

Institutional Quality and Labour Productivity: Evidence from the Economic Community of West African States Countries

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Abstract This study investigates how institutional quality influences labor productivity in West Africa. Thus, a panel of 15 Economic Community of West African States (ECOWAS) member states over the period 2005-2017 was considered. The panel was analyzed for the primary, secondary, and tertiary sectors. For the empirical analysis, a panel fixed effect regression was conducted based on a neoclassical framework. Results show that institutional quality improvement is overall associated with higher levels of productivity, regardless of the sector. Some specificities were also observed at the sectoral levels. Furthermore, the econometric analysis reconfirms a positive effect of investment and human capital on productivity. Therefore, improving institutional quality would be helpful for productivity growth in this sub-region. This event could enable ECOWAS member states to reap greater benefits from the implementation of the African Continental Free Trade Area agreement.

Keywords: institutional quality, labor productivity, Economic Community of West African States, African Continental Free Trade Area

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I. Introduction

The ability of countries to generate strong and inclusive growth depends, among other things, on the productive capacity of their labor force. Increasing labor productivity lowers production costs, increases competitiveness, and improves people's welfare by raising incomes and giving initially excluded groups easier access to goods whose prices have fallen relatively. Many studies

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rightly showed that increasing labor productivity in developing countries, particularly in agriculture, can substantially reduce poverty (Thirtle et al., 2003). Others point out that sectoral changes in labor productivity reduce income inequalities between workers in the primary sector and those in other sectors (Andersson and Palacio, 2016; 2017). Some studies also highlighted the contribution of productivity growth in improving the competitiveness of economies in international markets (Gu and Yan, 2016).

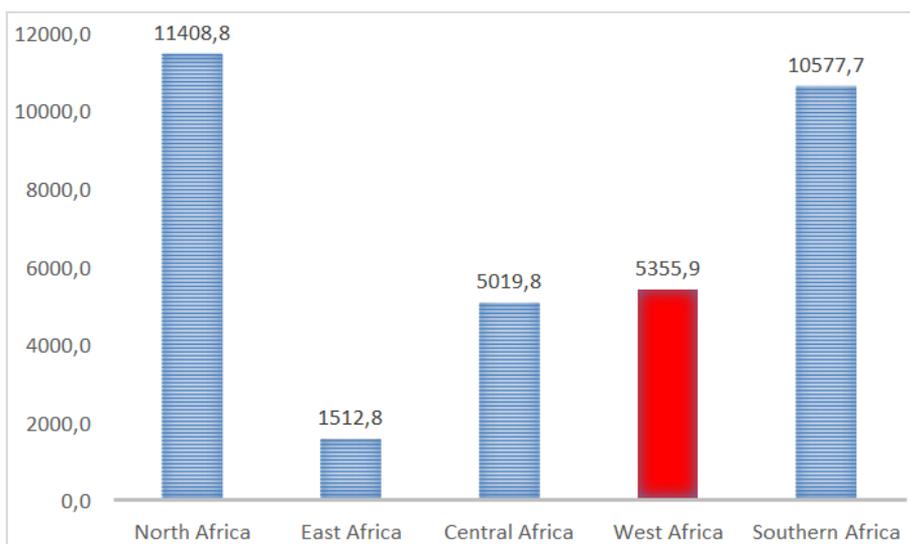
On the African continent, the performance of countries in terms of labor productivity appears quite heterogeneous. Countries in the West, East, and Central African sub-regions perform modestly, whereas those in North and Southern Africa perform better. For example, in 2016, labor productivities were 11,408.8 and 10,577.7 US dollars per worker per year in North and Southern Africa, respectively, whereas they stood at 1,512.8, 5,019.8, and 5,355.9 US dollars per worker per year in East, Central, and West Africa, respectively (Figure 1). Consequently, a very large proportion of employed people in the West Africa sub-region are poor, particularly in agricultural and service sectors where most of the available jobs are vulnerable (ECA, 2019)¹). Specifically, nearly 38% of employed individuals in the Economic Community of West African States (ECOWAS) sub-region are extremely poor, living on less than 1.90 US dollars a day, and approximately 63% are poor living on less than 3.10 US dollars (ECA, 2019). Thus, among other things, to these high levels of poverty, countries of this sub-region are frequently subject to social tensions, insecurity, and political instability.

Given the crucial role of productivity growth contributing to addressing these issues and the achievement of the Sustainable Development Goals and those of the African Union Agenda 2063, development partners and African states coordinate their efforts to improve it. This case is common in the agricultural sector, which employs the highest shares of poor workers. Most of their interventions are based on traditional inputs (e.g., physical capital, human capital, and technology). However, as highlighted in recent years, without adequate institutions and good governance, the impact of such interventions might be quite modest (Lio and Meng-Chun Liu, 2008).

This study attempts to assess how institutional quality affects ECOWAS member states' performances in terms of labor productivity.

