

Original Paper

Urbanization, Gender and Economic Growth in the Waemu Zone: Evidence from Pooled Mean Group Estimation

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Abstract

This study empirically analyses the influence of urbanization and the participation of men and women in the labour force on economic growth in the countries of the West African Economic and Monetary Union (WAEMU). Using data from the World Bank (2017) on the member States between 1990 and 2016, we show from Pesaran's PMG estimator, Shin and Smith (1999) that in the short term, youth and women are very useful for economic growth. In the long term, urbanization, industrial added value and the elderly make a positive contribution to economic growth. The study urges governments to create better living conditions by ensuring adequate income levels and care, i.e., public policies should aim to increase employment, establish or improve social protection, social integration, health and the fight against discrimination.

Keywords

urbanization, economic growth, gender, WAEMU, PMG estimator

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 increased from 14% in 1950, to 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 networks of contacts and more opportunities for knowledge sharing, and an environment conducive to innovation (Krugman, 1991; Spence, 2012; World Bank, 2009; AfDB, 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 & Poelhekke, 2008). A United Nations study (UN, 2017) for Africa indicates that the least urbanized countries are those with the fastest growth. The annual growth rate for countries with more than 60% of the population urbanized is 2.23%, less than half the growth rate for countries with less than 30% of the population urbanized. However, urbanization could influence economic growth through physical capital, human capital, knowledge capital and industrial structure (Shen Kun-rong & Jiang Rui, 2007). In developing countries, at the same time as the low level of development, African countries have high gender inequalities. In the Comoros, for example, 72% of men hold managerial and executive positions compared to 28% of women. In Ghana, 91.7% of men sit in parliament compared to 8.3% for women. At the educational level, according to some authors, gender inequalities lead to an underutilization of human capital, which could also affect economic growth through channels whose effects are widely discussed in the literature (Hill & King, 1993; Klasen, 1999). From the above, it follows some questions. Do gender inequalities have an impact on the economic growth of WAEMU countries? Is the urbanization observed in the countries of the Union a source of economic growth in the WAEMU zone? A central question then emerges: to what extent has urbanization and the employment of men and

women affected economic growth in the WAEMU region? Thus, the objective of this study is to analyze the effect of urbanization and the share of men and women in the labour force on economic growth in WAEMU countries. Our general objective can be achieved through specific objectives.

Specific objective 1: Analyze the effect of urbanization on economic growth in the WAEMU region.

Specific objective 2: Assess the relative contribution of women and men to the economic growth of WAEMU countries.

In relation to our objectives, we make the following two assumptions.

Hypothesis 1: The rise of urbanisation is beneficial to the long-term economic growth of WAEMU countries.

Hypothesis 2: The proportion of women in the labour force is favorable to economic growth in the WAEMU zone.

Methodologically, the study uses the Pool Mean Group (PMG) estimator proposed by Pesaran, Shin and Smith (1999). Unlike conventional methods (fixed effects or generalized moments), the PMG method introduces heterogeneity into certain coefficients to be estimated. Indeed, the PMG method reconciles in the same specification, the usual approach imposing fixed coefficients and the one assuming country-specific coefficients. Thus, it is possible to specify that the long-term relationship between the variables is the same for all countries but that each country follows its own dynamic to converge towards this common relationship. This assumption seems reasonable for countries in a monetary union that aspire to strong long-term integration. This article contributes to the empirical literature on the link between urbanization and economic growth in the WAEMU region. The results obtained from this study are as follows. In the short term, only women's contributions to the labour force and the proportion of young people (0-14 years old) appear to be statistically significant. In the long term, urbanization, industrial value added, the proportion of young people (0-14 years old) and the elderly (over 65 years old) have a positive influence on economic growth.

This article is organized as follows: Section 2 is devoted to the literature review on the relationship between urbanization, gender and economic growth. Section 3 presents the data source and its descriptive and statistical analysis. In Section 4, we present the methodology of the study. Section 5 will discuss the empirical results and their econometric and economic interpretations. Section 6 is reserved for the conclusion of the study.

