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Effect of Urbanization on Banking Sector Development in Waemu Countries: Evidence from Panel Quantile Regression

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Abstract

Urbanization is one of the most significant forces on the planet in the 21st century. In Africa, cities and their inhabitants are at the heart of development processes. Within the African continent, the level of West African urbanization is 41% in 2010 compared to 36% in 2000. According to projections, by 2030, 50% of Africans will live in cities. Urban demand could be an engine of industrial development because the level of urbanization is associated with many positive outcomes, such as technological innovation, economic progress, higher living standards. As a result, urbanization could positively influence banking development. This paper examines the impact of urbanization on financial sector development in a panel of 7 WAEMU countries. Contrary to previous studies that focus on mean effects, it uses quantile regression methodology to examine the effect of urbanization on financial development in those countries that share a common currency. The results point out that urbanization and economic openness is favourable to the financial development of WAEMU countries. The study urges governments to create the necessary conditions for successful urbanization so that it benefits financial development. Economic openness must also be promoted as it is conducive to the financial development of the WAEMU region.

Keywords

Financial development, the urbanization, Quantile Regression, WAEMU

1. Introduction

In Africa, demography seems to be a source of concern. But the demographic problem that annoys African governments is rapid urbanization. According to Collier (2017), sub-Saharan Africa will continue to urbanize rapidly regardless of the policies implemented. According to the United Nations Population Office (2010), Africa's population reached more than 1 billion in 2009, of which about 40

per cent lived in urban areas. The share of urban dwellers has increased from 14% in 1950, 27% in 1980 and 40% in 2015. By the mid-2030s, 50% of Africans are projected to live in cities. Urbanization is expected to continue and stabilize at around 56% by 2050. This considerable increase will also apply to needs for urban services, infrastructure and jobs, whose availability is already severely limited. According to several studies and research reports, urbanization in Africa, unlike most other regions of the world, has not been associated with economic growth in recent decades. For example, Ravallion, Chen and Sangraula (2007) find that urbanization helps to reduce poverty in other regions, but not in Africa. Indeed, cities provide a large and diversified labour pool, a dynamic local market, more cost-effective access to suppliers and specialized services, lower transaction costs, more diversified contact networks and more opportunities for knowledge sharing, and an environment conducive to innovation (Krugman, 1991; Spence, 2011; World Bank, 2009; BAfD, 2010).

Agglomeration economies can be beneficial to cities, as they allow fewer resources to be used to meet the needs of a larger population. The increasing yields of the agglomeration reinforce the attractiveness of cities that offer a cultural life and a diversified choice of services. This attractiveness also attracts talent and investment, creating a virtuous circle of urbanization and development. Post-industrial cities are the product of the rise of services, especially since the development of new communication technologies. The economic potential of post-industrial cities is based on new activities in the tertiary sector, such as financial services, research and development (R&D) and business services. In addition, the city itself is its main outlet: a large proportion of the goods and services produced in it are consumed by its own inhabitants. It is therefore an essential component of "its market". This observation is all the more relevant since most services are by nature untransportable and must therefore be produced where they are consumed.

As the export base often represents only a minority share of a city's activities, local services are therefore a crucial factor in urban growth. In theory, the causal link between urbanization and growth is not sufficiently established, except for the early stages of development, to allow urbanization to become a general development domain (Henderson, 2003). Urbanization can occur without development, as has been observed in sub-Saharan Africa in particular (Ploeg and Poelhekke, 2008). However, urbanization could influence economic growth through physical capital, human capital, knowledge capital and industrial structure (Shen & Jiang, 2007). The relationship between urbanization and financial development has not been fully addressed. Among the few studies on the relationship between urbanization and the financial sector are those by Lu and Zhao (2013), Tian (2013) and Fan et al. (2004). Already, Robinson (1952) stated that "where business goes, finance follows it", to say that the development of the financial system is simply a response to the growing demand for services by the real economy in a period of accelerated growth. In this case, the development of the financial system is a continuous consequence of the process of economic growth. The emergence of this system is shaped by objective changes in opportunities that urbanization can bring. According to the World Bank (WDI, 2017), for the RSA, domestic credit to the private sector increased from 67.7% in 1965 to 138.7% in

2001 and 144.2% in 2016. This rate was 52.6% in 1980, 125.6% in 2003 and 155.8 in 2017 for China. In terms of urban population, in South Africa, it represented 47.2% of the total population in 1965, 56.8% in 2000 and 65.8% in 2017. In China, the urban share of the population, which was 18.06% in 1965, rose to 35.8% in 2000 and 57.9% in 2017.