Raising the level of labor productivity in ECOWAS is necessary to reduce the high proportions of vulnerable employment and high poverty rates in this part of the African continent (ECA, 2019) and to enable the West African sub-region to improve its competitiveness to take full advantage of the ongoing implementation of the African Continental Free Trade Area (AfCFTA) agreements.

1) More than 70% in each country of the ECOWAS sub-region according to the recent estimations made by the UNDP.

Figure 1. Comparison of regional labor productivities in Africa

Source. Authors' calculations based on the World Bank data (World Development Indicators, 2018) and International Labour Organization data (2018)

Many studies pointed out the key role of institutions, including the regulatory capacity of governments, in explaining the proper functioning of markets and generating positive incentives for producer behavior, particularly in the rural sector (Adamopoulos and Restuccia, 2014; Deininger and Feder, 2001; Chen and al., 2017). Other works highlighted the positive effect of the ability of the judiciary to enforce contracts, resolve commercial disputes, or secure property rights (over assets, such as land) on productive investment and output (Fu et al., 2020). Several other studies similarly found the influence of state policies, including its ability to create a stable macroeconomic environment, on attracting investment and its effects on economic growth (Alguacil et al., 2011; Ranjan and Agrawal, 2011; Shah, 2016). Nonetheless, few studies, to our knowledge, examined the link between institutional quality and labor productivity, particularly in the West African sub-region.

This study intends to contribute to filling up this gap. The study examines whether the efforts made by states to improve the quality of public policies and institutions in the sub-region help explain the productivity levels they record. In examining, the study used the World Bank's Country Policy and Institutional Assessment (CPIA) indicators for a panel of 15 countries of the ECOWAS over the period 2005-2017. To this end, the relationship between institutional quality and productivity is examined at both the aggregate and sectoral levels. The results show that improvement in institutional quality is overall associated with higher levels of productivity in the ECOWAS sub-region. However, specificities were observed at the sectoral levels. Furthermore,

the econometric analysis highlights a positive effect of investment and human capital on this productivity. The rest of the paper is organized as follows. Section 2 is devoted to a literature review. Then, Section 3 presents the methodology used for the data analysis. Section 4 presents the empirical results and related discussions. Finally, Section 5 concludes the study and provides some recommendations.

II. Literature Review

Finding ways to increase labor productivity is a major concern in economics. It is important for fostering economic growth and improving people's living conditions, including the profitability and competitiveness of firms and countries (Gu and Yan, 2004; Krugman, 1994; Nakamura et al., 2019; Ueshina, 2018).

The literature identified several factors that are likely to contribute to labor productivity upward trend, and one of them concerns human capital. Becker (1962) argued that investments in human capital, that is, in education, health, and nutrition, affect people by equipping them with skills and cognitive abilities that contribute to labor productivity growth. This theory has given rise to several attempts at empirical verification. In this regard, Olayemi (2012) highlighted, based on Nigerian data, that public expenditure on education has a positive and highly significant effect on the level and growth of labor productivity in that country. Popoola et al. (2019) reached similar conclusions in the same country. Oketch (2006) also concluded that the secrets of labor productivity growth on the African continent seem to lie in investments in physical and human capital. The results of Fleisher et al. (2011) also illustrated the existence of a strong and positive correlation between the average length of schooling and the labor productivity of employees in China. The most educated employees, that is, with a level of education above the average length of schooling, have a much higher marginal contribution and wages than those who are less educated or below this average. Some authors also examined the contribution of investments in health to the upward influence of labor productivity as a key element in the formation of human capital. In this regard, Savadogo et al. (2016) posited that people's use of health services is associated with improved labor productivity in the agricultural sector in Burkina Faso.

Other studies also highlighted the influence of investment in capital, research and development, and technology on labor productivity (Hong, 2017). In the same vein, Esaku (2020) showed that capital investment reduces the cost of entry of Ghanaian and Tanzanian small firms into export markets and contributes to a significant increase in their productivity. Audrestsch and Belitski (2020) found that investment in research and development is an important source of productivity growth in the UK. Pieri et al. (2018) also concluded that investment in Information

and Communication Technology and research and development are important determinants of productivity growth in industrialized economies between 1973 and 2007.

In recent years, researchers also realized that the institutional environment influences the economic performance of countries beyond traditional factors, such as the stock of human or physical capital. For instance, Acemoglu et al. (2005) explained such influence based on the effect of institutions on growth and development. The authors showed that differences in economic institutions are the fundamental causes of differences in the level of development of countries. This causal relationship is explained by the fact that the levels of labor or capital productivity result from economic structures and resource allocation. Furthermore, Hall and Jones (1999) suggested that disparities in productivity and capital accumulation can be explained by differences in government institutions and policies, including social infrastructure. Again, economic institutions and policies may also be an obstacle to job creation, which could boost labor productivity. The socio-political context and the ability of a country's authorities to initiate and implement good economic policies can be very conducive to increasing private sector productivity (Field, 2008; Kusunose et al., 2020; Mugizi and Matsumoto, 2021). These policies include trade, fiscal, industrial, environmental, and competition policies, among others, as well as privatization, intellectual property, regulatory, and foreign ownership policies (Deleidi et al., 2020; Peng et al., 2021). These results highlight the role of public policy interventions and orientations in increasing labor productivity. The current study investigates the existence of such links in ECOWAS countries.