2. Literature Review of the Link between Urbanization, Gender and Economic Growth

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

2.1 Urbanization, Gender and Economic Growth: 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. Enterprises 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. The hypothesis is that urbanization, combined with a greater spatial density of economic activity, also brings greater proximity to suppliers and customers, better access to the market, and thus the benefits of agglomeration on costs and productivity for each individual enterprise. This "Marshallian" conceptualization underlies much of the recent work on the benefits of agglomeration in industrialized economies (Glaeser & Kerr, 2009; Jofre-Monseny et al., 2011; Dauth 2011). Doubling the size of cities could even lead to an increase in productivity of about 3% to 8% (Rosenthal & 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 finances and human capital. Through migration, the transfer of information, production skills and technology can be improved in areas of emigration.

Regarding women's labour force participation, many studies suggest a U-shaped relationship between

female labour force participation and economic growth (Tam, 2011; Lechman & Okonowicz, 2013; Olivetti, 2013; Tsani et al., 2013; Kaur & Tao, 2014). The logic behind this assumption is as follows. As the economy moves from subsistence agriculture to an industrialized economy, it requires a male-dominated workforce at the expense of women. The development of services in the post-industrial phase is associated with the increase in female employment (Olivetti, 2013). As a result, the feminization of the labour force in more service-oriented economies (Gaddis & Klassen, 2014; Olivetti, 2013). However, the relationship between women's labour force participation and economic development may vary from country to country (Durand, 1975). This link may be weakened by discrimination and restrictions on women's access to the labour market (Boserup, 1970) or religious restrictions (Wolch & Dear, 2014).

2.2 Urbanization, Gender and Economic Growth: Empirical Contributions

Urbanization and economic development have long been considered as interdependent processes. Indeed, the development history of many developed countries today has clearly demonstrated a dramatic increase in urbanization as their economies developed (Hughes & Cain, 2003). Studies have shown that the correlation coefficient between a country's percentage of urban dwellers and GDP per capita is about 0.85 (Henderson, 2003), suggesting that urbanization is an inevitable component of a modern society. However, the phenomenon of urbanization in developing countries too often leads to disorganized hyperurbanization. It is therefore necessary to qualify the idea that density and urbanization would, in any case, be good for growth. The causal link between urbanization and growth is not sufficiently established (Henderson, 2003). In many developing countries, there is also a very high size of the largest city, especially if it is a political capital. The explanation for this "urban bias" would lie in the deplorable conditions of rural life and in a kind of political preference of the leaders who would somehow "buy" political and social peace with better quality facilities in the capital. On this point, empirical studies do not provide sufficiently precise estimates of the equilibrium size of cities to guide public policies. The "right" level of urbanization depends on the size of each country and its level of development (Henderson, 2003). Studies by Moomaw and Shatter (1993) have shown that urbanization is conducive to economic growth. (2006) also found a statistically positive and significant relationship between the level of urbanization and people's standard of living, as measured by GDP per capita, in a sample of 35 countries covering the period 1985 to 2002. Daniel and Fhang (2010) also explored the link between urbanization and growth for 28 countries, including 14 developing and 14 developed countries, over the period 1950-2000.

Using causality tests in the Granger sense, he highlights a causality that goes from urbanization to economic growth for developing countries and in the opposite direction for developed countries. There is no shortage of studies on women's contribution to economic growth. Women now represent more than 40% of the global workforce (UN-HABITAT, 2013). However, women's economic opportunities are often still limited, especially when age, education and socio-economic status are taken into account. Urban economic sectors have opened many doors for women, especially in trade and domestic service.

