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The “Africa Rising”: An Exploratory Analysis with the Gross Domestic Product Data

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Abstract

The race toward inclusive development has prompted the researchers to reconsider the drivers of economic growth in Africa in view of the term for achieving the Sustainable Development Goals (SDGs).

The study examined growth of the 54 African countries using the Generalised Method of Moments (GMM) dynamic system estimators, which previous studies have confirmed to be suitable for growth analyses. The coefficients within the models remain stable even after controlling the effects of Sub-Saharan African countries and Lions ones.

As a data source, the main international organisations (UN, WB, IMF) have been used. The covered period is 2010-2019, where the data are more complete. We have used the real per-capita GDP as a dependent variable. The purpose of this research note is an exploration of the determinants of African growth after analysing the recent empirical literature.

Our findings show the significant variables are affecting African growth. A more developed institutional and business environment in African countries can to lead a long-run sustainable growth, but this depends on a sound governance.

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1. Introduction

Africa has experienced a remarkable turnaround in the last decade, with its GDP more than doubling since the millennium. Six of the world's fastest-growing economies are located in Sub-Saharan Africa.

The "African rising" has prompted academics and analysts to reconsider the critical issue of African economic growth. The rapid African growth is affecting firms' competitiveness, and those from developed countries are seeking to enter these emerging markets (Ferrucci et al., 2018; Scalamonti, 2022; Abdu et al., 2022).

Can African markets growth and break with its colonial past? On the other hand, can successfully Africa integrate in the global economy as it has happened in other areas of the world? Despite the difficulties, many African countries are encouragingly drawing up action agendas and implementing sustainable reforms (Mazrui and Wiafe-Amoako, 2015; Heshmati, 2017, 2018; Wiafe-Amoako, 2021).

In the last decade, Africa has experimented the highest levels of growth, however, there are still governance weaknesses. As a result, there have also been studies analysing the determinants of African growth. This means that debate on the determinants of African growth is remained central for economists and scholars (Nafziger, 2012; Kuada, 2014; Mol et al., 2017; Oluwatayo and Ojo, 2018).

The purpose of this research note is an exploration of the determinants of African growth after analysing the recent empirical literature.

Economies in transition – emerging and developing – have rapidly grown, and they have experienced a various socio-economic dynamism (Dallago and Casagrande, 2023). For instance, multilateral and free trade agreements can be important for countries' development and especially for African ones.

Interest in African emerging markets has grown for at least two reasons: (i) governance in developed and developing countries especially in Eastern- and Southern-Asia are concerned about ensuring strategic supplies of raw materials and natural resources to the manufacturing industry; and (ii) the so-called "African lions" – Ethiopia, Ghana, Kenya, Mozambique, Nigeria, and South Africa, have a fast-growing income (IMF, 2019). It expects that the recent African Continental Free Trade Area-AfCFTA agreement would increase African income by 9% from now until 2035.

This paper has structured as follows: (i) the empirical literature analysis, (ii) the data analysis, (iii) concluding remarks and the policy implications.

2. The empirical literature analysis

Development economists have produced many empirical studies about the drivers of growth without obtaining definitive findings. This means that the outcomes can change both over time and based on the countries considered in the panel.

We have analysed the recent empirical literature to identify the explicative variables of African growth. Empirical articles have been extrapolated from the online search-engine *discovered.ed.ac.uk* developed by the University of Edinburgh, by

inserting the following title key: *Africa growth*; filter: *gross domestic product*; time frame: *2011-2022*, articles' type: *business and economics*. In the Table 1, we show the clustering of the empirical literature on African growth.