III. Methodology and Data

A. Theoretical framework

The neoclassical framework of reference is used as the theoretical basis for this study. The effect of institutional quality on labor productivity is examined using an augmented neoclassical production function. The traditional neoclassical production function models the value added as a function of the stock of physical capital, the number of workers involved in the production process, and the stock of human capital available in the economy. Formally, the function is expressed as follows:

$$Y = Af(K, L, H), \tag{1}$$

where Y is the value added, A is the technical progress, K is the physical capital stock, L is labor, and H is the human capital stock.

Assuming decreasing factor returns and constant returns to scale, we can write the following:

$$\frac{Y}{L} = Af\left(\frac{K}{L}, \frac{H}{L}\right). \quad (2)$$

Equation (2) suggests that labor productivity can be expressed as a function of technical progress, the per capita stock of physical capital, and human capital.

B. Estimation strategy

Considering a Cobb-Douglas function for the previous production function and taking the logarithm of the latter, the following econometric specification was used for the panel of ECOWAS countries:

$$\log\left(\frac{Y}{L}\right)_{it} = \alpha_0 + \alpha_1 \log\left(\frac{K}{L}\right)_{it} + \alpha_2 \log\left(\frac{H}{L}\right)_{it} + \epsilon_{it}. \quad (3)$$

$i \in [1, 15]$ is the sample of 15 ECOWAS countries, and $t \in [2005; 2017]$ is the period covered by the analysis.

As a growing body of research points to the influence of the institutional environment in explaining countries' economic performance (Bhattacharyya, 2009; Dias and Tebaldi, 2012), the econometric model is augmented to consider the potential influence of governance performance in ECOWAS countries in explaining their productivity levels.

On this basis, the previous econometric specification (3) becomes:

$$\log\left(\frac{Y}{L}\right)_{it} = \alpha_0 + \alpha_1 \log\left(\frac{K}{L}\right)_{it} + \alpha_2 \log\left(\frac{H}{L}\right)_{it} + \alpha_3 (Inst)_{it} + u_i + v_{it}, \quad (4)$$

where $\frac{Y}{L}$ is labor productivity, $\frac{K}{L}$ is capital intensity, $\frac{H}{L}$ is the level of human capital, and $Inst$ is the ECOWAS member states' performances regarding institutional quality measured through some dimensions of the World Bank's CPIA. Detailed information on CPIA indicators used and the channel through which they may affect labor productivity are given in Section III. C.

Potential sources of endogeneity exist, at least in theory, in the empirical relationship to be estimated. Thus, an econometric estimation method that mitigates the potential endogeneity bias that may be generated was employed. Some countries' specific characteristics (e.g., culture or traditional social norms) can explain both their economic performance and the progress made in improving the institutional quality and institutions. Alternatively, their economic performance (in terms of productivity in particular) influences the progress made in improving the institutional

quality and vice versa (reverse causality). Therefore, a fixed-effects regression that allows for control of the country-specific effects, likely to be correlated with the explanatory variables of interest, was employed to consider the first potential source of endogeneity. The potential issue of reverse causality between the explanatory variables and productivity was solved by lagging the former variables by one period relative to the dependent variable.

Thus, the model we finally estimated is given as follows:

$$\log\left(\frac{Y}{L}\right)_{it} = \alpha_0 + \alpha_1 \log\left(\frac{K}{L}\right)_{it-1} + \alpha_2 \log\left(\frac{H}{L}\right)_{it-1} + \alpha_3 (Inst)_{it-1} + u_i + v_{it}. \quad (5)$$

The progress made by a country in the sub-region (particularly in technology) is likely to influence its productivity, including those of other countries through diffusion effects. Thus, considering that no links exist between the productivity levels achieved by countries in the West African sub-region may be quite inappropriate. Therefore, neglecting this situation could undermine the efficiency of the estimators of interest. This issue was solved using the approach of Driscoll and Kraay (1998) to calculate the standard deviations of the estimators.

In addition, given that the individual dimension of the panel ($N = 15$ countries) is larger than the time dimension ($T = 13$), the stationarity test step was not carried out (Baltagi, 2013).

C. Data

Four main sources of data collection were used for this research: ECOWAS data (on multilateral surveillance), World Bank data (on world development indicators), International Labour Organization (ILO) data (on employment), and United Nations Development Programme (UNDP) data (used for the calculation of the Human Development Index). These databases helped in calculating the indicators used in the study, and they are presented below:

1. Labor productivity

As suggested by the neoclassical framework presented in Section III. A, the measure of labor productivity employed in this research is the ratio of the total or sectoral value added to the corresponding total or sectoral level of employment. This measure is widely used in the literature (Chrisman et al., 2017; Kruse et al., 2012). It can potentially be influenced in the right direction by the right public policies (good tax policy, good labor market policy, good education policy, good health policy, and others).

