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IMPACT OF LOCAL PROCESSING OF AGRICULTURAL RAW MATERIALS ON JOB CREATION IN THE WEST AFRICAN MONETARY AND ECONOMIC UNION

Purpose. *This work evaluates the relationship between the processing of agricultural raw materials and the level of employment in the West African Monetary and Economic Union (WAEMU).*

Methodology / approach. *The Dynamic Common Correlated Effects (DCCE) estimation proposed by Chudik and Pesaran (2015) is used. The data for this study come from the World Bank and the International Labour Office and cover the Consumer Price Index, human capital, trade openness, foreign direct investment, and agricultural manufacturing industry for the period 1990–2019.*

Results. *The results show that agricultural manufacturing, human capital and foreign direct investment have positive influences on job creation in WAEMU countries in the long term, even if this impact remains small. On the other hand, trade openness and inflation lead to a decrease in employment level. Indeed, the specialization in the export of unprocessed agricultural raw materials with low benefit, the massive import of consumer goods and the delay in terms of global competitiveness in most of these countries justify such results. Therefore, in order to boost job creation, it would be expedient to accelerate the process of developing local industries and promote the production of consumer goods.*

Originality / scientific novelty. *Previous studies on local processing of agricultural raw materials have mainly focused on the production process and related constraints. However, very little work has been done on their effects on economic growth and job creation. This study fills this gap. It extends the existing literature on the causal relationship between local processing of agricultural raw materials and job creation. Finally, the Dynamic Common Correlated Effects estimator is used to address this issue.*

Practical value / implications. *The information generated will be useful to a number of organizations, including: research centers, universities, governments, governmental and non-governmental organizations, to better guide the development and implementation of policies and strategies for job creation and unemployment reduction. Finally, by knowing the existing relationship between local processing of agricultural raw materials and job creation, as well as the limitations of this raw material processing policy, the study provides the different ways to improve the capacity for job creation and unemployment reduction. Research on this issue is too important to inform policy makers on the structural transformation of their economies to achieve full economic growth and reduce the unemployment problem.*

Key words: *agriculture, industrialization, jobs, WAEMU.*

Introduction and review of literature. *For more than a decade, African countries in general and those of the West African Monetary and Economic Union*

(WAEMU¹) in particular have been experiencing a progressively high growth rate, i.e. 5.8 % in 2019 compared to 3.9 % in 2008. However, despite their progress for economic and financial integration, and even with an increasingly high growth rate, these eight (8) countries are generally qualified as developing countries (WAEMU, 2019).

Indeed, these countries have specialized in the export of unprocessed agricultural raw materials since their independence, therefore behind in terms of industrialization, competitiveness and moving up the value chain. In terms of innovation and global competitiveness, the results are still unclear or even declining in most of these countries. Agriculture is still in the middle of the economies of these countries. On average, the agricultural sector accounts for 45 % of the Gross Domestic Product (GDP), 75 % of the value of exports, 15 % of government revenue and provides income for almost 80 % of the population.

However, the considerable weight of this sector in GDP growth does not necessarily lead to a massive increase in the number of jobs. Moreover, the jobs created in this sector are mostly informal and essentially subsistence activities. Overall, the level of anchoring of their economies in the agricultural sector is still high as well as unemployment, not forgetting the low rate of employment in manufacturing. Unemployment affects more than 70.2 % of young people, who represent almost 57.2 % of the population of the union. In addition, it should also be noted that the quality of jobs is extremely problematic in this area where more than 76 % of jobs are vulnerable (low income) in 2018 (WAEMU, 2019).

Since the technological revolution, manufacturing has been in the middle of these structural changes, steadily increasing output and employment and leading to unprecedented income growth and poverty reduction. While looking around the world at European countries, the United States, Japan, the Republic of Korea, China and the many other Asian tigers and dragons, we can see some evidence that these countries have begun their economic booms through the sectoral reallocation of resources to industries. This is the basis for structural change (AfDB, OECD and UNDP, 2016; Sen, 2019). However, countries considered to be least developed have failed to initiate such changes in the productive structures of their economies and remain with low or at best middle income levels (AfDB, OECD and UNDP, 2016). This is the case in WAEMU countries where the majority of jobs are in agriculture and are essentially subsistence activities.