Table 1. The clustering of the empirical literature, authors, and summary

Clusters	Authors	Summary
	Gaibulloev and Sandler (2011)	They have found the effects of domestic and transnational terrorism on the per-capita income growth of 51 African countries from 1970 to 2007 by accounting for the cross-sectional spatial dependence of conflicts. The findings suggest that transnational terrorism has a modest marginal impact on per-capita income growth and that domestic terrorist events, surprisingly, do not affect it. According to the authors, the modest impact of transnational terrorism on African growth indicates that developing economies are more resilient to terrorism than is commonly assumed.
	Narayan et al. (2011)	They examine the relationship between democracy and economic growth in 30 SSA countries, finding mixed support for the Lipset theory in the long-run.
	Bertocchi and Guerzoni (2012)	They explore the empirical determinants of fragility in SSA over the period 1992-2007 by using a battery of development indicators and finding that institutions are the main cause of the fragility. The probability that a country will be fragile increases with the restrictions on civil liberties and with the increase in revolutions. In fact, the per-capita GDP growth and investments are significant explanatory variables, but the economic growth has an uncertain net impact as it reduces the country's fragility, while the investments increase it.
	Jaunky (2013)	He studies the linkage between democracy and economic development in 28 SSA countries over the period 1980–2005 using the GMM model. He has found that economic growth precedes democracy in the short-run, while bi-directional causality is found in the long-run. At last, the effects on growth are positive.
GOVERNANCE	Fayissa and Nsiah (2013)	They use fixed and random effects models, and GMM models for investigating the governance effect on African growth. They have found that governance contributes to the growth gap of African countries, which depends on the countries' income.
CLIMATE	Ahlerup et al. (2016)	They examine how an impartial government toward ethnic groups can improve the growth of 20 SSA countries beginning in the late Nineties. They have found that countries with a governance perceived as impartial have a better chance of growth.
	Akobeng (2016)	He investigates whether the linkage between growth and poverty reduction can be strengthened across the institutions in 41 SSA countries over the period 1981-2010 by using the GMM estimator. He finds that improvements in governance are significant for supporting the link between growth and poverty reduction in SSA.
	Toh (2016)	He investigates the long-run growth drivers of a group of SSA emerging economies. His findings indicate that the economies diverge more on economic characteristics, institutional quality, and governance than the slow-growth group.
	Epaphra and Kombe (2017)	They examine the impact of institutions on African growth using the GMM, fixed- and random-effects models over a sample of 48 countries from 1996 to 2016, discovering that political stability is the most important factor in explaining African per-capita GDP growth. Other significant explicative variables are openness, gross fixed investment, human capital formation, and foreign direct investments.
	Ogbuabor et al. (2020)	They examine the impact of governance on economic growth in Western Africa after the global economic recession using a panel of 13 countries and find a negative relationship between governance and growth. Specifically, corruption, government ineffectiveness, political instability, the weakness of the rule of law, and the absence of accountability are the main obstacles to growth, while the per-capita GDP, gross fixed investment, employment, and foreign direct investment are the other significant drivers of growth in the region.
	Ahmed (2012)	He explores the relationship between military expenditure, external debts, and growth in a sample of 25 SSA countries over the period 1988–2007, by finding that military expenditure has a positive impact on the external debt of African countries and GDP growth affects their total debt stock in a negative way.
	Kagochi et al. (2013)	They investigate the relationship between financial development and growth in a sample of SSA countries and find that stock-market development has a positive effect on growth. Instead, the other financial development indicators have an uncertain impact on the growth, while the control variables such as capital formation, schooling, and life expectancy have a positive effect on the growth.
	<Mbate (2013)	He investigates the impact of the domestic debt on growth and the private sector in 21 SSA countries over the period 1985-2010 by using GMM models. He has found that domestic debt crowds out the private sector and deters capital accumulation.
	Asongu (2014)	He uses a VAR approach to examine the effects of monetary policy on African growth from 1987 to 2010, testing whether monetary policy variables affect growth in the short and long run, but with inconclusive results.
FINANCIAL	Walle (2014)	He examines the long-run relationship between the financial development and growth in 17 SSA countries over the period 1975-2005 by applying an error correction term based on the co-integration tests for considering the cross-sectional dependence between the countries. He has found that there is a long-run relationship between financial development and growth, although there is a weak reverse causal impact.
DEVELOPMENT,		