The latter employs between 4 and 10 percent of the workforce. In developing economies, women represent 74 to 94 percent of domestic workers (World Bank, 2011). Women represent 70 to 90 percent of workers in multinational electronics and garment factories alone, most of whom are located in urban areas (UN Habitat 2013). In addition, women are the preferred workers for manufacturing jobs—traditionally low-paying, low-skilled, labour-intensive and precarious jobs—because they are considered docile, cheap and efficient according to stereotypes (Chant, 2013). In Africa, where agriculture remains the backbone of the economy, employing 70% of the population, women play a major role. They constitute almost two thirds of the agricultural labour force and produce the majority of foodstuffs. Outside agriculture, female labour force participation rates are high throughout Africa, with the exception of North Africa. They reach 85 to 90% in countries such as Burundi, Tanzania and Rwanda. In many countries (Nigeria, Togo, Burundi), the participation rates of men and women are equal or very close. However, African labour markets are characterised by very high gender segregation, with women generally working in low-paying occupations. Women are much more likely to work as self-employed entrepreneurs in the informal sector than to earn a regular wage in formal employment. In the formal sector, women hold 4 out of 10 jobs and earn on average two thirds of the salary of their male colleagues. Women are increasingly participating in paid work without a significant change in their domestic and family work responsibilities (Chant, 2014). This dual responsibility could prevent them from taking advantage of all the economic opportunities offered by urban areas. Thus, women contribute substantially to general economic well-being by performing a large number of unpaid tasks, such as childcare and household chores, which are often not included in GDP. On average, women spend twice as much time on household chores and four times as much time on childcare as men (Duflo, 2012). Gender disparities in access to social and financial services have an impact on women's economic productivity. Globally, women have less access to banking and other financial services than men. For example, less than 53% of women have an account in a financial institution in middle-income countries, compared to nearly 62% of men (Demirgüç-Kunt et al. 2015). It follows from the above that gender equality is in itself a development objective. There is evidence that when women are able to achieve their full potential in the labour market, there are significant macroeconomic gains (Loko & Diouf, 2009; Dollar & Gatti, 1999; McKinsey, 2015; Cuberes & Teignier, 2016). Potential losses in GDP per capita that can be attributed to gender gaps in the labour market can reach about 27 per cent in some regions (Cuberes & Teignier, 2012). Aguirre et al. (2012) estimate that increasing the participation rate of women to the level of men would increase GDP by 5% in the United States, 9% in Japan, 12% in the United Arab Emirates and 34% in Egypt. Very recently, Lechman and Kaur (2015) reexamined for 168 countries, over the period 1990-2012, the U-shaped curve between women's participation in the labour market and economic growth. The results confirm the U-shaped curve hypothesis, which implies that in the early stages of economic growth, women's participation in the labour market tends to decline, but as the country progresses in its economic development, with a significant share of the service sector, women's contribution increases. But in Africa, an econometric

study on this relationship has a reduced U-shape, indicating an incomplete transition of women from agricultural and manual labour to higher-income services (UN, 2017). In North Africa, for example, high socio-cultural norms keep women's participation rates at their lowest: 15-31% of working-age women are in the labour market, compared to an average of 69% in the rest of Africa. Based on panel data from several African and arable countries, Balamoune-Lutz (2007) empirically assesses the impact on growth of two primary indicators, namely the ratio of girls to boys in primary and secondary education and the literacy ratio of women aged 15 to 24 years compared to men in the same age group. The results of the study indicate that gender inequalities in literacy have a significant negative effect on growth. What about the WAEMU countries?

3. Data Sources and Descriptive Statistics

The empirical study uses annual data from the eight (8) WAEMU countries, namely Côte d'Ivoire, Senegal, Niger, Mali, Burkina Faso, Togo, Benin and Guinea-Bissau. The study data are mainly from the World Development Indicator (WDI) database and the study covers the period 1990-2016. GROWTH refers to the growth rate of gross domestic product, URBAN the urbanization rate, INDUST the industrial added value as a percentage of GDP, MEN the share of men in the labour force, WOMEN the share of women in the labour force, YOUNG the share of the population aged 0-14 years (% of the total) and OLD the share of the population aged 65 years and over (% of the total). The descriptive statistics of all variables are recorded in Table 1. The Pearson correlation coefficient matrix is summarized in Table 2.