2. Institutional quality

The availability of reliable data on institutional quality is an important constraint in identifying a valid association between public policies and institutions and outcomes of interest—economic growth, productivity growth, foreign direct investment, and others (Williams and Siddique, 2008). The institutional quality is measured through some dimensions of the CPIA, whose indicator definitions are similar to the World Governance Indicators (Kaufmann et al., 2011) and the Doing Business.

These dimensions are as follows:

- 1) The business regulatory environment dimension assesses the extent to which the legal, regulatory, and policy environments promote or hinder private investment, create jobs, and stimulate business productivity. The regulatory environment influences the choices that investors and entrepreneurs make in locating, operating, and expanding their businesses. Their ability to access credit, buy property, collaborate in good understanding with custom services, pay taxes, and conduct other everyday activities efficiently depends on the appropriate regulation of the business environment. Onerous regulations can thwart their activities.
- 2) The property rights and rule-based governance dimension assesses the extent to which private economic activity is facilitated by an effective legal system and a rule-based governance structure in which property rights and contracts are respected. The existence, in countries, of efficient property rights security systems can help facilitate people's access to credit, increase people's incentives to invest, and also increase their work effort.
- 3) The transparency, accountability, and corruption in the public sector dimension assesses the extent to which the executive can be held accountable for its use of funds and the results of its actions by the electorate and the legislature and judiciary, and the extent to which officials in the executive are held accountable for administrative decisions, the use of resources, and the results achieved. Efforts to improve this dimension of the CPIA indicator can result in greater social peace and stability, which is conducive to investment and thus stimulates productivity growth.
- 4) The debt policy dimension assesses the extent to which the increasing debt burden poses risks of unsustainable public debt in the long run. The unsustainability of debt is likely to jeopardize people's future, particularly when it forces governments to devote the bulk of budget revenues to the payment of debt service at the expense of investments in key sectors, such as health, education, and infrastructures that improve labor efficiency and promote progress. Moreover, an unsustainable level of debt is likely to engender reluctance to investment because of the anticipation of tax increases for debt repayment.

Table 1. *Descriptive Table of Variables*

Indicator	Observations	Mean	Sd. error
Primary sector productivity (log)	195	7.019	0.598
Secondary sector productivity (log)	195	8.281	1.003
Tertiary sector productivity (log)	195	7.879	0.975
Overall productivity (log)	195	7.571	0.705
Business regulatory environment	191	3.274	0.443
Property rights and rule-based governance	191	2.926	0.582
Transparency, accountability, and corruption in the public sector	191	2.992	0.673
Debt policy	191	3.374	0.841
Investment per capita (log)	195	6.201	0.893
Average level of education	195	3.473	1.563

Source: Authors' calculations based on ECOWAS (2018), ILO (2018), UNDP (2017), and the World Bank (World Development Indicators, 2017) data.

3. Control variables (Physical capital per capita, human capital)

As suggested by the theoretical model in Section 3, the effects of physical capital and human capital on labor productivity are controlled. The data on physical capital are extracted from the 2018 ECOWAS Multilateral Surveillance Database. More precisely, this variable is approximated by private investment (or private gross fixed capital formation).

Investment per capita is then obtained by relating private gross fixed capital formation to the corresponding volume of employment extracted from the 2018 ILO database.

As human capital is an intangible asset, its measurement remains particularly complex. However, this measurement is approached by the average level of education of the populations in the countries of the sub-region²).

Overall, a marginal increase in each of these variables is expected to have a positive effect on aggregate and sectoral productivity growth. Table 1 gives an overview of the variables used in the econometric analysis.

IV. Empirical Results

In this section, the influence of institutional quality, measured by the four variables described in Section III C., on labor productivity was examined for the ECOWAS sub-region by estimating the econometric model presented in Section III B. We introduced one of one these institutional variables in addition to the control variables in the models because of the strong correlation

2) To make sense when interpreting the results, we do not take the logarithm of this variable in the econometric estimates. Human Development Data Center | Human Development Reports (undp.org)

existing among some of them (see the Appendix).

A. Institutional quality and labor productivity in the primary sector in ECOWAS

The results of the econometric analysis reveal that West African countries' performance improvement regarding the "business regulatory environment" or "property rights and rule-based governance" contributes to higher productivity in the primary sector (Table 2). Specifically, a marginal improvement in these performances (*ceteris paribus*) translates into respective labor productivity accelerations of 17.7% and 11.9% in this sector.