Consequently, the current challenge for West African economies is to generate many decent jobs for its predominantly poor population. To do this, it is essential to turn to a structural transformation of its economy, i.e. to move from an economy with low value-added content (export of unprocessed agricultural products) to the production of goods with high value-added content (developing its agricultural

¹ The West African Monetary and Economic Union (WAEMU) is a West African organisation created on 10 January 1994 with the mission of achieving economic integration among its member states. It has eight (8) members: Cote d'Ivoire, Benin, Burkina Faso, Guinea-Bissau, Mali, Niger, Senegal and Togo.

manufacturing sector).

Even though the indicators regarding the causal relationship of agricultural sector and economic growth in the WAEMU countries seem satisfactory and sufficient, it is difficult to assess causal effect of agricultural manufacturing sector on employment and the nature of their relationship. In this regard, the subsequent research questions were raised:

- What is the nature of the relationship between agricultural manufacturing and the level of employment?

- How does agricultural industry influence job creation?

- What is the nature of causal relationship among agricultural manufacturing and other factors (life expectancy, school enrolment, trade openness, inflation and Foreign Direct Investment) affecting unemployment?

- How do the other factors (life expectancy, school enrolment, trade openness, inflation and Foreign Direct Investment) and agricultural manufacturing influence the level of employment?

Addressing the answers of the above research questions, this section discusses some findings of previous empirical studies regarding economic activity and labour market performance to bring some evidence from the different regions of the world.

Okun (1962) developed an analysis linking growth and employment. Indeed, using quarterly data on the US economy between 1947 and 1960, the author demonstrated an inverse relationship between growth and unemployment of the order of 1:3. In other words, when the Gross Domestic Product increases by 1 %, *ceteris paribus*, unemployment decreases by 0.3 %. Thus, for a stable level of the active population, an increase in GDP leads to an increase in the level of employment.

Lavopa & Szirmai (2012) support this assertion by stating that increased manufacturing output generates new jobs for the simple reason that industry interacts with all other sectors of activity through input-output linkages.

Djahini (2019) explains that the manufacturing sector can act in two ways on the labour market. Indeed, it can either act in a direct way such as the important absorption of labour, or in an indirect way such as the creation of new jobs due to the interaction that exists between the manufacturing sectors and all the other sectors of the economy and this confirms the analysis by Soubbotina (2004). This author concludes that in order to benefit from decent jobs, sub-Saharan African countries need to turn to the manufacturing sector, as the development of this sector can contribute to reducing youth and female unemployment.

Khan (2011) examines the relationships between output growth, employment and poverty, linking them at the macro and micro levels. He argues that high economic growth can create employment opportunities at high productivity rates. The poor can thus increase their productivity and income, either in their existing occupations or by moving to new ones. This process can enhance productivity in various sectors and occupations, change the pattern of employment towards higher productivity occupations, and increase in income and wages. This could support greater essential household spending on children's education, thereby intensifying

future productivity and supporting higher growth in the future.

Lewis (1954) analysed the relationship between industrialisation and employment using a two-sector model: one traditional (agricultural) and one modern (industrial). The main idea of his model is that the persistence of capital accumulation in the industrial sector should gradually absorb the surplus of workers in the agricultural sector. Hence, the development of the industrial sector is seen as a source of employment opportunities for the laid-off workers in the agricultural sector.

The analysis by Haris & Todaro (1970) supports that by Lewis (1954) and sheds important light on the analysis of the relationship between industrialisation and employment. He argues that labour-intensive rather than capital-intensive industries should be developed as they are likely to solve the unemployment problem.

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Kapsos (2006) carried out an analysis of employment-economic growth elasticities in different regions of the world over the period 1991–2003 using the calculation of arc elasticity. The results obtained in sub-Saharan Africa establish this elasticity at 0.73 over the period 1991–1995, 0.82 between 1995 and 0.53 between 1999 and 2003. The analysis by sector showed that the employment elasticity is more important in services and industry.

Ndinga et al. (2018) conducted a study on sub-Saharan African countries by calculating the employment-growth elasticity. From the results, they note that growth in the manufacturing sector is accompanied by job creation and productivity growth.

In contrast, Kumar & Pattanaik (2017) find a weak relationship between employment and output in the industrial sector for most states in India during the period 1981–2014. This would imply that with 1 % change in industrial sector output, employment will grow at a lower rate. They confirmed a negative employment growth rate despite reasonable output growth.

