread_int	-2.2831	0.0112	I(0)
Quality_Macro	-9.2876	0.0013	I(0)
Quality_Admin	-2.5707	0.0051	I(0)

**3. Table 3 : Cointegration test Results**

Pedroni test for cointegration

Ho: No cointegration	Number of panels	=	8
Ha: All panels are cointegrated	Number of periods	=	11
Cointegrating vector: Panel specific			
Panel means:	Included	Kernel:	Bartlett
Time trend:	Not included	Lags:	2.00 (Newey-West)
AR parameter:	Panel specific	Augmented lags:	1
	Statistic		p-value
Modified Phillips-Perron t	4.4422		0.0000
Phillips-Perron t	1.6043		0.0543
Augmented Dickey-Fuller t	0.8375		0.2011

**4. Table 4 : Correlation matrix**

	Aid	Aid_financ~l	Aid_agri	GDP_cap	Informal	Density	Educa~on
Aid	1.0000						
Aid_financ~l	0.2228	1.0000					
Aid_agri	0.7016*	0.2209	1.0000				
GDP_cap	-0.6113*	-0.2432	-0.3925*	1.0000			
Informal	0.0317	0.0393	-0.0919	-0.3406*	1.0000		
Density	-0.4410*	-0.1442	-0.4619*	0.2348	-0.0065	1.0000	
Education	-0.1899	-0.1703	-0.2312	0.1099	-0.1476	0.7614*	1.0000
Internet	-0.1746	-0.0516	-0.1558	0.5469*	-0.6142*	0.2427	0.2564
Mobile	-0.2634*	-0.1045	-0.2411	0.6489*	-0.4394*	0.1205	0.1823
Inflation	-0.1798	0.0276	-0.0895	-0.0379	0.2299	0.0490	-0.0328
Spread_int	0.1034	0.1303	0.0781	0.0785	-0.5815*	0.2152	0.2691*
Quality_Ma~o	-0.2860*	0.0998	0.0528	0.1731	-0.4791*	-0.0956	-0.0373
Quality_Ad~n	-0.2563	0.0499	0.0149	0.1843	-0.5107*	0.0174	-0.0220
	Internet	Mobile	Inflat~n	Spread~t	Qualit~o	Qualit~n	
Internet	1.0000						
Mobile	0.7500*	1.0000					
Inflation	-0.1858	-0.1772	1.0000				
Spread_int	0.5197*	0.4107*	-0.2382	1.0000			
Quality_Ma~o	0.0863	0.1101	0.0138	0.0698	1.0000		
Quality_Ad~n	0.2151	0.0537	-0.0803	0.1451	0.6395*	1.0000	

Note : \* indicates that the correlation coefficients are statistically significant at 1%.

**5. Table 5 : Financial inclusion determinants (linear effects)**

Variable	Direct effect		
	(I)	(II)	(III)
Lag FI	0.6921*** (7.85)	0.6836*** (7.08)	0.6946*** (7.07)
Aid	-0.0017** (-1,90)		
Aid_agri		-0.0092*** (-5,12)	
Aid_financial			0.0441** (1,95)
GDP_cap	0.0008*** (3.07)	0.0008*** (3.01)	0.0008*** (2.99)
Informal	0.0001* (1.72)	0.0001* (1.86)	0.0002** (2.29)
Density	0.0014 (0.90)	0.0018 (1.20)	0.0021 (1.32)
Education	0.0004 (0.90)	0.0007 (1.34)	0.0004 (0.84)
Mobile	0.0002 (1.12)	0.0002 (0.08)	0.0008 (0.35)
Internet	0.0013** (2.11)	0.0013** (2.29)	0.0011* (1.80)
Inflation	-0.0021* (-1.69)	-0.0014 (-1.05)	-0.0020** (-1.91)
Spread_int	0.0145*** (2.76)	0.0153*** (3.01)	0.0134*** (2.58)
Quality_Macro	-0.0272** (-2.17)	-0.0235 (-1.34)	-0.0151 (-0.95)
Quality_Admin	0.0173 (1.06)	0.0179 (1.02)	0.0249 (1.31)
Observations	80	80	80
Number of countries	8	8	8
Number of instruments	80	80	80
Hansen Test	0.16	0.159	0.122
AR(1)	0.09	0.082	0.09
AR(2)	0.647	0.562	0.714