Table 2. *Institutional Quality and Labor Productivity in the Primary Sector in ECOWAS*

Dependent variable: ln(labor productivity in the primary sector)				
Indicator				
$\log\left(\frac{\text{Private GFCF}}{L}\right)_{t-1}$	0.235***	0.232***	0.246***	0.246***
	(0.026)	(0.028)	(0.037)	(0.036)
(Average education level) _{t-1}	-0.024***	-0.045***	-0.020***	-0.023***
	(0.005)	(0.012)	(0.005)	(0.007)
(Business regulatory environment) _{t-1}	0.177***			
	(0.025)			
(Property rights and rule-based Governance) _{t-1}		0.119***		
		(0.027)		
(Transparency, accountability, corruption in the pub. sect.) _{t-1}			0.015	
			(0.029)	
(Debt policy) _{t-1}				0.013
				(0.022)
Observations	176	176	176	176
R-squared (within)	0.40	0.39	0.35	0.35
Fisher Stat.	41.8	43.38	5.99	67.46

Source: Authors; note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

However, improvement in ECOWAS member states' performances in terms of "*transparency, accountability, and corruption in the public sector*" does not result in an increase in productivity in the primary sector. In the same vein, the estimation results do not allow to conclude that a better performance in "*debt policy*" translates into increased productivity in the primary sector.

Furthermore, as suggested by numerous empirical studies, a marginal increase in the level of private investment per worker is associated with an improvement of the primary sector productivity of approximately 0.24% (Esaku, 2020; Vinh, 2019).

Moreover, a rise in the average education level of countries in the sub-region leads to a

decline in labor productivity in the primary sector. This counter-intuitive result could be explained by the fact that the improvement of the level of education in the sub-region is accompanied by the mobility of the better educated people, generally younger and vigorous, from the primary sector to the secondary and tertiary sectors, where productivity is relatively higher. As illustrated in a two-activity model by Taylor and Yunez-Naude (2000), allocating at least parts of the available investment resources (e.g., labor or land) away from crop production toward noncrop production may be beneficial for rural households if the marginal effect of schooling on the net income-productivity of investments of the latter exceeds that of the former (Reimers and Klasen, 2013). Therefore, this mobility contributes to inhibiting the rejuvenation of the labor force in the primary sector (dominated by agriculture), which is poorly mechanized and whose production remains highly dependent on the quantity of labor available.

B. Institutional quality and labor productivity in the secondary sector in ECOWAS

The results suggest that a rise in ECOWAS member states' performances regarding "*transparency, accountability, and corruption in the public sector*" contributes to the increasing labor productivity in the secondary sector.

Table 3. *Institutional Quality and Labor Productivity in the Secondary Sector in ECOWAS*

Dependent variable: ln(labor productivity in the secondary sector)				
Indicator				
$\log\left(\frac{\text{Private GFCF}}{L}\right)_{t-1}$	-0.010	-0.006	-0.030	-0.012
	(0.029)	(0.030)	(0.037)	(0.030)
(Average education level) $_{t-1}$	0.137***	0.139***	0.131***	0.134***
	(0.030)	(0.037)	(0.025)	(0.032)
(Business regulatory environment) $_{t-1}$	0.008			
	(0.039)			
(Property rights and rule-based Governance) $_{t-1}$		-0.038		
		(0.061)		
(Transparency, accountability, corruption in the pub. sect.) $_{t-1}$			0.116**	
			(0.049)	
(Debt policy) $_{t-1}$				0.014
				(0.014)
Observations	176	176	176	176
R-squared (within)	0.03	0.03	0.03	0.03
Fisher Stat.	7.23	6.35	10.04	18.79

Source: Authors; note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

A marginal increase in this indicator is associated with a labor productivity growth in the secondary sector of approximately 11.6%. Beyond this variable, no other dimension of the CPIA indicator, analyzed, has been found to influence labor productivity in the secondary sector.

Finally, the rise in the level of education in the countries of the sub-region contributes to raising labor productivity in the secondary sector. Regardless of the model considered, a marginal increase in the average level of education in the ECOWAS zone leads to an increase of approximately 13.0% in labor productivity in the secondary sector. This result seems to corroborate Taylor and Yunez-Naude's (2000) arguments about the inverse relationship between educational attainment and labor productivity in the primary sector in the sub-region.

C. Institutional quality and labor productivity in the tertiary sector in ECOWAS

The only improvement in the performances concerning "*debt policy*" was found to have an impact on the rise in labor productivity in the tertiary sector in the ECOWAS sub-region.

Table 4. *Institutional Quality and Labor Productivity in the Service Sector in ECOWAS*

Dependent variable: ln(labor productivity in the tertiary sector)				
Indicator				
$\log\left(\frac{\text{Private GFCF}}{L}\right)_{t-1}$	-0.026	-0.018	-0.037	-0.039
	(0.017)	(0.013)	(0.025)	(0.022)
(Average education level) $_{t-1}$	0.004	0.024	0.001	-0.011
	(0.021)	(0.034)	(0.020)	(0.017)
(Business regulatory environment) $_{t-1}$	-0.023			
	(0.042)			
(Property rights and rule-based Governance) $_{t-1}$		-0.053		
		(0.047)		
(Transparency, accountability, corruption in the pub. sect.) $_{t-1}$			0.048	
			(0.044)	
(Debt policy) $_{t-1}$				0.059**
				(0.021)
Observations	176	176	176	176
R-squared (within)	0.03	0.02	0.02	0.05
Fisher Stat.	4.19	4.86	3.46	5.99

Source: Authors; note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

A marginal improvement in ECOWAS' performances for this institutional indicator is associated with a 5.9% increase in productivity in the tertiary sector. A good debt management

policy is associated with good predictability of taxation, which is a key element of the business environment considered by investors. This policy encourages investment and therefore stimulates productivity. Giordano et al. (2017) also found an influence of sovereign debt dynamic on labor productivity in the service sector in Italy.