According to Yaïche (2019), the level of manufacturing development, which is measured by manufacturing value added as a percentage of GDP, has a positive and statistically significant effect on the level of GDP per capita. Accordingly, a 1 % increase in manufacturing value added increases GDP by 0.025 %. Clearly, manufacturing contributes positively to economic growth in these countries, but it is clearly small and therefore contributes only modestly to economic growth and hence to job creation in Africa. This was shown in the results of Ayira (2019) when he investigated the macroeconomic and institutional determinants of unemployment in the countries of the West African Economic and Monetary Union.

According to Masters et al. (2018), Yeboah & Jayne (2018), despite policies for structural transformation of the economy, many Africans still work in low-productivity agriculture. They justify this by faster rural population growth and lower

labour productivity. Economic transformation refers to two linked development processes: (1) sectoral change, through increases in labor productivity, especially in the sectors containing the majority of the labor force; and (2) structural change, the shift of workers and other resources from low-productivity sectors, such as subsistence agriculture, to high productivity sectors, such as industry and modern services. Always according to these same authors, economic transformation raises the general level of output per worker and hence is a fundamental driver of rising wages and incomes, improved living standards, and economic opportunities. Economic transformation creates sustained growth and is necessary to improve the material welfare of the population and increase resilience to shocks. These assertions are supported by Beegle & Christiaensen (2019), Benin (2019), Chadwick (2020), Calabrese & Tang (2023).

De Vries et al. (2021) made this observation when they found that high growth rates had little effect on job creation in African countries. According to them, despite the high rates of output growth, the level of employment was quite low. While many African economies have grown over the last few decades, their structure has not transformed. In contrast with other regions of the world, where the majority of people are employed in the secondary and tertiary sectors, a large share of Africa's labour force is engaged in agriculture and related activities, where average productivity is lower. Most of the workforce in African countries is employed in what is usually the least productive sector, agriculture (Martuscelli, 2020). Africa's economic growth is mainly based on low-value-added sectors, such as the oil and mining sector (a key source of income for most African states) and commodity exports (Yeboah & Jayne, 2018). These sectors are characterised by low job creation potential and modest wage levels. The growth of the last twenty years, instead of generating sufficient jobs, has led these countries to an increasing dependence on informal employment. In this regard, according to Yaïche (2019), 60 % of African workers are low-paid because they depend on the informal sector, which is synonymous with precariousness and exploitation. The structure of jobs and the predominance of agricultural jobs in the WAEMU are associated with high vulnerability of jobs on the continent. Indeed, the continent remains one of the regions where more than half of workers are self-employed and generally work in sectors that are not very productive, according to Djahini (2019).

The literature reviewed above showed enormous empirical evidence of the effect of industrialisation on employment from different regions of the world. Unfortunately, very few research studies have been done in the WAEMU regarding agricultural manufacturing and employment. Those existing research works about agricultural sector in the WAEMU only cover the correlation between agricultural sector and productivity and state the trends and growth in commodity exports and GDP without considering the assessment of agricultural manufacturing impact on job creation and identifying the nature of the relationship. Moreover, those works suffer from improper methods and techniques, and analysis based on the old dataset. Thus, this significant research gap is addressed in our present study by considering the

causal effect assessment of agricultural manufacturing on job creation and identifying the nature of the relationship between these two indicators. Furthermore, our analysis is based on the highest possible recent dataset and empirically valid new methods and techniques (DCCE).

Thus, we expect that the findings of this study based on empirically valid standard techniques with the new dataset from the WAEMU countries can incrementally contribute to the existing literature.

The purpose of the article. This study aims to assess the relationship between the processing of agricultural raw materials and the level of employment in WAEMU countries. In particular, it aims to determine the causal effect of the agricultural manufacturing on the job creation in WAEMU countries.

Methodology. Data on Employment (Empl) are taken from the International Labour Office, while those on Agricultural Manufacturing (Manu), Life Expectancy (Exp), School Enrolment (Edu), Trade openness (Tra), Consumer Price Index (CPI) and Foreign Direct Investment (FDI) are taken from the World Bank. These data are for eight (8) WAEMU countries: Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo, during the period 1990–2019.

The Dynamic Common Correlated Effects (DCCE) estimator originally developed by Chudik & Pesaran (2015) was used in this study. This technique takes into account the Pooled Mean Group (PMG) technique and the mean recursive adjustment method is applied to correct for small sample bias. The basic idea of CCE estimation is to proxy the unobserved common factors using the cross-sectional averages of the observables in the regression. Comparatively, it has several advantages. For instance, it can be computed by least squares to auxiliary regression, and it does not require the knowledge of the number of unobserved factors.