In the WAEMU zone, which is considered one of the areas in Africa that will drive the continent's dynamics in the coming years, the financial sector is struggling to emerge, despite being a monetary union. The banking rate in WAEMU is barely above 20%. Private sector credit as a percentage of GDP has barely increased from 13% in 2000 to 20% in 2011, while the average rate in other non-oil-exporting countries in sub-Saharan Africa almost doubled between 2000 and 2011, from 22% to 41%. However, it should be noted that the outstanding amount of securities outstanding at the BRVM has risen sharply in recent years. Indeed, the stock of local currency debt securities outstanding increased from 0.5% of GDP in 2000 to about 5% of GDP in 2010 and almost 10% at 31 December 2014. At the same time, it should be noted that the two flagship countries in the WAEMU zone have exemplary urbanization rates. In Côte d'Ivoire, the urbanization rate, which was 24.5% in 1965, rose to 43.15% in 2000 and 50.3% in 2017. In Senegal, this rate was 26.3% in 1965, 40.3% in 2000 and 46.7% in 2017. Based on this observation, this study analyses the link between urbanization and financial development in the UEMOA region. It aims to provide answers to the following research questions. In what way and to what extent does the urbanization rate influence the level of financial development of WAEMU countries? Is the share of the population aged 0-14 years (% of the total) in these countries an obstacle to the development of the financial sector? Does industrial added value influence financial development in the UEMOA region?

The objective of this study is to empirically examine the relationship between urbanization and financial development in UEMOA countries. More specifically, it is a question of assessing, on the one hand, the effect of the urbanization rate on financial development and, on the other hand, the contribution of industrial value added in the development of the financial sector.

In terms of contribution, this study is not lacking in interest. Indeed, the relationship between financial development and economic growth has attracted much interest in the economic literature. However, very few studies have examined the link between urbanization and finance, especially in sub-Saharan African countries. To our knowledge, this problem has not been the subject of any previous research for WAEMU countries. The formation of the spaces has largely been ignored in explaining the macroeconomic and financial performance of these countries.

This study therefore makes an empirical contribution to economic research by assessing the extent to which the rapid urbanization of WAEMU countries influences its financial sector. Far from being a study of the determinants of financial sector development, it contributes to the debate on the link between the financial sector and urbanization. From this point of view, our study could inform decision-makers in their reflections on the challenges posed by urbanization in Africa.

In addition to this empirical contribution, the study introduces a major methodological innovation.

While most empirical economic studies focus on average modeling, this study adopts the panel method of quantile regression. This provides essential but limited information. In addition, in some cases the conditional mean is difficult to model. This may be the case in the presence of extreme or outliers values (due for example to measurement errors), to which the mean is much more sensitive than the quantiles. Quantile regression is a tool available to the econometrician to address these inherent limitations of the mean. It provides a more precise description of the distribution of a variable of conditional interest to its determinants than a simple linear regression, which focuses on the conditional mean.

The rest of the study is organized as follows. Section 2 presents a review of the academic literature on the relationship between financial development and urbanization. Section 3 presents the methodology of the study. Section 4 presents the data and descriptive statistics of the variables used to conduct the study. The results of the estimates are discussed in Section 5. The study concludes in Section 6 with a conclusion that highlights the main findings and economic policy recommendations.

2. The urbanization-Finance Nexus in the Literature

This section revisits the theoretical and empirical literature on the link between financial development and urbanization. In a first subsection, we examine the link between finance and urbanization. We will see that this relationship is still ambiguous. In a second subsection, we discuss empirical studies on the relationship between urbanization and financial development.

2.1 Financial Development and Urbanization: Theoretical Contributions

Urbanization can influence economic growth in a variety of ways, and the majority of studies suggest that urbanization should have a positive impact on economic growth.