D. Institutional quality and overall labor productivity

The results suggest that all the variables examined have an influence on the overall labor productivity.

More clearly, an improvement in the performances of ECOWAS countries with regard to the "*business regulatory environment*" is associated with an increase in labor productivity of 9.2%.

Similarly, better performances on "*property rights and rule-based governance*," "*transparency, accountability, corruption in the public sector*," and "*debt policy*" lead to increases in the overall labor productivity of 3.3%, 5.7%, and 6.3% respectively.

Furthermore, the results show that an increase in gross private fixed capital formation per worker has a positive effect on overall labor productivity in the sub-region. More concretely, a 1% increase in investment per worker leads to an 0.11% increase in labor productivity.

Table 5. *Institutional Quality and Labor Productivity in ECOWAS*

Dependent variable: ln(labor productivity in all sectors)				
Indicator				
$\log\left(\frac{\text{Private GFCF}}{L}\right)_{t-1}$	0.114***	0.114***	0.110***	0.112***
	(0.015)	(0.019)	(0.018)	(0.019)
(Average education level) $_{t-1}$	0.030**	0.023*	0.029***	0.018*
	(0.010)	(0.012)	(0.008)	(0.009)
(Business regulatory environment) $_{t-1}$	0.092***			
	(0.018)			
(Property rights and rule-based Governance) $_{t-1}$		0.033***		
		(0.010)		
(Transparency, accountability, corruption in the pub. sect.) $_{t-1}$			0.057***	
			(0.018)	
(Debt policy) $_{t-1}$				0.063***
				(0.014)
Observations	176	176	176	176
R-squared (within)	0.41	0.42	0.39	0.42
Fisher Stat.	27.16	83.99	20.54	83.99

Source: Authors; note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Finally, the relationship between the average level of education of the population in ECOWAS countries and overall labor productivity appears positive, reflecting the idea that educational efforts in this sub-region lead to an acceleration of overall labor productivity.

V. Conclusion

By using documentary, statistical, and econometric analysis of panel data, this research attempted to assess the effect of the institutional quality on productivity in ECOWAS member states.

Although the empirical results support the hypothesis that institutional quality positively affects overall labor productivity in West Africa, specificities were recorded at the sectoral levels.

Increased efforts to improve the "business regulatory environment" and "property rights and rule-based governance" are relevant to raising labor productivity in the primary sector. However, less evidence has been found concerning "transparency, accountability, and corruption in the public sector" and "debt policy."

Similarly, only improvements in the performances in terms of "transparency, accountability, and corruption in the public sector" and "debt policy" were found to be relevant for explaining labor productivity growth in the secondary and tertiary sectors, respectively.

The results also show that an increase in private investment per worker and the rise in the level of education in the West Africa sub-region contribute respectively to increasing labor productivity in the primary and secondary sectors. Counter-intuitively, however, the rise in the average level of education in ECOWAS is associated with a reduction in primary sector productivity. This case can be explained by the low mechanization of agriculture and by the mobility of the educated labor force, essentially young, from the primary sector to those with higher productivity as part of the structural transformation process in which many economies in the West African region are engaged. However, this mobility toward the secondary and tertiary sectors thwarts the rejuvenation of the workforce needed to support production in the agricultural sector.

The results are rich in lessons for the sub-region. They suggest that ECOWAS countries need to step up their efforts to improve the institutional quality. If these efforts are matched with increased labor productivity, they can help improve the competitiveness of goods produced by the countries of this sub-region, allowing them to benefit from the implementation of the AfCFTA agreements. The results also shed light on the need to carry out concrete actions in the direction of the mechanization of agriculture. Such efforts can also help reduce poverty and the high proportion of vulnerable employment in West Africa, particularly in the primary sector.