**Notes:**

- ✓ Student statistic in parentheses
- ✓ The stars mean that the coefficient is significant (\*\*\*)  $p < 0.01$ , (\*\*)  $p < 0.05$ , (\*)  $p < 0.1$ )

6. Table 6 : Financial inclusion determinants (Non-linear effects)

Variable	Non-linear effects					
	Threshold effect			Interaction governance		
	(I)	(II)	(III)	(I)	(II)	(III)
Lag FI	0.6924*** (7.61)	0.6971*** (7.20)	0.6853*** (7.16)	0.7043*** (11.48)	0.7013*** (8.43)	0.7177*** (6.61)
Aid				-0.0069** (-1.95)		
Aid_agri					-0.0165 (-0.49)	
Aid_financial						0.0253 (0.05)
Aid_sq	-0.0004** (-2.03)					
Aid_agri_sq		-0.0015*** (-3.06)				
Aid_fin_sq			0.1513*** (4.66)			
GDP_cap	0.0008*** (3.11)	0.0008*** (2.78)	0.0009*** (3.12)	0.0009*** (3.96)	0.0009*** (4.96)	0.0001*** (4.59)
Informal	0.0001* (1.69)	0.0001** (2.11)	0.0002** (2.13)	0.0002* (1.70)	0.0001* (1.69)	0.0001* (1.78)
Density	0.0015 (0.92)	0.0017 (1.09)	0.0020 (1.32)	0.0012 (0.94)	0.0015 (1.18)	0.0018 (1.02)
Education	0.0004 (0.85)	0.0006 (1.20)	0.0004 (0.85)	0.0002 (0.38)	0.0006 (1.07)	0.0004 (0.81)
Mobile	0.0002 (1.06)	0.0008 (0.35)	0.0007 (0.31)	0.0003* (1.85)	0.00011 (0.49)	0.0009 (0.63)
Internet	0.0013** (1.97)	0.0012** (1.99)	0.0012** (1.93)	0.0014*** (2.41)	0.0012** (2.23)	0.0010* (1.70)
Inflation	-0.0020* (-1.67)	-0.0014 (-1.12)	-0.0018* (-1.76)	-0.0026** (-2.26)	-0.0017 (-1.33)	-0.0021** (-1.97)
Spread_int	0.0140*** (2.61)	0.014*** (2.81)	0.0133*** (2.64)	0.0159*** (3.01)	0.0157*** (2.92)	0.0126*** (2.58)
Quality_Macro	-0.0255** (-1.93)	-0.0197 (-1.22)	-0.0164 (-1.05)			
Quality_Admin	0.0172 (1.00)	0.0198 (1.09)	0.0262 (1.36)			
Interact_Aid_Macro				0.0001 (0.03)		
Interact_Aid_Admin				0.0020*** (2.62)		
Interact_Aid_agri_Macro					-0.0053 (-1.20)	
Interact_Aid_agri_Admin					0.0099* (1.80)	
Interact_Aid_fin_Macro						-0.0794 (-0.77)
Interact_Aid_fin_Admin						0.1114*

						(1.76)
<b>Observations</b>	80	80	80	80	80	80
<b>Number of countries</b>	8	8	8	8	8	8
<b>Number of instruments</b>	80	80	80	80	80	80
<b>Hansen Test</b>	0.147	0.155	0.12	0.173	0.142	0.132
<b>AR(1)</b>	0.088	0.082	0.093	0.087	0.088	0.086
<b>AR(2)</b>	0.639	0.563	0.774	0.559	0.556	0.751

**Notes:**

- ✓ Student statistic in parentheses
- ✓ The stars mean that the coefficient is significant (\*\*\*)  $p < 0.01$ , (\*\*)  $p < 0.05$ , (\*)  $p < 0.1$