Let's assume the following equation with heterogeneous coefficients (Pesaran, 2006):

$$y_{it} = \alpha_i + \beta_i' x_{it} + u_{it} \quad (1)$$
$$u_{it} = \gamma_i' f_t + e_{it}$$

where f_t is an unobserved common factor;

γ_i – a heterogeneous factor loading;

α_i – a unit-specific fixed effect;

e_{it} – a cross-section unit-specific independent and identically distributed;

IID – error term. The heterogeneous coefficients are randomly distributed around a common mean such that $\beta_i = \beta + v_i, v_i \sim IID(0, \Omega_v)$, where Ω_v is the variance–covariance matrix.

Pesaran (2006) shows that equation (1) can be consistently estimated by approximating the unobserved common factors with cross-sectional averages \bar{x}_t under strict exogeneity of x_{it} .

In empirical applications, it was used, for example, in Eberhardt et al. (2013), Bond & Eberhardt (2013), McNabb & LeMay-Boucher (2014), and Gundlach & Paldam (2016).

However, the CCE estimator is consistent only in non-dynamic panels (Chudik & Pesaran 2015; Everaert & Groote, 2016).

In a dynamic panel such as:

$$y_{it} = \alpha_i + \lambda_i y_{i,t-1} + \beta' x_{it} + u_{it}, \quad (2)$$

where the idiosyncratic errors u_{it} are cross-sectionally weakly dependent;

$E(\lambda_i) = \lambda$, the lagged dependent variable is no longer strictly exogenous. Therefore, the estimator becomes inconsistent.

Chudik & Pesaran (2015) show that the estimator gains consistency if the floor of $\sqrt[3]{T}$ lags of the cross-section averages is added for both the dependent variables and the strictly exogenous variables. Let's denote the number of lags by $PT = \lceil \sqrt[3]{T} \rceil$. The equation to be estimated is:

$$y_{it} = \alpha_i + \lambda_i y_{i,t-1} + \beta' x_{it} + \sum_{i=0}^{PT} \delta'_{it} \bar{z}_{t-i} + e_{it} \quad (3)$$

Taking in account the specificity of the present study, the econometric model used in this study takes the following form:

$$\text{Ln}(Empl_{i,t}) = \mu + \alpha_i \text{Ln}(Empl_{i,t-1}) + \lambda_i \text{Ln}(Manu_{i,t}) + \beta_i \text{Ln}(X_{i,t}) + U_{i,t} \quad (4)$$

With, $U_{i,t} = \delta_i f_t + e_{i,t}$,

where f_t is an unobserved common factor of idiosyncratic errors;

$U_{i,t}$ is weakly dependent;

$\text{Ln}(Empl_{i,t})$ – denotes the log of total employment;

$\text{Ln}(Empl_{i,t-1})$ is the log of the total employment variable (introduced to account for the fact that as the economy tends towards full employment of labour input, it generates fewer and fewer new jobs);

$\text{Ln}(Manu_{i,t})$ is the log of the share of agricultural manufacturing in gross domestic product, used as a proxy for the processing of agricultural raw materials;

$\text{Ln}(X)$ is the log of a vector of control variables including the inflation rate (CPI), school enrolment (Edu), life expectancy at birth (Exp), degree of trade openness (Tra) and foreign direct investment (FDI).

The problem that now arises is that the lagged dependent variable is not strictly exogenous and thus the estimator becomes inconsistent.

Ditzen (2016) shows that the estimator becomes more consistent if we add a lag of the means. To do this, the model used is as follows:

$$\begin{aligned} Empl_{i,t} = \mu + \alpha_i \text{Ln}(Empl_{i,t-1}) + \lambda_i \text{Ln}(Manu_{i,t}) + \beta_i \text{Ln}(X_{i,t}) + \\ + \sum_{i=0}^p \delta_i \text{Ln}(\bar{M}_{t-1}) + e_{i,t}, \end{aligned} \quad (5)$$

where:

$$\text{Ln}(\bar{M}_{t-1}) = (\text{Ln}(\overline{Empl}_t), \text{Ln}(\overline{Empl}_{t-1}), \text{Ln}(\overline{Manu}_t), \text{Ln}(\overline{X}_t)).$$

The expectations regarding the effects of the explanatory variables on the dependent variable are shown in Table 1. A plus sign (+) would indicate a positive effect and a minus sign (-) would show a negative effect of the dependent variable on GDP.