Table 1. Descriptive Analysis of Variables

<i>VARIABLE</i>	<i>OBS.</i>	<i>MEAN</i>	<i>STD. DEV.</i>	<i>MIN</i>	<i>MAX</i>
<i>GROWTH</i>	224	3,813	4,189	-28,099	15,376
<i>URBAN</i>	224	33,392	10,297	13,815	50,326
<i>INDUST.</i>	224	19,165	4,095	9,247	29,724
<i>MEN</i>	224	80,566	7,153	67,035	92,209
<i>WOMEN</i>	224	60,225	14,413	34,219	82,586
<i>YOUNG</i>	224	45,399	2,152	41,496	50,231
<i>OLD</i>	224	2,908	0,330	2,299	3,817

Source: Author's estimates, based on WDI data (2017).

Table 1 requires some comments. It indicates that over the period 1990-2016, on average, the real GDP growth rate is 3.81%, the urbanization rate is 33.39% and industrial value added is 19.16%. As for the rate of participation of men in the labour force, it is around 80.56%, that of women 60.22%, thus marking a substantial gap between the contribution of men and women to the formation of the gross

domestic product. As for young people, on average, they represent a proportion of the order of 45.39% and a proportion of the elderly of 2.90%. The low standard deviation (0.33) observed in the elderly reflects a homogeneity of this category in the sample. Table 2 shows a low correlation between the explanatory variables. Of all these variables, the urbanization rate (Urban) and youth (Young) pair have the highest correlation coefficient (-0.79) but well below 0.8. The Urban and Men, Urban and Women pairs have correlation coefficients of -0.67 and -0.34 respectively. We still decide to include all the other variables in our model because of their theoretical interest.

Table 2. Correlation Matrix

	<i>Growth</i>	<i>Urban</i>	<i>Indust.</i>	<i>Men</i>	<i>Women</i>	<i>Young</i>	<i>Old</i>
Growth	1,000						
Urban	-0,038	1,000					
Indust.	0,054	0,285*	1,000				
Men	-0,053	-0,676*	-0,357*	1,000			
Women	-0,028	-0,342*	-0,284*	0,634*	1,000		
Young	0,024	-0,798*	-0,120**	0,566*	0,015	1,000	
Old	0,028	0,314*	0,035	-0,504*	-0,342*	-0,261*	1,000

Source: Author's estimates, based on WDI data (2017).

Note. * (**) refers to the significance of the parameters at the 5% (10%) threshold.

4. Model and Methodology Research

The methodology adopted in this study is essentially econometric modelling based on panel data. The analysis of the interaction between the real GDP growth rate and our explanatory variables covers all WAEMU countries observed over time. It is therefore a study based on panel data. In this section, we first present the specification of the model and then the methodology for estimating the PMG.

4.1 The Specification of the Model

The model to be estimated in this paper can be specified as follows:

$$Growth_{it} = \theta_0 + \theta_1 Urban_{it} + \theta_2 Indust_{it} + \theta_3 Men_{it} + \theta_4 Women_{it} + \theta_5 Young_{it} + \theta_6 Old_{it} + \mu_{it} \quad (1)$$

From the point of view of economic theory, urbanization, industrial added value and human participation in economic life are expected to have a positive influence on economic growth. With regard to the share of women in the labour force, in view of the exclusion they experience in developing countries, it is expected that their contribution will be negative or, at best, very low. Based on Modigliani's life cycle theory, the contribution of young and old must be marginal to economic growth, given their inactivity.