DEBT AND PUBLIC EXPENDITURE	Shaaba and Ngepah (2018)	On a panel of 35 African countries from 1990 to 2015, they analyse the relationship between military expenditure, industrialization, and growth, by finding that industrialisation and growth precede military expenditure in the short- and long-run, but that military power can be used to achieve industrialisation and growth under given conditions.
	Mensah et al. (2019)	They used ADL models to exaggerate the impact of public debt on growth in 38 African countries from 1970 to 2015, discovering that public debt stifles growth when it exceeds 50% of the country's GDP.
	Arizala et al. (2020)	They investigate the effects of government expenditures and revenues on growth in SSA from 1990 to 2016. They discovered that cutting off public investments has a greater impact on growth than cutting off public consumption or increasing revenues. Attempts to consolidate public finances, on the other hand, have had a negative impact on short- and medium-term growth, which has been mitigated by financial adjustments.
	Ehigiamusoe and Lean (2020)	They examine the effects of the public debt and deficit on growth in Western Africa by implementing empirical strategies that account for various econometric issues. They find that the impact of financial development on growth depends on the levels of debt and deficit. When debt and deficit levels exceed a certain threshold, the marginal effects of financial development on growth are negative.
	Idun (2021)	He believes that the use of technology in financial systems can contribute to African growth in the long run, provided that other growth drivers such as human capital formation, openness, and infrastructural capital are present in the countries. However, financial development produces divergent responses to growth within African country clusters. Financial innovation in COMESA and ECCAS causes growth, while that in ECOWAS and ARABMAG has been found dangerous to growth.
ICT ADVANCEMENT	Batuo (2015)	He finds that ICT infrastructures are positively related to the growth of a panel of 44 African countries over the period 1990-2010. A dynamic panel data approach has been employed. Findings show that additional ICT investments have a positive impact on growth.
	Donou-Adonsou et al. (2016)	They examine the impact of the ICT infrastructures on the growth of 47 SSA countries over the period 1993-2012, by finding the positive impact of internet adoption and mobile technology.
	David (2019)	From 2000 to 2015, he investigates the impact of ICT infrastructure on growth as measured by the GDP and HDI index in 46 African countries. He uses a composite index as a proxy for the ICT depth finding and finds that it contributes to the growth.
	Haftu (2019)	Using GMM models with internet and mobile telephone penetration rates as proxies for ICT depth, he discovered that an increase in mobile telephone penetration rate contributes to growth while an increase in internet penetration rate does not, as the countries remain in a relatively immature state in terms of technology use.
	David and Grobler (2020)	They investigate the impact of ICT infrastructure on growth in African countries. They discovered that the depth of ICT has a positive impact on growth.
	Ngameni et al. (2022)	They study the impact of the ICT infrastructure on the growth-gap between China and 30 African countries over the period 2000-2016, by using internet penetration and ICT-good exports as proxies. Their results suggest that the technological-gap has a positive impact on African growth. The increase in Chinese ICT investments could benefit African economies through the positive externalities induced.
FOREIGN CAPITAL INFLOWS	Alemu and Lee (2015)	For a panel of 20 middle-income economies and one for 19 low-income economies over the period 1995-2010, they have used GMM models that found a positive relationship between foreign aid and growth only in the low-income countries, while the growth is subordinated to foreign investments and oil-export revenues in the middle-income countries.
	Adusah-Poku (2016)	He investigates the impact of foreign capital inflows – foreign aid, foreign direct investments, and personal remittances – on SSA growth from 1990 to 2010, concluding that all three inflows have a positive and significant impact on growth in the long run, while personal remittances are significant only in the short run.
	Cai et al. (2018)	They investigate the effects of aid on African growth using panel data from 47 African countries from 1980 to 2013, discovering that international aid promotes growth but its effectiveness is dependent on governance.
	Hagan and Amoah (2019)	Using an instrumental variable approach to panel data, they investigate whether the effect of foreign investments on African growth is dependent on the resilience of the financial system. They have found that when the financial markets are fragile, as they are in some African countries, the foreign investment inflows can have a small positive effect on growth.
	Kumar and Saleh (2021)	They use co-integrated vector autoregressive analysis to examine the output and prices of tradable and non-tradable sectors in SSA countries. They find that aids have a heterogeneous effect on sectoral output and prices.
HUMAN	Anoruo and Elike (2015)	They analyse the causal relationship between human capital formation and growth in a panel of 29 African countries. The results show a bidirectional causality between the two variables and reinforce the nexus between education and growth.
	Kayaoglu and Naval (2017)	They simulate the trend for the formation of human capital, the urbanisation rate, and per-capita GDP in African countries. They contend that in the short run, a low or negative return on education investments can be attributed to systemic transitory adjustment or urbanisation costs.
	Ibrahim	He examines the effect of human capital formation on the financial depth and growth in 29 SSA countries over the period 1980-2014 by using GMM models. They discovered that human capital formation and financial depth both promote growth in