First, cities play a vital role in the economic and social fabric of developed and developing countries by providing educational, employment and health services opportunities. Educational capital determines a country's ability to develop new technologies and adopt existing ones. The expansion of education systems in urban areas is easier and cheaper than in rural areas. The return on education is therefore generally higher in urban areas than in rural areas. In terms of public health, urban populations are more likely to reach hospitals, health centres and sanitation facilities. Health care systems are also more developed, which can lead to better health performance than those in rural areas. In addition, urban workers have better access to transport and other services such as water, Internet and electricity. Businesses and workers may have higher productivity in urban areas than in rural areas.

Secondly, urbanization involves the agglomeration of people and companies, which reduces production costs, thus allowing economies of scale to be achieved. The resulting reduction in transaction costs allows companies to specialize, resulting in low production costs. Doubling the size of cities could even lead to an increase in productivity of about 3-8% (Rosenthal and Strange, 2004). Third, urbanization seems to be a key factor in entrepreneurship. Urban populations have access to financing and can easily promote their ideas and have a local market to some extent to do business.

Loughran and Schultz (2005) show that geography affects business performance: all other things being equal, urban businesses are more profitable than rural businesses. Poverty reduction can be associated with the ability to become an entrepreneur and start your own business. This change in behaviour makes urban areas more attractive to entrepreneurs and entrepreneurship. In addition, a city's prosperity and growth depend mainly on its ability to attract productive workers, match them appropriately to jobs and further develop their skills. Urbanization is driving the migration of talent and skilled people to large cities. This concentration causes interactions and generates spillover effects of knowledge and skills. Qualified people improve their skills and knowledge more effectively when exposed to similar profiles and qualified people (urban areas) than when they are not in contact with their peers (rural areas). This increases productivity in urban areas. Fourth, there are positive benefits or externalities of urban development on rural areas. Through migration, remittances and interactive activities between urban and rural areas, urbanization can have positive effects on finance and human capital. Through migration, the transfer of information, production skills and technology can be improved in areas of emigration.

Financial development is the process by which a financial system gains in depth, accessibility, efficiency and diversity. Since the work of Schumpeter (1911) and Gurley and Shaw (1955), the analysis of the role of the financial system in the growth process has been enriched with the development of theoretical models of endogenous growth integrating the financial sphere. The development of the financial sphere is capable of stimulating real sector growth through three main mechanisms: (i) the adoption of technological innovations that increase factor productivity; (ii) the increase in the economy's savings rate; and (iii) the efficient allocation of resources. However, the performance of these functions may be hampered by the existence of asymmetries of information and transaction costs that would discourage financial intermediaries from entering into risky contractual relationships. Indeed, Greenwald et al. (1994) argue that problems of information asymmetry, with their corollaries of anti-selection and moral hazard, which are specifically endemic to financial markets, can distort the free functioning of markets and thus call into question their effectiveness. This suggests that a developed financial sector does not always promote the efficient allocation of real resources in the economy. The literature on financial crises and more recently on subprime crises illustrates the potential risk of destabilization associated with excessive credit growth in a context of endemic uncertainty.

The work of Berthélémy and Varoudakis (1998) shows that by admitting the existence of a technological externality of the financial sector on the real sector, we can observe situations of multiple equilibria. Below a financial sector development threshold, the economy is locked in a low equilibrium that constitutes a poverty trap. The search for the positive effects of financial development on growth must be based on convergence clubs defining countries with similar economic and financial characteristics. The existence of threshold effects associated with multiple equilibria makes it possible to explain why in some cases financial development appears neutral towards the real sphere while in

others it exerts a positive influence.

If urbanization benefits financial development then it can be beneficial to economic growth. From there, it is possible to make the link between urbanization and financial development. Indeed, it is difficult to make financial services such as credit, deposits, payments and even insurance available to rural residents, farmers and low-income households. The different reasons for the difficulties encountered in reaching each of these three categories are clear. By definition, rural areas are more isolated than urban areas, and in most African countries, the population is extremely dispersed. It is rare that farms can benefit from the most common sustainable microfinance techniques as quickly and to the same extent as small urban traders. There is no doubt that access to credit and other financial services is even more restricted in the agricultural sector than in any other sector, and more restricted in rural areas than in urban areas (Honohan and Beck, 2009).