4.2 The Presentation of the PMG and MG Estimator

The estimation technique used is that proposed by Pesaran et al. (1999), the PMG estimator. According to Pesaran et al. (1999), equation 1 can be seen as a staggered delay autoregressive model (ARDL) of the form :

$$y_{it} = \sum_{j=1}^m \lambda_{ij} y_{it-j} + \sum_{j=0}^n \delta'_{ij} x_{it-j} + \mu_i + \varepsilon_{it} \quad (2)$$

where

$y_{it} = Growth_{it}$, $x_{it} = (Urban_{it}, Indust_{it}, Men_{it}, Women_{it}, Young_{it}, Old_{it})$ is a vector (6×1) of explanatory variables; δ_{ij} is a vector (6×1) of coefficients; λ_{ij} is a scalar and μ_i represents the fixed effect (country). From this model, the long-term relationship derives as follows:

$$y_{it} = \theta'_i x_{it} + \mu_{it} \quad (3)$$

If the variables are cointegrated, then the term ε_{it} is a stationary process. In this case, the model can be respecified as an error-correction model in which the short-term dynamics are influenced by the deviation from the long-term relationship:

$$\Delta y_{it} = \phi_i (y_{it-1} - \theta'_i x_{it}) + \sum_{j=1}^{m-1} \lambda^s_{ij} \Delta y_{it-j} + \sum_{j=0}^{n-1} \delta^s_{ij} \Delta x_{it-j} + \mu_i + \varepsilon_{it} \quad (4)$$

Where ϕ_i is the adjustment coefficient, θ_i is the vector of long-term coefficients and Δ is the variation operator between two successive dates. It is expected that $\phi_i < 0$. One of the advantages of the ARDL models is that the short-term and long-term multipliers are estimated jointly. In addition, these models allow the presence of variables that can be integrated of different orders, i.e., $I(0)$ and $I(1)$, or cointegrated (Pesaran and Shin, 1999). The PMG estimator allows short-term coefficients and adjustment coefficients to vary from country to country, but long-term coefficients are the same for all countries ($\theta_i = \theta$). In this study, the PMG estimator is based on the following error-correction model:

$$\begin{aligned} \Delta Growth_{it} = & \theta_0 + \phi_i S_{it-1} + \sum_{j=1}^p \gamma_{1ij} \Delta Growth_{it-i} + \sum_{j=0}^p \gamma_{2ij} \Delta Urban_{it-i} \\ & + \sum_{j=0}^p \gamma_{3ij} \Delta Indust_{it-i} + \sum_{j=0}^p \gamma_{4ij} \Delta Men_{it-i} + \sum_{j=0}^p \gamma_{5ij} \Delta Women_{it-i} \\ & + \sum_{j=0}^p \gamma_{6ij} \Delta Young_{it-i} + \sum_{j=0}^p \gamma_{7ij} \Delta Old_{it-i} + \mu_{it} \quad (5) \end{aligned}$$

Where

$$S_{it-1} = (Growth_{it-1} - \theta_1 Urban_{it} - \theta_2 Indust_{it} - \theta_3 Men_{it} - \theta_4 Women_{it} - \theta_5 Young_{it} - \theta_6 Old_{it})$$

It has been shown that the imposition of an identical coefficient for the return force could lead to biases (Kiviet, 1995). The MG estimator allows heterogeneity in both short-term parameters and long-term coefficients. The MG estimator estimates the equation for each country in the sample and then calculates the unweighted averages of the coefficients over the entire panel. The hypothesis of homogeneity of long-term coefficients is empirically tested. For this purpose, a Hausman test was used to determine the difference between the MG and PMG estimators. Under the null hypothesis, this difference is not significant and the PMG estimator is then preferable.

5. Presentation of Econometric Results and Interpretations

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 apply the cointegration test to validate or invalidate a possible long-term relationship between the variables. Third, we estimate the long-term coefficients, using the PMG estimator. The order of integration of the variables is tested according to the tests of Im, Peseran and Shin (IPS, 2003), Levine, Lin and Chu (2002) and Maddala and Wu (1999). The results in Table 3 indicate that the variables Growth, Indust, Men, Young and Old are stationary in level at the 5% threshold. 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's cointegration test (1999; 2001) is performed for all variables and the results are reported in Table 4.