HUMAN CAPITAL FORMATION	(2018)	1980-2014 by using GMM models. They discovered that human capital formation and financial depth both promote growth in the short and long run, with financial depth stimulating human capital formation.
	Anetor (2020)	He analyses the impact of human capital formation on foreign direct investment and growth in 28 SSA countries over the period 1999-2017. He finds that SSA countries do not have a sufficient, high-quality workforce for absorbing and transforming the FDI spillovers towards growth.
	Nwani (2021)	He examines the role of human capital formation in relation to foreign aid and growth in SSA countries from 1985 to 2019. He has found that foreign aid and human capital formation have a negative impact on growth, nevertheless, this impact is mitigated by the interaction between human capital formation and the foreign aid, which reduces the negative effect of the foreign aid on growth.
OPENNESS	Chang and Mendy (2012)	They examine the effects of openness on growth in 36 African countries over the period 1980-2009, by using fixed-effects models. Their results show that openness and investments positively impact growth, with North Africa being the best, while foreign aid, domestic savings, and gross fixed investments show a negative impact.
	Brueckner and Lederman (2015)	They use instrumental variables approach to estimate the reciprocal effects of openness and growth in SSA discovering that growth has a negative effect on openness while having a positive effect on growth.
	Osei et al. (2019)	They compare the influencing factors of openness in low- and low-middle-income African countries using the GMM approach. They have found that growth robustly enhances openness in low-income countries, while the impact is not robust and is largely negative in low- income countries. This suggests to them that higher growth is associated with less openness. Furthermore, the growth-openness relationship is non-linear and has an inverted U-shape in low-income countries. This means that an increase in the per-capita GDP improves openness, but beyond a given threshold, further increases penalise openness.
	Udeagha and Ngepah (2021)	They use a non-linear ARDL approach for exploiting the relationship between openness and growth in South Africa over the period 1960-2016, by finding that there is a short- and long-run causality from the openness to the growth.
CHINESE INFLUENCE	Doku et al. (2017)	They use fixed-effect models and Granger causality tests to examine the effects and causal nexus of Chinese FDIs on African growth over a sample of 20 countries from 2003 to 2012. They have found that Chinese FDIs increase the GDP growth rate in Africa, and, all other things being equal, they have found that there is a unidirectional causality between GDP growth and Chinese FDIs in Africa.
	Koomson-Abekah and Nwaba (2018)	They primarily examine the effects of Chinese FDIs on African growth using ADL models and Granger causality tests on data dating back to the millennium. They discovered that Chinese FDIs have a negative impact on African growth in both the short and long run because their inflows are directed toward capital-intensive activities with a lower impact on employment. They also discovered that FDIs from the United States and Chinese trade had little impact on African growth. The Granger-causality test has confirmed that there is a unidirectional relationship between growth and the other variables, with the exception of human capital formation, which does not show causality. More FDI inflows to labour-intensive activities will, according to the authors, boost African growth by lowering unemployment.
URBANISATION	Bruckner (2012)	He analyses the effects of the value-added growth in the agricultural sector and per-capita GDP growth on the urbanisation rate in African countries over the period 1960-2007. He has found that an increase in the urbanisation rate has a negative effect on the per-capita GDP growth on average, but this does not affect the urbanisation rate. At last, he has found that a decrease in the value-added in agriculture leads to increase in urbanisation.
	Onjala and K'Akumu (2016)	They found that the relationship between GDP and urbanisation in sub-Saharan African countries differs from that in developed economies. Their results indicate that the traditional thesis is still valid in the SSA countries, in fact they urbanise without growth. However, new trends emerge when urbanization coexists with growth.
	Seetanah and Rojid (2011)	They analyse the drivers of growth in the selected African COMESA member countries and find that gross fixed investments, openness, and human capital formation are the most important drivers of growth, as well as governance, financial depth, international aid, and spillover effects from foreign capital inflows.
	Mijiyawa (2013)	He explores the drivers of African growth over the period 1995-2005, by finding that investments, access to finance, governance improvements, exports, and the share of value-added from agriculture have positively contributed to the growth.
	Akhmat et al. (2014)	They investigate the relationship between the public health indicators and growth in Africa from 1975 to 2011, by establishing that there exists a moderately bidirectional causality between the variables.
	Elhiraika et al. (2014)	They investigate the role of manufacturing transformations along the global value chains in 50 growing African countries. By using GMM models, they find that GDP increases when human capital formation drives the output growth in manufacturing, at last, this has a positive impact on the GDP growth rate, reducing the volatility.
	Pinkovskiy and Sala-i-Martin (2014)	They look at the recent growth in Africa in relation to poverty. They estimate the income distribution, the poverty rate, and the inequality index in African countries over the period 1990-2011. They show that African poverty is falling rapidly, and the growth that began in the second half of the Nineties has decreased income inequality, even in countries with geographical or historical disadvantages.