2.2 Financial Development and Urbanization: Empirical Contributions

Urbanisation is a major demographic trend for African counties, with potentially major consequences for financial development. Over the past few decades, dramatic growth and structural changes have taken place in both economies. Some studies indicate that climate change is affecting agriculture productivity and accelerating rural- urban migration. For example, Barrios, Bertinelli and Strobl (2006) use rainfall data to show that low rainfall (low agricultural productivity) is associated with higher contemporary urbanization in Africa.

Brückner (2012) also finds that a decrease in the share of agricultural value added leads to a significant increase in urbanization for a panel of 41 African countries between 1960 and 2007. By linking it to financial development, Yao-jun (2005) describes the relationship between Chinese financial development and urbanisation growth. In the Indian context, Kundu (2013) presents the urbanisation process as relating to different aspects of development, including the financial sector. Using data from the 2013 Chinese Household Finance Survey, Lyons et al. (2017) analysed the effect of infrastructure on the use of bank and non-bank loans by urban and rural households in China. The study produced two major results.

The first is that infrastructure, in various forms (physical, financial, technological, social and informational), seems to have a significant influence on the demand for bank loans and informal loans. These effects seem to be more significant for bank loans, particularly for urban households with bank loans. In addition, the quality of infrastructure strongly influences the demand for bank loans from urban populations. This is not rural households. The second is related to the "urbanization effect" due to the fact that households living in highly urbanized areas are less likely to have a bank or non-bank loan. Hyperurbanization and congestion problems reduce the quality of services offered, so that the positive impact of infrastructure on loan demand becomes negative. It follows that urbanization alone is not enough to bring about economic development. Nevertheless, urbanization could have a positive impact on financial development.

3. Model and Methodology

In this section, we first present the model specification and then the quantile regression technique.

3.1 The Empirical Model

To assess the impact of urbanization on financial development, we specify the following model:

$$FIN_{i,t} = \beta_0 + \beta_1 INDVAL_{i,t} + \beta_2 URBAN_{i,t} + \beta_3 OPEN_{i,t} + \beta_4 INF_{i,t} + \beta_5 GOUVEX_{i,t} + \mu_{i,t} \quad (1)$$

Where i represents country i in the panel, t the time, FIN the financial development indicator (it is the average of credit to the private sector, liquid liabilities and bank assets, all in relation to GDP), $INDVAL$ the industrial value added as a percentage of GDP, $URBAN$ the urban population as a percentage of the total population, $OPEN$ the openness rate of each country ((import + export)/2*GDP)), $GOUVEX$ the consumption expenditure of the public administration as a percentage of GDP, INF the inflation rate calculated from the GDP deflator then $\mu_{i,t}$ the error term. Equation (1) assumes that the marginal effect of urbanization on financial development is the same regardless of the level of financial depth. If the expected effect differs for each country according to its level of financial development, then the linear specification is not the right one. To do this, we estimate this model in a way that identifies the differences in financial development responses to changes in urbanization rates at different points in the distribution of financial development. To this end, we use the quantile regression method, which is a widely used estimation technique when examining the impact of explanatory variables at different points in the distribution of the dependent variable.

3.2 Quantile Regression Methodology

The quantile regression method was first introduced by Koenker and Bassett (1978) and extended in subsequent studies (Koenker & Machado, 1999; Koenker & Hallock, 2001). Compared to OLS regression, this method is more robust, especially in the presence of outliers and non-normality. The quantile regression model can be formulated as follows:

$$q(FIN_{i,t}) = \beta_{0t} + \beta_{1t} INDVAL_{i,t} + \beta_{2t} URBAN_{i,t} + \beta_{3t} OPEN_{i,t} + \beta_{4t} INF_{i,t} + \beta_{5t} GOUVEX_{i,t} + \mu_{i,t} \quad (2)$$

where $q(FIN_{i,t})$ is the conditional quantile of financial sector development. This equation 2 can be written as follows:

$$y_{it} = x_{it}\beta(\tau) + \varepsilon_{it} \quad (3)$$

where $x_{it} = (1, INDVAL_{i,t}, URBAN_{i,t}, OPEN_{i,t}, INF_{i,t}, GOUVEX_{i,t})$ is the vector of the explanatory variables, $\beta(\tau)$ are the $kx1$ regression coefficients at the τ-th quantile of the dependent variable y. Contrary to the usual minimization of the sum of squared residuals in the OLS case, the quantile regression estimator minimizes the weighted sum of absolute deviations:

$$Min_\theta \left[\sum_{y_{it} \geq x_{it}\theta_\tau} \tau |y_{it} - x_{it}\beta(\tau)| + \sum_{y_{it} \leq x_{it}\theta_\tau} (1-\tau)|y_{it} - x_{it}\beta(\tau)|\right] \quad (4)$$