Table 1

Used variables		
Variables	Description	Expected effects
Empl	Employment	+
Manu	Agricultural Manufacturing	+
Exp	Life Expectancy	+
Edu	School Enrolment	+
Tra	Trade openness	+
CPI	Consumer Price Index	+
FDI	Foreign Direct Investment	+

Source: author's research, on the basis of the theory.

Results and discussion. *Characteristics of the variables used.* In terms of standard deviation (Table 2), the Foreign Direct Investment (FDI) is more volatile than all other variables. Indeed, it is sensitive to the effects of variables such as Employment (Empl), Agricultural manufacturing (Manu), Life Expectancy (Exp), School Enrolment (Edu), Trade openness (Tra) and Consumer Price Index (CPI).

Table 2

Statistical description of the variables used

Indicators	Empl	Manu	Exp	Edu	Tra	CPI	FDI
Mean	8.0183	2.3528	4.0018	2.9908	3.9507	4.3726	0.1015
Median	8.2112	2.3384	4.0099	3.0916	3.9906	4.4451	0.1799
Maximum	11.0300	3.0677	4.2186	4.1246	4.7252	4.7301	2.9348
Minimum	5.93885	0.8844	3.7736	-2.1968	3.2619	1.5218	-4.2109
Std. Dev.	0.8283	0.37901	0.0910	0.7445	0.2634	0.4084	1.1733
Skewness	-0.6937	-0.3299	-0.0884	-1.8564	-0.0357	-3.2143	-1.1127
Kurtosis	4.2943	2.9416	2.6061	12.1220	3.1731	18.6486	5.2592
Jarque-Bera	36.0053	4.3884	1.8639	969.9707	0.3509	2862.075	100.5713
Probability	0.0000	0.1114	0.3938	0.0000	0.8391	0.0000	0.0000
Sum	1924.410	564.6732	960.4416	717.7980	948.1877	1049.435	24.3603
Sum Sq. Dev.	163.9704	34.3318	1.9816	132.4860	16.5853	39.8735	329.0283
Observations	240	240	240	240	240	240	240

Source: author's research, from Eviews 10.

Preliminary tests. The preliminary tests consist of the IPS unit root test, the Kao Cointegration test, the Ramsey-Reset test and many others.

Unit root test. According to Table 3, the variables Empl, Manu, Edu and Tra are stationary of order 1, i.e. $I(1)$. The variables Exp, CPI and FDI are stationary in level.

Table 3

Summary of the unit root test

Variables	In level			In difference first		
	1	2	I(0)	1	2	I(1)
Employment (Empl)	3.90916 (0.1000)	0.21003 (0.5832)	No	-5.51170 (0.000)*	-4.07714 (0.000)*	Yes
Education (Edu)	0.29484 (0.6159)	0.68440 (0.7531)	No	-8.68292 (0.000)*	-7.61835 (0.000)*	Yes
Life expectancy at birth (Exp)	-6.64976 (0.0000)*	-68.3137 (0.0000)*	Yes			

Continuation of Table 3

Agricultural manufacturing industry (Manu)	-1.38907 (0.0824)	-1.44669 (0.0740)	No	-8.92917 (0.000) *	-8.26901 (0.0007)*	Yes
Consumer Price Index (CPI)	-2.90064 (0.0019)*	-2.49234 (0.0063)*	Yes			
Trade Opening Ratio (Tra)	-0.84299 (0.1996)	-0.85288 (0.1969)	No	-8.81500 (0.0000)*	-7.29631 (0.0000)*	Yes
Foreign Direct Investment (FDI)	-5.4144 (0.000)*	-6.12152 (0.000)*	Yes			

Notes. I(0): Level stationary or integrated series of order 0; I(1): First difference stationary or integrated series of order 1.

- 1 and 2 in the Table denote respectively with constant without trend and with constant and trend.

- The values in brackets are the p-values of the test.

*Means rejection of the unit root hypothesis at the 1 % and 5 % thresholds. Rejection of the null hypothesis (P-value < 1 or 5 %) indicates the absence of a unit root.

Source: author's research, from Eviews 10.

Co-integration Test. The results in Table 4 show that the p-values of Dickey-Fuller and Augmented Dickey-Fuller are below the 5 % threshold. Therefore, there is a long term relationship between the different variables of the model.