OTHER ADDITIONAL VARIABLES	Addison et al. (2016)	They investigate the commodity price shocks in SSA countries dependent on agricultural commodities, by finding that there are inconclusive proofs of unanticipated price variations as responses to variations in per-capita GDP.
	Calderon and Boreux (2016)	They investigate if African growth was accompanied by improved structural and macroeconomic indicators, if African countries had liquidity, and if governments implemented countercyclical policies following the global economic crisis between 1995 and 2008. They have found that improvements in the macroeconomic framework have allowed some African countries to better resist the global crisis.
	Nsiah et al. (2016)	They examine the determinants of growth in 48 African countries from 1980 to 2011, by taking into account the economic impacts of neighbouring countries. They control for some drivers of growth, such as the gross fixed capital investment, openness, aids, and inflation, by finding a significant level for the gross fixed investment and education, as well as, for the spatial linkages across countries. When recessions occur, neighbouring SSA countries with similar growth compete for resources.
	Kedir et al. (2017)	They estimate the additional investments required to achieve the SDGs and reduce poverty in Africa by 2030. They have found that estimates of the required growth rates vary widely across the African subregions and countries. Countries and subregions with low initial poverty levels and higher responsiveness to the poverty contrast will need less development assistance.
	Oluwatayo and Ojo (2018)	They examine growth's drivers and poverty reduction in African countries, by finding that African development is advancing inequality and poverty. In other words, this is manifested through persistent inequality, poverty, armed conflict, and indiscriminate young people's migration towards the developed countries in search of better living conditions.
	Shittu et al. (2020)	They study the impacts of FDIs, globalisation, and governance on the growth of Western Africa over the period of 1996-2016 using ADL models. They discover a positive relationship between globalization, governance, and growth. Even if the findings on the relationship between FDI and growth are inconclusive, governance has a positive impact on FDIs and growth. The other considered drivers of growth are employment, gross fixed capital investment, and government expenditure, whose effects on growth are negative on the first two and positive on the last.
	Franses and Welz (2022)	They propose a forecasting model with a single equation for estimating the GDP growth rate in 52 African countries starting from 1960 and by including lagged growth rates from the other countries. Furthermore, co-integration relationships have been computed to capture potential common stochastic trends.

Source: our elaboration.

3. The data analysis

3.1. Presentation of the variables and econometric model

We have used a set of explicative variables extracted from the UN-dataset (UNCTAD and UNDP), and the WB-dataset (World Development Indicators-WDI and World Governance Indicators-WGI) over the period 2010-2019 for all 54 African countries[1]. Time-series have been integrated where necessary on few missing values with data from the IMF (World Economic Outlook-WEO), otherwise from secondary sources (primarily the CIA-World Factbook survey). As a result, the reliability of our panel-dataset is high at the 98%.