We have as many estimators of β as values of $\tau \epsilon [0, 1]$. The special case $\tau = 0.5$ which minimizes the sum of absolute residuals corresponds to median regression. The first quartile is obtained by setting $\tau = 0.25$ and so on. As one increases τ from 0 to 1, one traces the entire conditional distribution of financial development. It is in this way that quantile regression allows for parameter heterogeneity in

the response of the dependent variable to explanatory variables.

Previous panel quantile regressions do not take into account unobserved country heterogeneity. In this paper, we perform panel quantile regressions with fixed effects following the two-step method suggested by Canay (2011). Following this approach, a fixed-effects regression is estimated as a first step. As a second step, these fixed effects are used to demean the dependent variable and this transformed variable is taken as the dependent variable in the quantile regression described above. The use of panel quantile regressions with fixed effects improves the usual panel pooled data regressions by exploring simultaneously two kinds of heterogeneity: unobserved country heterogeneity via fixed effects and common heterogeneity via covariates effects along the dependent variable distribution.

4. Data and Descriptive Statistics

In this section, we first present the data sources and then present descriptive statistics.

4.1 Source of Data

The empirical study uses annual time series data from 7 UEMOA countries except Guinea-Bissau. These are Côte d'Ivoire, Senegal, Niger, Mali, Burkina Faso, Togo and Benin. Countries were selected based on data availability. The variables in the study are: the urban population as a percentage of the total population, government consumption expenditure as a percentage of GDP, the economic openness rate measured by the ratio (import + export)/2*GDP, the inflation rate calculated from the GDP deflator, industrial value added and a financial development indicator. We calculated this indicator by taking the average of bank credit to the private sector, liquid bank liabilities and bank assets as a percentage of GDP. The study data are mainly from the World Bank's 2018 World Development Indicator (WDI) database. The data on industrial value added come from the V-DEM (Variety of Democracy) database. All data cover the period from 1980 to 2016.

4.2 Descriptive Statistics

The descriptive statistics of all variables are recorded in Table 1. In this table, the average trend of the variables, flattening and asymmetry are presented. Flattening measures the apogee or flatness of the distribution of the series. It is well known that when this quantity exceeds 3, we say that the data have heavy tails. It is obvious that most variables are leptocurtic. Another statistic is asymmetry, which measures the asymmetry of the distribution of the series around its mean. A formal normality test combining flattening and asymmetry is given by the Jarque-Bera test statistic, which suggests that all variables follow a non-normal distribution.

Table 1. Descriptive Analysis

VARIABLE	OBS	MEAN	ST.DEV.	MIN	MAX	KURT	SKW
FIN	259	21,984	8,380	4,93	50,651	3,424	0,679
URBAN	259	30,836	10,969	8,805	54,869	1,952	-0,186
INF	259	3,198	6,776	-9,823	46,386	17,358	3,073
GOUVEX	259	15,026	4,038	0	26,064	5,669	-0,429
OPEN	259	30,866	9,559	14,187	62,516	3,001	0,658
INDVAL	259	20,670	4,083	11,264	32,821	3,359	0,163

Source: Author based on data from WDI (2017) and V-DEM (2017).

This table shows that urbanisation is average in the area (30.83). The standard deviation of 10.96 with a skewness coefficient of -0.186, and a kurtosis coefficient of 1.952 reveal that urbanization is not uniform in the area. The distribution is spread to the left of the average. With Kurtosis, we can see that the density has a low peak than the normal distribution (Kurt less than 3). For financial development, the average is 21.98, the standard deviation is 8.38 and a skewness coefficient of 0.67, a kurtosis coefficient of 3.42.