References

- Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of economic growth*, 1, 385-472. [https://doi.org/10.1016/S1574-0684\(05\)01006-3](https://doi.org/10.1016/S1574-0684(05)01006-3)
- Adamopoulos, T., & Restuccia, D. (2014). The size distribution of farms and international productivity differences. *American Economic Review*, 104(6), 1667-1697. <https://doi.org/10.1257/aer.104.6.1667>
- Alguacil, M., Cuadros, A., & Orts, V. (2011). Inward FDI and growth: The role of macroeconomic and institutional environment. *Journal of Policy Modeling*, 33(3), 481-496. <https://doi.org/10.1016/j.jpoldm.2010.12.004>
- Andersson, M. & Palacio, A. (2016). *Structural change and income inequality—Agricultural development and inter-sectoral dualism in developing world, 1960-2010*. OASIS, No 23. Available at SSRN: <https://ssrn.com/abstract=280966>
- Andersson, M. & Palacio, A. (2017). *Catch up growth and social capability in developing countries: A conceptual and measurement proposal*. OASIS, No. 26, 7-23. Available at SSRN: <https://ssrn.com/abstract=3112803>
- Audretsch, D. B. & Belitski, M. (2020). The role of R&D and knowledge spillovers in innovation and productivity. *European Economic Review*, 123, 103391. <https://doi.org/10.1016/j.eurocorev.2020.103391>
- Baltagi, H. B. (2013). *Econometric Analysis of Panel Data* (5th ed.). Wiley.
- Bhattacharyya, S. (2009). Unbundled institutions, human capital and growth. *Journal of Comparative Economics*, 37(1), 106-120. <https://doi.org/10.1016/j.jce.2008.08.001>
- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5, Part 2), 9-49. <https://doi.org/10.1086/258724>
- Chen, C., Restuccia, D., & Santaaulalia-Llopis, R. (2017). *Land misallocation and productivity* (No. w23128). National Bureau of Economic Research.
- Chrisman, J. J., Devaraj, S., & Patel, P. C. (2017). The impact of incentive compensation on labor productivity in family and nonfamily firms. *Family Business Review*, 30(2), 119-136. <https://doi.org/10.1177/0894486517690052>
- Deininger, K., & Feder, G. (2001). Land institutions and land markets. *Handbook of Agricultural Economics*, 1, 287-331. [https://doi.org/10.1016/S1574-0072\(01\)10009-5](https://doi.org/10.1016/S1574-0072(01)10009-5)
- Deleidi, M., Meloni, W.P., & Stirati, A. (2020). Tertiariation, productivity and aggregate demand: Evidence-based policies for European countries. *Journal of Evolutionary Economics*, 30(5), 1429-1465. <https://doi.org/10.1007/s00191-019-00647-6>
- Dias, J., & Tebaldi, E. (2012). Institutions, human capital, and growth: The institutional mechanism. *Structural Change and Economic Dynamics*, 23(3), 300-312. <https://doi.org/10.1016/j.strueco.2012.04.003>
- Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549-560. <https://doi.org/10.1162/003465398557825>
- Economic Commission for Africa. (2016). *Cabo Verde country profile, report*.
- Economic Commission for Africa. (2016). *The macroeconomic framework for structural transformation of African economies*. Ethiopia: Addis Ababa.
- Economic Commission for Africa. (2017). *Liberia country profile, report*.

- Economic Commission for Africa (2019). *Socio-economic profile for West Africa 2018 and prospects for 2019, report*.
- Esaku, S. (2022). Exports, investment and productivity growth in small firms: A firm-level analysis from Tanzania and Ghana. *Journal of African Business*, 23(2), 400-421. <https://doi.org/10.1080/15228916.2020.1838836>
- Field, A. J. (2008). The impact of the second world war on US productivity growth. *The Economic History Review*, 61(3), 672-694. <https://doi.org/10.1111/j.1468-0289.2007.00404.x>
- Fleisher, B. M., Hu, Y., Li, H., & Kim, S. (2011). Economic transition, higher education and worker productivity in China. *Journal of Development Economics*, 94(1), 86-94. <https://doi.org/10.1016/j.jdeveco.2010.01.001>
- Fu, K., Wennberg, K., & Falkenhall, B. (2020). Productive entrepreneurship and the effectiveness of insolvency legislation: A cross-country study. *Small Business Economics*, 54(2), 383-404. <https://doi.org/10.1007/s11187-018-0040-6>
- Giordano, C., Toniolo, G., & Zollino, F. (2017). Long-run trends in Italian productivity. *Bank of Italy Occasional Paper*, No. 406. <http://dx.doi.org/10.2139/ssrn.3082193>
- Gu, W., & Yan, B. (2017). Productivity growth and international competitiveness. *Review of Income and Wealth*, 63, S113-S133. <https://doi.org/10.1111/roiw.12254>
- Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? *The Quarterly Journal of Economics*, 114(1) 83-116. <http://www.jstor.org/stable/2586948>
- Hong, J. P. (2017). Causal relationship between ICT R&D investment and economic growth in Korea. *Technological Forecasting and Social Change*, 116, 70-75. <https://doi.org/10.1016/j.techfore.2016.11.005>
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicators: Methodology and analytical issues1. *Hague Journal on the Rule of Law*, 3(2), 220-246. <https://doi.org/10.1017/S1876404511200046>
- Krugman, P. (1994). Competitiveness: A dangerous obsession. *Foreign Affairs*, 73, 28.
- Kruse, D. L., Blasi, J. R., & Freeman, R. B. (2012). Does linking worker pay to firm performance help the best firms do even better? *Working Paper*, No. 17745. Cambridge, MA: National Bureau of Economic Research.
- Kusunose, Y., Thériault, V., & Alia, D. (2020). Can customary land tenure facilitate agricultural productivity growth? Evidence from Burkina Faso. *Land Economics*, 96(3), 441-455. <https://doi.org/10.3368/le.96.3.441>
- Lio, M., & Liu, M. C. (2008). Governance and agricultural productivity: A cross-national analysis. *Food Policy*, 33(6), 504-512. <https://doi.org/10.1016/j.foodpol.2008.06.003>
- Mugizi, F. M., & Matsumoto, T. (2021). From conflict to conflicts: War-induced displacement, land conflicts, and agricultural productivity in post-war Northern Uganda. *Land Use Policy*, 101, 105149. <https://doi.org/10.1016/j.landusepol.2020.105149>
- Nakamura, K., Kaihatsu, S., & Yagi, T. (2019). Productivity improvement and economic growth: lessons from Japan. *Economic Analysis and Policy*, 62, 57-79. <https://doi.org/10.1016/j.eap.2018.11.002>
- Oketch, M. O. (2006). Determinants of human capital formation and economic growth of African countries. *Economics of Education Review*, 25(5), 554-564. <https://doi.org/10.1016/j.econedurev.2005.07.003>
- Olayemi, S. O. (2012). Human capital investment and industrial productivity in Nigeria. *International*