In Table 2, we show the main descriptive statistics and proxies for the used variables. An acceptable level of variability over the time dimension (within-variance) exists, while the cross-sectional dimension (between-variance) shows a higher level of variability for some variables.

Table 2. Main statistics and description of the used variables, log-values

		Standard Deviation	

Variables	Mean	Deviation		Proxy and source
		Within	Between	
Real per-capita GDP	7.308	0.194	1.060	Middle income per-capita as proxy of economic growth UNCTAD (USD)
FDI Inflows	5.321	1.174	1.398	FDI inflows of as proxy of activities of international investors UNCTAD (% of GDP)
Inflation	4.903	0.343	0.314	Consumer price index as proxy of monetary stability UNCTAD (trend reconstructed with the annual average growth rate)
Openness	4.206	0.201	0.441	Openness degree by country as proxy of international integration UNCTAD (% of GDP)
Natural Resources Rent	2.029	0.349	0.932	Available resources rent as proxy of revenues from raw materials WB-WDI (% of GDP)
Government Expenditure	2.771	0.198	0.411	General government consumption as proxy of the bureaucracy WB-WDI (% of GDP)
Productivity	4.526	0.049	0.047	Gross value added at factors cost as proxy of productivity WB-WDI (% of GDP)
External Debt	3.455	0.296	0.669	External debt stock as proxy of the credit-worthiness of country WB-WDI (% of GNI)
Unemployment	2.054	0.127	0.743	Labour market efficiency WB-WDI (% of labour force)
Military Expenditure	0.999	0.295	0.553	Expenditures for keeping the armed forces WB-WDI (% of GDP)
Health Expenditure	1.901	0.189	0.484	Domestic general health expenditure as proxy of public health care WB-WDI (% of general government expenditure)
Received Remittance	4.529	0.926	2.103	Transfers from the migrant labour force as proxy of foreign incomes WB-WDI (% of GDP)

Net ODA	5.925	0.489	1.431	Net official development assistance as proxy of international aids WB-WDI (% of GNI)
Urban Population	3.702	0.070	0.468	Urban population level as proxy of the growth of urban areas WB-WDI (% of total population)
Human Capital Formation	3.610	0.367	0.197	Human capital formation as proxy of educational level UNDP (%)
Gross Fixed Investment	3.122	0.213	0.374	Internal structural investments as proxy of infrastructural capital WB-WDI (% of GDP)
ICT diffusion	8.813	0.266	0.541	Mobile cellular subscriptions as proxy of ICT diffusion WB-WDI (per 100 people)
Governance Climate	3.489	0.119	0.444	Composite index as proxy for the governance by Scalamonti (2021) our elaboration from WB-WGI (%)
Imports [Exports] from [to] HDCs	3.745 [3.735]	0.167 [0.383]	0.482 [0.758]	Merchandise imports [exports] from [to] high-developed countries (HDCs) WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Latin America or Caribbean	4.744 [3.016]	0.593 [1.013]	1.206 [1.663]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in Latin America or Caribbean WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Europe or Central-Asia	5.286 [3.512]	0.611 [1.047]	1.124 [1.703]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in Europe or Central-Asia WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Eastern-Asia or Pacific	7.167 [6.081]	0.318 [0.933]	0.589 [1.472]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in Eastern-Asia or Pacific WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Southern-Asia	6.010 [5.182]	0.418 [1.106]	0.995 [1.728]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in Southern-Asia WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in North	4.846	0.466	1.309	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in North Africa or Middle East

Africa or Middle East	[3.618]	[1.029]	[1.881]	WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Sub-Saharan Africa	6.999 [6.845]	0.470 [0.548]	1.350 [1.826]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in Sub-Saharan Africa WB-WDI (% of total merchandise imports [exports])
Sub-Saharan Africa Countries	0.907	0.000	0.293	Control dummy: "1" for "Western-, Central-, Eastern-, Southern-Africa"; "0" for "Northern-Africa"
Lions' Countries	0.111	0.000	0.317	Control dummy: "1" for "Ethiopia, Ghana, Kenya, Mozambique, Nigeria, South Africa"; "0" for "others"

Source: our elaboration.