Table 3. Stationarity Test Results

Variables	In Level			In First Difference		
	LLC	IPS	MW	LLC	IPS	MW
Growth	-10,464*	-11,249*	45,345*	-9,335*	-14,787*	78,435*
	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)
Urban	7,018	-1,423**	2,338	-116,949*	-83,648*	13,384
	(1,000)	(0,077)	(1,000)	(0,000)	(0,000)	(0,644)
Indust.	-1,781*	-2,791*	21,408	-10,810*	-11,139*	29,669*
	(0,037)	(0,002)	(0,163)	(0,000)	(0,000)	(0,019)
Men	-3,900*	-0,694	27,322*	-3,168*	-1,218	13,463
	(0,000)	(0,996)	(0,038)	(0,000)	(0,111)	(0,638)
Women	-4,117*	-0,476	10,322	-1,729*	-2,885*	12,155

	(0,000)	(0,316)	(0,849)	(0,041)	(0,002)	(0,733)
Young	-6,043*	-6,148*	10,606	-2,175*	-1,683*	9,307
	(0,000)	(0,000)	(0,833)	(0,014)	(0,046)	(0,900)
Old	-4,776	-1,720*	29,599*	-3,643*	0,009	11,421
	(0,000)	(0,042)	(0,020)	(0,000)	(0,503)	(0,782)

Source: Author's estimates, based on WDI data (2017).

Note. LLC, IPS and MW are respectively the Levin-Lin-Chu (2002), Im-Pesaran-Shin (2003) and Maddala-Wu.

Table 4 shows that of the seven statistics, four are in favour of a long-term relationship between the variables. As a result, we can conclude that the variables are cointegrated, allowing the choice of an error-correction model to estimate the long-term relationship.

Table 4. Cointegration Test Results

	Panel Tests		Group Mean Tests	
	<i>Statistiques</i>	<i>P-values</i>	<i>Statistiques</i>	<i>P-values</i>
v-stat	-1,859	0,968	-	-
ρ-stat	0,070	0,527	0,884	0,811
t-stat (PP)	-10,116*	0,000	-20,792*	0,000
t-stat (ADF)	-2,813*	0,002	-3,670*	0,000

Note. * indicates the significance of the test at the 5% threshold.

Source: Author's estimates, based on WDI data (2017).

At this stage of the study, it is possible to present the results of the PMG and MG estimates. The results of the PMG and MG estimates are reported in Tables 5 and 6. To choose between the two models, it is recommended to apply the Hausman test. This test is applied to the differential between MG and PMG. Under the null hypothesis, the difference between the estimated coefficients MG and PMG is not significant and PMG is more efficient.

Table 5. Results of the Short-Term Equations

Variables	PMG			MG		
	Coef.	S.E	p-value	Coef.	S.E	p-value

$\Delta Urban$	-26,226	35,213	0,456	0,781	53,367	0,988
$\Delta Indust.$	-0,095	0,118	0,420	-0,201	0,153	0,191
ΔMen	-13,155**	6,950	0,058	-12,244	8,000	0,126
$\Delta Women$	34,363**	18,311	0,061	32,983**	16,975	0,052
$\Delta Young$	23,246*	7,617	0,002	24,070*	9,178	0,009
ΔOld	-70,284*	30,726	0,022	-23,329	37,462	0,533
<i>Constante</i>	-155,834*	24,438	0,000	9,394	412,735	0,982

Note. * (**) indicates that the null hypothesis of homogeneity of long-term coefficients at the 5% (10%)

Source: Author's estimates, based on WDI data (2017).