- Journal of Humanities and Social Science*, 2(16), 298-307. download (psu.edu)
- Peng, J., Xie, R., Ma, C., & Fu, Y. (2021). Market-based environmental regulation and total factor productivity: Evidence from Chinese enterprises. *Economic Modelling*, 95, 394-407. <https://doi.org/10.1016/j.econmod.2020.03.006>
- Pieri, F., Vecchi, M., & Venturini, F. (2018). Modelling the joint impact of R&D and ICT on productivity: A frontier analysis approach. *Research Policy*, 47(9), 1842-1852. <https://doi.org/10.1016/j.respol.2018.06.013>
- Popoola, O., Alege, P. O., Gershon, O., & Asaleye, J. A. (2019). Human capital channels and productivity growth: Evidence from Nigeria. *Economics and Sociology*, 12(4), 59-73. <https://doi.org/10.14254/2071-789X.2019/12-4/3>
- Pritchett, L. (2001). Where has all the education gone? *The World Bank Economic Review*, 15(3), 367-391. <https://doi.org/10.1093/wber/15.3.367>
- Ranjan, V., & Agrawal, G. (2011). FDI inflow determinants in BRIC countries: A panel data analysis. *International Business Research*, 4(4), 255. <https://doi.org/10.5539/ibr.v4n4p255>
- Reimers, M. & Klasen, S. (2013). Revisiting the role of education for agricultural productivity. *American Journal of Agricultural Economics*, 95(1), 131-152. <https://doi.org/10.1093/ajae/aas118>
- Savadogo, K., Combarry, O. S., & Akouwerabou, D. B. (2016). Impacts of social services on agricultural productivity in Burkina Faso: A distance output function approach. *Mondes en developpement*, 174(2), 153-167. <https://doi.org/10.3917/med.174.0153>
- Shah, M. H. (2016). Financial development and foreign direct investment: The case of Middle East and North African (MENA) developing nations. *University of Haripur Journal of Management*, 1(2), 93-109.
- Taylor, J. E., & Yunez-Naude, A. (2000). The returns from schooling in a diversified rural economy. *American Journal of Agricultural Economics*, 82(2), 287-297. <https://doi.org/10.1111/0002-9092.00025>
- Thirtle, C., Lin, L., & Piesse, J. (2003). The impact of research-led agricultural productivity growth on poverty reduction in Africa, Asia and Latin America. *World Development*, 31(12), 1959-1975. <https://doi.org/10.1016/j.worlddev.2003.07.001>
- Ueshina, M. (2018). The effect of public debt on growth and welfare under the golden rule of public finance. *Journal of Macroeconomics*, 55, 1-11. <https://doi.org/10.1016/j.jmacro.2017.08.004>
- Vinh, N. T. (2019). The impact of foreign direct investment, human capital on labour productivity in Vietnam. *International Journal of Economics and Finance*, 11(5), 97. <https://doi.org/10.5539/ijef.v11n5p97>
- Williams, A., & Siddique, A. (2008). The use (and abuse) of governance indicators in economics: A review. *Economics of Governance*, 9(2), 131-175. <https://doi.org/10.1007/s10101-006-0025-9>

Appendix. *Correlation between the Selected CPIA indicator Dimensions*

	Business regulatory environment	Property rights and rules-based government	Transparency, accountability, and corruption in the public sector	Debt policy
Business regulatory environment	1.00			
Property rights and rules-based government	0.71	1.00		
Transparency, accountability, and corruption in the public sector	0.61	0.75	1.00	
Debt policy	0.54	0.57	0.67	1.00