We have used the two-step GMM dynamic system estimator (Arellano and Bover, 1995; Blundell and Bond, 1998; Bond et al., 2001). This procedure is more efficient than the differencing, especially for panel data with a large N (cross-country dimension: 54) and a small T (time dimension: 10) like ours.

We use the finite sample bias correction by Windmeijer (2005) for robust standard errors in the models. An unbiased GMM dynamic system estimator is dependent on the validity of the instruments used (Roodman, 2009a, b). Higher p-values from the Sargan and Hansen tests under the null hypothesis of no overidentification and instrument validity confirm the correct specification of models. We have collapsed instruments to limit their unnecessary proliferation.

The dependent variable is real per-capita GDP, and the dynamic specification is given by the dependent variable with one order of lags in models. Firstly, we have estimated models with the regressors at time t and then at time t-1 to consider also the lagged effect on variables of macroeconomic policies. Finally, Sub-Saharan African and Lions countries effects have been added to check the coefficient's stability in models. These have been estimated with the open-source statistical software Gretl, as below [1]:

$$Y_{i,t} = \alpha Y_{,-1} + \beta X_{,t|-1} + \theta D + \lambda + \quad + \quad _{,}; [1]$$

where, $Y_{i,t}$ is the vector of the dependent variable; $Y_{,-1}$ is the vector of the dependent variable with one order of lags in the right side of the equation; $X_{,t|-1}$ is the vector of time-variant explanatory variables, which capture the lagged effect of macroeconomic policies and those of persistence on trade flows, when they are with one order of lags in the models; D is vector of control dummy variables for a check on the estimates – time dummies included; λ and are the vectors of the idiosyncratic unobserved individual and time-specific effect; finally, α, β and θ are vectors of the coefficients that want to be estimated, and $_{,}$ is the vector of the idiosyncratic error-terms in the regressions.

3.2. Findings and interpretation

The real per-capita GDP with one order of lags is the variable with the highest magnitude in models, and it is expected of us (Table 3). This is a clear indication of confirmation of the past's high persistence effect on growth as well as the

appropriateness of the dynamic approach used. The variable is significant in all models.

Inflation is usually expected to negatively impact growth, in fact, it is not uncommon to find it associated with a more unstable economic system (Kagochi et al., 2013; Asongu, 2014; Walle, 2014).

Its significance may depend on the competitive devaluation in the correlated foreign exchange markets implemented by policy-makers with the purpose of incentivising import-export.

Openness is significant and it is not uncommon for more liberalised economies to be better positioned along global value chains, benefiting from positive externalities on productivity produced by learning-by-doing in trade, collaboration, or competition on international markets (Chang and Mendy, 2012; Elhiraika et al., 2014; Brueckner and Lederman, 2015; Koomson-Abekah and Nwaba, 2018; Osei et al., 2019; Udeagha and Ngepah, 2021; Abdu et al., 2021).

More openness can increase productivity, facilitate industrial upgrading, promote technological and institutional advancement, and, overall, increase capital accumulation. As a result, intermediate manufacturing imports and goods exports rise, especially if commodities are not available within the markets. The productivity reflects the economy's ability to generate high-value-added output, and higher productivity has important implications for growth. Indeed, its magnitude is significant in models, and this can be evidence of the African countries' growth along the global value chains.

According to the models, significant variables of African growth are merchandise trade from or to LMDCs in Latin America or the Caribbean, merchandise trade from or to LMDCs in Eastern Asia or the Pacific and Southern Asia – primarily China and India. Furthermore, the exports to HDCs and LMDCs in Europe or Central-Asia also are significant.

The significance of merchandise trade from or to different LMCDs clusters can be determined by the prevalence of linkages between South-South economies. However, we have also found evidence that confirms North-South links – the exports to HDCs are significant. This highlights the linkage along global value chains between African markets and developed countries.