**REFERENCES**

- [1]. F. Mishkin, *The economics of money, banking, and financial markets*, Pearson ed. Pearson education, 2007.
- [2]. P. Granata, K. Kibuuka, and Y. Mascaró, “Le coût du financement en Afrique : quelle politiques publiques pour réduire son coût et renforcer l’inclusion financière ?,” *Rev. d’économie Financ.*, vol. 4, no. 116, pp. 121–150, 2014.
- [3]. T. Beck, A. Demirgüç-Kunt, and R. Levine, “Finance, inequality and the poor,” *J. Econ. Growth Vol.*, vol. 12, no. 1, pp. 27–49, 2007, doi: <https://doi.org/10.1007/s10887-007-9010-6>.
- [4]. E. S. Shaw, “Financial deepening in economic development,” *New York, NY Oxford Univ. Press*, 1973.
- [5]. Ronald I. McKinnon, *Money and capital in economic development*. Washington, D.C Brookings, 1973.
- [6]. FMI, “Le Renforcement de la surveillance du secteur financier dans les pays à faible revenu : Approfondissement du secteur financier et stabilité macroéconomique,” *Fond Monétaire Int.*, 2012.
- [7]. N. Meisel and J.-P. Mvogo, “Quelle politique de développement financier en zone franc?,” *Agence Française développement (AFD)*, vol. 23, 2007.
- [8]. World Bank, “Inclusion financière,” *L’inclusion financière est un facteur essentiel de réduction de la pauvreté et de promotion de la prospérité.*, 2022. <https://www.worldbank.org/en/topic/financialinclusion>
- [9]. A. N. Berger, R. Deyoung, H. Genay, and G. F. Udell, “Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance,” *Brookings-whart. Pap. Financ. Serv.*, vol. 2000, no. 1, pp. 23–120, 2000.
- [10]. G. Dell’ariccia and R. Marquez, “Information and Bank Credit Allocation,” *J. financ. econ.*, vol. 72, no. 1, pp. 185–214, 2004.
- [11]. R. Levine, “Foreign Banks, Financial Development, and Economic Growth,” *Int. Financ. Mark. Harmon. versus Compet.*, vol. 7, pp. 224–54, 1996.
- [12]. R. Sengupta, “Foreign Entry and Bank Competition,” *J. financ. econ.*, vol. 84, no. 2, pp. 502–28, 2007.
- [13]. D. McKillop and J. Wilson, “Financial exclusion,” *Public Money Manag.*, vol. 27, no. 1, pp. 9–12, 2007.
- [14]. A. Demirgüç-Kunt and L. F. Klapper, “Financial inclusion in Africa: an overview,” *World Bank Policy Res. Work. Pap.*, vol. 6088, 2012.
- [15]. T. Beck, A. Demirgüç-Kunt, and M. S. Martinez Peria, “Banking services for everyone? Barriers to bank access and use around the world,” *World Bank Econ. Rev.*, vol. 22, no. 3, pp. 397–430, 2008.
- [16]. S. Guerineau and L. Jacolin, “L’inclusion financière en Afrique Subsaharienne: Faits stylisés et déterminants,” *Rev. d’économie Financ.*, vol. 116, pp. 57–80, 2014.
- [17]. M. D. Chinn and H. Ito, “What matters for financial development? Capital controls, institutions, and interactions,” *J. Dev. Econ.*, vol. 81, no. 1, pp. 163–192, 2006.
- [18]. R. G. Raghuram and L. Zingales, “The Great Reversals: The Politics of Financial Development in the Twentieth Century,” *J. financ. econ.*, vol. 69, no. 1, pp. 5–50, 2003.
- [19]. B. H. Baltagi, P. O. Demetriades, and S. H. Law, “Financial Development and Openness: Evidence from Panel Data,” *J. Dev. Econ.*, vol. 89, no. 2, pp. 285–96, 2009.
- [20]. J. E. Stiglitz, “The Role of the State in Financial Markets,” *World Bank Econ. Rev.*, vol. 7, no. suppl\_1, pp. 19–52, 1993.
- [21]. J. Peek and E. S. K. Rosengren, “Implications of the Globalization of the Banking Sector: The Latin American Experience,” *Fed. Reserv. Bank Bost. New Engl. Econ. Rev.*, pp. 45–62, 2000.
- [22]. E. Detragiache, T. Tressel, and P. Gupta, “Foreign Banks in Poor Countries: Theory and Evidence,” *J. Finance*, vol. 63, no. 5, pp. 2123–60, 2008.