Table 6. Results of the Long-Term Equations

Variables	<i>PMG</i>			<i>MG</i>		
	Coef.	S.E	p-value	Coef.	S.E	p-value
<i>Urban</i>	1,644*	0,219	0,000	-0,127	1,210	0,171
<i>Indust.</i>	0,250*	0,073	0,001	0,312	0,117	0,274
<i>Men</i>	-0,263**	0,149	0,078	-0,286	1,377	0,973
<i>Women</i>	-0,143**	0,084	0,092	3,768*	3,188	0,009
<i>Young</i>	1,844*	0,371	0,000	-4,041*	4,330	0,049
<i>Old</i>	14,695*	2,344	0,000	25,381**	14,707	0,084
<i>Ajustement Coefficient</i>	<i>efficient</i>					
<i>Phi</i>	-1,096*	0,101	0,000	-1,208*	0,084	0,000

Note. * (**) indicates that the null hypothesis of homogeneity of long-term coefficients at the 5% (10%) threshold has not been rejected.

Source: Author's estimates, based on WDI data (2017).

The results of the haussman test, presented in Table 7, indicate that the assumption of homogeneity of the long-term coefficients can not be rejected. Indeed, the probability of the test is higher than the 5% threshold. In this case, the interpretation of the results will be based on those of the PMG estimator because it is more efficient.

Table 7. Hausman Test Results

Variables	Coefficients		Différence (b-B)
	MG (b)	PMG (B)	
<i>Urban</i>	-0,127	1,644	-1,772

<i>Indust.</i>	0,312	0,250	0,061
<i>Men</i>	-0,286	-0,263	-0,022
<i>Women</i>	3,768	-0,143	3,911
<i>Young</i>	-4,041	1,844	-5,886
<i>Old</i>	25,381	14,695	10,686
$\chi^2(5) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 2,38$			
$\text{Prob} > \chi^2 = 0,882$			

Source: Author's estimates, based on WDI data (2017).

Now, we can interpret the results of the econometric analysis of the relationship between the real GDP growth rate and the explanatory variables used in this study.

In the short term, the variables Men, Women, Young and Old show significant coefficients. The share of men in the labour force (Men) and the share of the population aged 65 and over, as a percentage of the total (Old), have a negative influence on the real growth rate in the WAEMU Zone. The negative impact of men's share of the labour force is not very intuitive given their high weight compared to women. This could be explained by the low quality of jobs. According to the results of the 1-2-3 surveys in seven capitals of the WAEMU zone, decent wage employment represents less than 30 per cent of urban employment (Zerbo, 2006). Indeed, for all the capitals studied, 23.8 per cent of the employed work in the formal sector (private, public and voluntary) with 8.4 per cent of the employed in the public and para-public sector and 15.4 per cent in the private formal sector. As for older people, their inactivity is not beneficial to economic growth. Most often in retirement, these elderly people are a burden on the economy, with no savings capacity. In this regard, a recent analysis has highlighted the economic threat to Africa posed by a growing population, low savings rates and low productivity, which could limit the demographic dividend (Eastwood & Lipton, 2011). On the other hand, the share of women in the labour force (Women) and the share of the population aged 0-14 years as a percentage of the total (Young) positively influence the real GDP growth rate in the area. Our results on women's positive contribution to growth are similar to those of Balamoune-Lutz (2007) and Klassen (1999). It appears that the increase in women's participation in employment generates strong growth, the magnitude of which varies with the rate at which the participation rates of men and women converge. The proportion of informal employment in non-agricultural sectors is around 85% in the WAEMU zone. Almost the entire labor market is informal. An estimate for Senegal indicates that only 3.8 percent of jobs were formal. With 53% of active workers, the informal sector appears overall to be the most feminized sector in West African countries. This strong contribution of women could explain the positive effect of women's activity in the short term in contrast to that of men. According to Thevenon et al. (2012), it can correspond to a potential output gain of 12% on average in the OECD by 2030 if convergence is total—a gain of 0.6 percentage points in annual GDP per capita growth. For young people under 14 years of age, their positive contribution to economic growth must be supported

by their ability to increase the active population. Indeed, in most WAEMU countries, compulsory schooling up to the age of 15 or 16 leads almost all boys and girls to attend primary and secondary education. If this youth is trained then there will be more workers. However, more workers means more production, and when there are more workers in relation to the population, production per capita increases.