As a result, financial development is not uniform in the area and this corresponds to a distribution spread to the right of the average. With Kurtosis, we can see that the density has a higher peak than the normal law (Kurt greater than 3). As for inflation, its level is not high in the zone (3.19) but varies greatly from one country to another with a standard deviation of 6.776. With an asymmetry coefficient of 3.073 and a flattening coefficient of 17.358, we can say that the distribution is spread to the right of the average. With Kurtosis, we can see that the density has a higher peak than the normal law. In the area, general government consumption expenditure as a percentage of GDP is low (15.02). The standard deviation of 4.038 with a skewness coefficient of -0.429, and a kurtosis coefficient of 5.669 reveal that public spending varies from one country to another. The distribution is spread to the left of the average. The countries in the area are small open economies (30.86). Again, the standard deviation of 9.559 with a skewness coefficient of 0.658, and a kurtosis coefficient of 3.001 reveal that the opening rate is not homogeneous in the area. We notice that the distribution is spread to the right of the mean with a density that has a higher peak than the normal distribution. The same is true of industrial development, which stands out with a low level (20.67).

5. Empirical Finding

The empirical analysis follows the following approach. First, we apply unit root tests to the series to study the stationarity of the variables. Second, we estimate the coefficients of the quantile regression.

5.1 Unit Root and Cointegration Test Results

Econometric analysis requires unit root tests to be applied to the series in order to study the stationarity

of the variables. These tests ensure that all variables in the model are cointegrated. The order of integration of the variables is tested according to the tests of Im, Peseran and Shin (IPS, 2003) and Maddala and Wu (1999). The results are presented in Table 2.

The analysis of the table indicates that at the 5% threshold, the null hypothesis confirming the presence of a unit root cannot be rejected for all level variables, with the exception of the inflation rate. Not all variables are therefore stationary in level. But all variables are stationary in first difference.

It follows from the above that there is a presumption of a cointegrating relationship between the different variables. A cointegration test should therefore be applied (Pedroni, 1999). The results of Pedroni cointegration test (Table 3) support the existence of a long-run relationship between the variables. In the context of panel data, conventional estimators such as fixed or random effect models that do not take into account the presence of unit roots in the series can provide biased estimates and statistical tests that do not follow a standard Student law.

Table 2. Summary of Unit Root Tests

	In Level		**In First Difference**	
	IPS(2003)	MW(1999)	IPS(2003)	MW(1999)
FIN	7,003 (1,000)	1,346 (1,000)	-8,726 *** (0,000)	131,748*** (0,000)
URBAN	-0,1329 (0,447)	25,234** (0,032)	-1,831** (0,033)	59,454*** (0,000)
INF	-9,139*** (0,000)	123,341*** (0,000)	-13,194*** (0,000)	359,731*** (0,000)
GOUVEX	-2,296** (0,010)	25,317** (0,031)	-14,880 *** (0,000)	238,989*** (0,000)
OPEN	-0,395 (0,346)	16,601 (0,278)	-13,421*** (0,000)	248,036*** (0,000)
INDVAL	-0,978 (0,163)	20,530 (0,114)	-14,503*** (0,000)	237,547*** (0,000)

Source: Author based on data from WDI (2017) and V-DEM (2017).

Note. The variables in brackets are the p-values; (*), (**), (***) represent the respective significance levels of 10%, 5% and 1%.

Table 3. Pedroni Cointegration Test

	Statistic	**P-value**
Modified Phillips-perron t	3,351	0,0004
Phillips-perron t	3,135	0,0009
Augmented Dickey Fuller t	3,575	0,0002

Source: Author based on data from WDI (2017) and V-DEM (2017).

For this reason, we propose a panel integration-cointegration analysis, using the methods of completely modified least squares (FMOLS) and dynamic least squares (DOLS). However, Kao and Chiang (2000) state that the OLS estimation, in finite sample, presents a bias problem with respect to the FMOLS

method. But they also show the superiority of the DOLS method over the FMOLS method, which is considered to be the most effective technique for estimating cointegrating relationships on panel data. The results of OLS, FE, DOLS and FMOLS regressions are given in Table 4.

Table 4. Results of Conditional Models

VARIABLE	OLS	FE	DOLS	FMOLS
URBAN	0,227*** (0,000)	0,133 (0,138)	0,710*** (0,000)	0,260*** (0,000)
INF	-0,235***(0,000)	-0,229 *** (0,000)	-0,110*** (0,000)	-0,170*** (0,000)
GOUVEX	0,375*** (0,000)	0,291** (0,011)	1,370*** (0,000)	0,900 ** (0,025)
OPEN	0,418 *** (0,000)	0,358 *** (0,000)	0,400*** (0,000)	0,260*** (0,000)
INDVAL	-0,075 (0,468)	-0,102 (0,336)	0,440 (0,250)	0,220 (0,150)

Source: Author based on data from WDI (2017) and V-DEM (2017).