Table 4

Co-integration test (Pedroni, Kao and Bai and Ng test)

Kao test for cointegration		
Ho: No cointegration	Number of panels = 8	
Ha: All panels are cointegrated	Number of periods = 28	
Cointegrating vector: Same	-	
Panel means: Included	Kernel: Barlett	
Time trend: Not included	Lags: 2.75 (Newey-West)	
AR parameter: Same	Augmented Lags: 1	
Indicators	Statistic	P-value
Modified Dickey-Fuller t	-2.9982	0.0014
Dickey-Fuller t	-6.0062	0.0000
Augmented Dickey-Fuller t	-0.2869	0.0111
Unadjusted modified Dickey-Fuller t	-21.9762	0.0000
Unadjusted Dickey-Fuller t	-12.8550	0.0000

Source: author's research, from STATA16.

Ramsey-Reset test of omission. The result of test (Table 5) shows that the model has not omitted any relevant explanatory variables, as the probability (*Prob* = 0.2005) is above the 5 % threshold. Therefore, the model is well specified.

Table 5

Result of the Ramsey-Reset omission test

Ramsey RESET test using powers of the fitted values of DEBU
Ho: model has no omitted variables
F (3.230) = 1.56
Prob > F = 0.2005

Source: author's research, from STATA16.

Validation test of the model. According to Table 6, the null hypothesis is accepted in the different validity tests of the model because their different probabilities are higher than 5 %. Moreover, there is an absence of autocorrelation of errors, heteroscedasticity of errors and normality of errors. The model is well specified, stable and validated.

Table 6

Results of the model validation test

Econometric tests	Null hypothesis (H0)	P-value	Null hypothesis decision (H0)	Consequences
Breusch-Pagan heteroscedasticity test and White correction	Homoscedasticity	0.0003	Reject	Presence of heteroscedasticity
Fixed effects model (test for individual effects)	No specific effects	0.0000	Reject	Presence of individual effects
Random effects model	Individual specifics of the randomized model	0.0000	Reject	Presence of individual specificities
Test de Breusch and Pagan Lagrangian multiplier test for random effects	Reject the choice of a random compound error structure	0.0000	Reject	The test accepts random individual effects
Hausman test (choice between fixed and random)	Random effect model	0.1371	Reject	The random effects model is therefore more appropriate

Source: author's research, from STATA16.

Model estimation. According to Table 7, the coefficient of the variable “Manu” is positive. Thus, local processing of raw materials has a positive effect on job creation in the WAEMU countries.

Table 7

Estimation of the long-term relationship between agricultural raw material processing and employment in the WAEMU

Variables	Empl(-1)	Manu	Exp	Edu	Tra	CPI	FDI	Constant
Coeff.	-0.0159	0.0589	8.4213	0.0049	-0.2010	-0.6027	0.0295	-1.3199
T-stats	0.927	0.856	0.383	0.926	0.482	0.730	0.280	0.775
R ² = 0.91 Adjusted R ² = 0.87 Root MS = 0.22 P-value = 0.8059 Number of countries = 8 Number of observations = 232								

Source: author's research, from STATA16.

Thus, an increase in the level of processing of agricultural products by 1 % leads to an improvement in the level of employment by 0.058 %. Life expectancy (Exp) at birth and the secondary school enrolment rate (Edu), which represent human capital, also have a positive influence on employment (Empl) in the WAEMU region. Trade openness (Tra), on the other hand, has a negative influence on job creation. A 1 %

increase in this variable leads to a 0.2 % drop in the level of employment in the WAEMU. The same applies to the consumer price index (CPI). Indeed, inflation seems to be negatively associated with employment. Finally, a 1 % growth in foreign direct investment (FDI) also leads to a significantly low increase in the level of employment (0.02 %).

Discussion. This study indicates that the development of the agricultural manufacturing sector has a positive effect on job creation in WAEMU countries in the long term. In fact, agricultural manufacturing contributes favourably to job creation. This empirical result confirms the body of economic literature that states that the expansion of the manufacturing sector is fundamental for the creation of decent jobs, generally better paid even for relatively low-skilled workers (Masters et al., 2018; Ayira, 2019; Beegle & Christiaensen, 2019; Agbebi, 2019). However, the coefficient on the lagged employment variable is negative. This shows that as the economy moves towards full employment of labour input, its capacity to generate new jobs declines. The work of Calabrese & Tang (2023) confirms this claim.