- [23]. T. A. Gormley, “Costly information, entry, and credit access.,” *J. Econ. Theory*, vol. 154, pp. 633–667, 2014.
- [24]. J.-P. Allegret and S. Azzabi, “Intégration financière internationale et croissance économique dans les pays émergents et en développement : le canal du développement financier,” *Rev. Econ. Dev.*, vol. 22, no. 3, pp. 27–68, 2014.
- [25]. W. J. M. Kébré, “Does Foreign Aid Promote Financial Development in the Economic Community of West African States (ECOWAS)?,” *Res. Econ. Manag.*, vol. 5, no. 2, 2020.
- [26]. BCEAO, “Document cadre et politique et stratégie régionale d’inclusion financière dans l’UEMOA,” 2016.
- [27]. M. Sarma, “Index of Financial Inclusion—A measure of financial sector inclusiveness,” *Cent. Int. Trade Dev. Sch. Int. Stud. Work. Pap. Jawaharlal Nehru Univ.*, vol. Delhi, Ind, no. 2012, 2012.
- [28]. N. Cámara and D. Tuesta, “Measuring financial inclusion: A multidimensional index.,” *BBVA Res. Pap.*, vol. 14, no. 26, 2014.
- [29]. J. E. Stiglitz and A. Weiss, “Credit rationing in markets with imperfect information,” *Am. Econ. Rev.*, vol. 71, no. 3, pp. 393–410, 1981.
- [30]. T. Beck and H. Hesse, “Why are interest spreads so high in Uganda?,” *J. Dev. Econ.*, vol. 88, no. 2, pp. 192–204, 2009.
- [31]. S. Peña, M. F. Boutin-Dufresne, M. T. A. Zawisza, and M. O. Williams, *Benchmarking Banking Sector Efficiency Across Regional Blocks in Sub-Saharan Africa: What Room for Policy?* International Monetary Fund (No. 2013/051), 2013.
- [32]. IATI, “<https://datastore.iatistandard.org/>,” 2022.
- [33]. S. Ben Naceur, R. Almarzoqi, and A. Kotak, “What Matters for Financial Development and Stability?,” *Int. Monet. Fund*, vol. 2015/173, 2015.
- [34]. S. Nickell, “Biases in dynamic models with fixed effects,” *Econometrica*, vol. 49, no. 6, pp. 1417–1426, 1981.
- [35]. M. Arellano and S. Bond, “Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations.,” *Rev. Econ. Stud.*, vol. 58, no. 2, pp. 277–297, 1991.
- [36]. R. Blundell and S. Bond, “Initial conditions and moment restrictions in dynamic panel data models,” *J. Econom.*, vol. 87, no. 1, pp. 115–143, 1998.
- [37]. D. Roodman, “How to do xtabond2: An introduction to difference and system GMM in Stata,” *Stata J.*, vol. 9, no. 1, pp. 86–136, 2009.
- [38]. M. Arellano and O. Bover, “Another look at the instrumental variable estimation of error-components models,” *J. Econom.*, vol. 68, no. 1, pp. 29–51, 1995.
- [39]. F. Allen, E. Carletti, R. Cull, J. “QJ” Qian, L. Senbet, and P. Valenzuela, “The African financial development and financial inclusion gaps,” *J. Afr. Econ.*, vol. 23, no. 3, pp. 614–642, 2014.
- [40]. M. Sarma and J. Pais, “Financial inclusion and development,” *J. Int. Dev.*, vol. 23, no. 5, 2011.
- [41]. C. Burnside and D. Dollar, “Aid, policies, and growth: Reply.,” *Am. Econ. Rev.*, vol. 94, pp. 781–784, 2004, doi: <https://doi.org/10.1257/0002828041464524>.
- [42]. C. Burnside and D. Dollar, “Aid, policies and growth,” *Am. Econ. Rev.*, vol. 90, pp. 847–868., 2000, doi: <https://doi.org/10.1257/aer.90.4.847>.
- [43]. L. Chauvet and P. Guillaumont, “Aid and growth revisited: Policy, economic vulnerability and political instability,” *CERDI Work. Pap.*, vol. 2003, 2003.

**W. Jean Marie Kébré<sup>1</sup>**

<sup>1</sup>(Ministry of Economy Finance and Forecasting; Center for Training, Orientation and Research on Economic Governance in Africa, Burkina Faso)