Note. The variables in brackets are the p-values; (*), (**), (***) represent the respective significance levels of 10%, 5% and 1%.

As can be seen, urbanization is significantly and positively correlated with financial development. Similarly, the inflation rate is significantly and negatively correlated with financial development. Public administration consumer spending also has a positive effect on financial development. The openness rate of the economy improves financial development in three models (OLS, FE and DOLS).

5.2 Results from Quantile Regressions

Empirical investigation is conducted by the quantile regression model at 5 quantiles, namely the 10th, 25th, 50th, 75th and 90th quantiles. This allows us to examine the impact of explanatory variable at different points of the distribution of FIN. Table 5 presents the estimated parameters. The estimates show that urbanization is positively related to financial depth and the effect decreases and increases overquantiles. For example, a 10% increase in urbanization rate increases the financial development indicator by 16.4% at the lower level of financial deepening but by 32.9% at the higher level of financial depth.

Another interesting result is the effect of government consumption expenditure on financial development indicator. Government consumption expenditure, which had a positive effect on financial development in all four models (OLS, FE, DOLS and FMOLS), appears to be positively correlated with financial development only in countries where the level of financial development is not high. Public administration consumer spending has no effect on financial development in countries with a high level of financial development. In addition, it appears here that the openness rate of the economy is positively related to financial depth and the effect increases overquantiles. For example, a 10% increase in the openness rate of the economy increases the financial development indicator by 32.3% at the lower level of financial deepening but by 68.3% at the higher level of financial depth.

Table 5. Synthesis of Quantile Regression Results

VARIABLE	Quantile				
	Q10	Q25	Q50	Q75	Q90
URBAN	0,164*(0,076)	0,124 (0,148)	0,239 *** (0,001)	0,329*** (0,000)	0,216 ** (0,034)
INF	-0,089 (0,492)	-0,190* (0,072)	-0,264 *** (0,005)	-0,185 ** (0,033)	-0,290 *** (0,000)
GOUVEX	0,426 **(0,025)	0,531** (0,010)	0,324** (0,039)	0,128 (0,177)	0,195 (0,113)
OPEN	0,323 *** (0,003)	0,402*** (0,000)	0,395 *** (0,000)	0,446*** (0,000)	0,683*** (0,000)
INDVAL	0,168 (0,140)	0,227 (0,104)	-0,054 (0,758)	-0,301 ** (0,035)	0,049 (0,826)
CONSTANTE	10,401** (0,034)	-10,529* (0,074)	-0,420 (0,939)	6,769 ** (0,011)	-0,213 (0,951)

Source: Author based on WDI (2017) data.

Note. The variables in brackets are the p-values; (*), (**), (***) represent the respective significance levels of 10%, 5% and 1%.

Another result, by way of confirmation, is that inflation is negatively correlated with financial development. The negative effect of inflation on financial development is stronger for countries with a very low level of financial development. As the financial system develops, the negative effect decreases.

6. Concluding Remarks

The objective of this study was to analyse the empirical link between urbanisation and financial development. The data for this study come from the World Bank's 2018 World Development Indicator database. These data cover the period 1980-2016 and concern 7 WAEMU countries. This study has used panel quantile regression methodology to investigate the effect of urbanization on financial development in a panel of 7 WAEMU countries. The use of panel quantile regressions with fixed effects improves the usual panel pooled data regressions by exploring simultaneously two kinds of heterogeneity: unobserved country heterogeneity via fixed effects and common heterogeneity via covariates effects within the quantile estimation. The key empirical results of quantile regression show that the development of urbanization, economic openness and Government consumption expenditure is favourable to the financial development of WAEMU countries. However, high inflation is unfavourable to financial development. In terms of economic policy implications, governments must create the conditions for successful urbanization because the phenomenon of urbanization in developing countries too often leads to disorganized hyperurbanization. In addition, governments must consolidate and pursue economic openness. Indeed, economic openness is also beneficial to financial development because it forces the banking and financial sector to propose new tools adapted to the complexity of economies and to take advantage of technology transfers.

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