Furthermore, life expectancy (Exp) at birth and the school enrolment rate (Edu), which represent human capital, have a positive effect on employment in the WAEMU countries. This means that the development of human capital reduces the vulnerability of jobs in the region. These results are explained by endogenous growth theory, which assumes that public and private investment in human capital generates external savings and productivity improvements that compensate for natural tendencies towards lower returns (Benin, 2019; Kouakou, 2020a).

In addition, investments promote job creation in WAEMU countries. Thus, a 1 % increase in foreign direct investment (FDI) leads to a 0.02 % increase in the level of employment. This argues that any investment generates new jobs (Kouakou, 2020b; Masters et al., 2018; Chen et al., 2019).

On the other hand, trade openness (Tra) has a negative effect on employment. Thus, a 1 % increase in trade openness leads to a 0.2 % decrease in employment in the WAEMU. Indeed, the specialization in the export of unprocessed agricultural raw materials with low added value, the lag in terms of industrialization, innovation and global competitiveness of most of these countries do not allow them to benefit from the open trade with the rest of the world. This assertion is supported by Kouakou (2020) and Xia (2019).

The same goes for the consumer price index (CPI), which is negatively associated with employment. Indeed, inflation reduces the responsiveness of employment to growth by increasing price volatility and uncertainty. Thus, a 1 % increase in inflation leads to a 0.6 % decrease in the level of employment. This result is contrary to those of several authors, according to whom when inflation increases, unemployment decreases and therefore the level of employment increases (Ndinga & Itoua, 2018; Tang, 2019; Kouakou, 2020b).

Conclusions. The WAEMU countries have experienced strong growth and increased and improved economic performance over the past decades. However, this growth has not generated as many jobs that could absorb high unemployment and

even reduce endemic poverty. This study assesses the effect of local processing of agricultural raw materials on job creation in the eight WAEMU countries.

The results show that the development of the agricultural manufacturing industry has a positive effect on job creation in WAEMU countries in the long term. However, this contribution remains small. This is especially true as the supposedly exceptionally labour-intensive agricultural manufacturing sector is lagging behind.

On the other hand, life expectancy (Exp) at birth and the secondary school enrolment ratio (Edu), which represent human capital, also have a positive effect on employment in the WAEMU countries. This means that the development of human capital reduces the vulnerability of jobs in this zone. The same is true for investments in the development of agricultural manufacturing, which generates new jobs in the WAEMU region.

In contrast, trade openness has a negative effect on employment. Indeed, the specialization in the export of unprocessed agricultural raw materials with low added value, the lag in terms of industrialization, innovation and global competitiveness of most of these countries do not allow them to benefit from the openness to trade with the rest of the world.

In the same context, the consumer price index (CPI) is negatively associated with employment. Indeed, inflation reduces the responsiveness of employment to growth by increasing price volatility and uncertainty due to the massive importation of consumer goods.

Therefore, in this current context, to boost job creation and even reduce poverty, it would be better to accelerate the process of developing local labour-intensive industries and to encourage the production of consumer goods. This policy will obviously consist of:

- promoting the development of agricultural manufacturing. When agricultural industry develops, its strong upstream and downstream linkages with agricultural value chains and non-agricultural sectors contribute to employment and income growth more generally;

- improving attractive investment opportunities in WAEMU states. Macroeconomic management needs to be improved in order to attract massive foreign direct investment (FDI);

- developing human capital, which is a key variable in the structural transformation of the economy. The long-term progress of WAEMU countries must be based on the following interrelated reasons: an increasingly knowledgeable, skilled and informed workforce, thanks to rising education levels; exceptional ease of access to information;

- reducing inflation by adopting appropriate macro-economic policies to boost local consumption;

- lastly, improving the competitiveness of agricultural products in order to mitigate the negative effects of trade openness.

In conclusion, it should be noted that this study assessed the contribution of local processing of agricultural raw materials to job creation in the WAEMU states,

which may help to develop and implement policies for the structural transformation of the economy. However, due to information unavailability, some data have been used by proxy and do not reflect the full extent of the value of the variables. In addition, the data only cover the period 1990–2019 and do not take account of recent developments. Despite this, the study is the first in the WAEMU and can be used to assess policies for the structural transformation of the economy, hence the need to improve the methodology and scope of future studies. This obviously requires the use of recent data and more robust analysis. This may help to fill the gaps in the present study.

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