In the long term, all variables are significant at the 10% threshold. Urbanization, industrial value added, the share of the population aged 0-14 years (% of the total) and the share of the population aged 65 years and over (% of the total) have a positive influence on the real GDP growth rate. Urbanization and industrial added value are conducive to long-term economic growth. Indeed, the relative geographical concentration of research and innovation relative to production in most industries, and the strong links with the diversity of employment in technology-related industries, illustrate the role of cities in innovation (Duranton, 2015). Urbanization facilitates industry in this case. However, industrial development is not only the way forward, but also the corollary of structural transformation. The city increases the potential of the African manufacturing sector to generate growth. Young people and the elderly are also useful for the economic growth of WAEMU countries.

The existence of a negative relationship between the share of men and women in the population and the long-term GDP growth rate, although surprising, is based on the structure of the labour market. In Africa, women's participation rate is high in all age groups and remains high until the end of their productive years, which is only possible when women combine their family responsibilities with their work in the informal economy, especially on their own account. There is a clear trend towards a generalisation of self-employment among women (and men), especially when they are not in paid employment. More often than men, women prefer to work for themselves rather than employ staff and are more present in the informal sector than in the formal economy. However, informal workers earn, on average, lower wages than formal workers, thus facing a higher probability of falling into poverty, which could be considered as a brake on economic growth in the long term. As for the share of men in the labour force, its negative influence on long-term growth could be explained by the predominance of low-skilled workers, who receive low wages whether they are employed in the formal or informal sectors. It is also possible that the negative impact of the contribution of men and women to the labour force on economic growth can be explained by the importance of the informal sector in the economies of the WAEMU region. Indeed, according to the International Labour Office, this sector provides 72% of jobs in sub-Saharan Africa with 93% of new jobs generated (Adigbli, 2008), while the formal sector employs only 10% of the workforce across the continent. The lack of reliable data from this sector could lead to an undervaluation of GDP, which in the end may weaken the contribution of women and men to economic growth.

6. Conclusion

The objective of this study was to show the empirical link between urbanization, the share of men and women in the labour force and economic growth. The data for this study come from the World Bank's 2017 Development Indicators Database. These data cover the period 1990-2016 and cover the eight WAEMU countries. Using Pedroni's (1999; 2001) approach, the data indicate a long-term relationship between economic growth and urbanization. The results indicate that in the short term, young people and women are very useful for economic growth while older women are a burden on society. In the long term, industrial added value and urbanization have a positive influence on economic growth in the WAEMU region. However, the contribution of workers weighs on economic growth. The Union's political authorities must reflect on the challenges posed by urbanisation in order to benefit from it. Improving access to basic services, infrastructure and public transit, as well as affordable and accessible childcare, would facilitate everyone's ability to participate in the economy. In addition, the industrial policies pursued in almost all EU countries must continue. Our empirical analysis has highlighted the limitations of human capital formation in terms of the negative effect of the share of men and women in the active population on economic growth. But in the long term, older people are very useful for economic growth. Thus, measures will have to be taken by the political authorities in response to the negative growth effects of the active population. Policies to combat unemployment must go hand in hand with policies to build human capital. In this context, the empowerment of women must therefore be accompanied by changes in legislation, policies and socio-cultural norms in order to effectively address the gender disparities that impede their full economic, social and political participation in urban life. Governments will therefore have to create better living conditions by ensuring adequate levels of income and care, i.e., public policies should aim at intensifying employment, establishing or improving social protection, social integration, health and the fight against discrimination. The retirement pension system should enable individuals to maintain their standard of living after the period of employment and should prevent social exclusion.

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