Natural resource rent is also significant. Countries rich in natural resources are usually characterised by their high dependency on them, their low economic diversification, and the volatility of their commodity prices and revenues. Therefore, a negative sign can refer to the well-known crowding-out effect due to an abundance of natural resources and commodities – the "Dutch disease".

The effect of received remittances is also significant. This suggests that migrant workers' earnings are contributing to African growth in some way (Adusah-Poku, 2016). This means that remittance inflows by migrant workers are linked with the population's migration rates from underdeveloped countries to developed countries that have better growth prospects. Remittances have an effect on the economies toward which they are directed through the well-known Keynesian multiplier. Even if all the incomes of households receiving remittances are consumed, they can still stimulate investment through the households whose incomes have increased.

The impact of net-ODA on African growth is also significant. However, they can crowd-out growth if they are not directed

by the governance toward the social and economic development of the country or toward poverty reduction within it (Alemu and Lee, 2015; Adusah-Poku, 2016; Cai et al., 2018).

The urban population growth and the governance climate are significant in the models (Bruckner, 2012; Onjala and K'Akumu, 2016; Oluwatayo and Ojo, 2018). Usually, economic growth follows the population increase and the extension of urban areas.

The institutional stability, the liberalisation and privatisation policies, the bureaucratic quality, and the efficiency of the financial systems can positively influence the country's growth. Therefore, governance climate is an important indicator of the level of development reached by an economy.

In other words, an improvement of the institutional framework and the business environment can produce spillover effects on growth. Democracy and political rights promote growth, while, the protectionism of the particular interests of the elites depresses it (Gaibulloev and Sandler, 2011; Narayan et al., 2011; Bertocchi and Guerzoni, 2012; Jaunky, 2013; Fayissa and Nsiah, 2013; Ahlerup et al., 2016; Toh, 2016; Epaphra and Kombe, 2017; Ogbubor et al., 2020).

Last but not least, the ICT diffusion variable has found significance. Over the last few decades, it has been discovered that the use of new technologies, such as the internet or mobile communication, has been significant to African growth. However, the significance or lack thereof can depend on the variable used as a proxy (Batuo, 2015; Donou-Adonsou et al., 2016; David, 2019; David and Grobler, 2020; Ngameni et al., 2022). Indeed, Haftu (2019) acknowledges that many people in Africa are still lagging behind in terms of technology adoption.

Finally, in line with our expectations the gross fixed investment and unemployment rate have been found significant (Seetanah and Rojid, 2011; Calderon and Boreux, 2016; Shittu et al., 2020). These variables have an effect on the mechanism of capital accumulation in the income equation, which then has an effect on investments and consumption.

Table 3. The GMM-dynamic system estimator

	Model (1)			**Model (2)**			**Model (3)**			**Model (4)**		
	Real per-capita GDP											
	Coeff.	***Std. Err.***		***Coeff.***	***Std. Err.***		***Coeff.***	***Std. Err.***		***Coeff.***	***Std. Err.***	
Real per-capita GDP (t-1)	0.718	0.104	***	0.704	0.106	***	0.834	0.135	***	0.830	0.133	***
FDI Inflows	0.004	0.005		0.004	0.005							
FDI Inflows (t-1)							-0.011	0.007		-0.011	0.007	
Inflation	-0.025	0.038		-0.023	0.039							
Inflation (t-1)							0.097	0.040	**	0.098	0.042	**
Openness	-0.055	0.044		-0.051	0.040							
Openness (t-1)							0.096	0.041	**	0.097	0.041	**
Natural Resources Rent	0.040	0.024	*	0.036	0.023							

Natural Resources Rent	-0.040	0.024		-0.036	0.023							
Natural Resources Rent (t-1)							-0.002	0.033		0.001	0.032	
Government Expenditure	0.024	0.030		0.025	0.030							
Government Expenditure (t-1)							-0.045	0.039		-0.043	0.039	
Productivity	-0.283	0.252		-0.274	0.255							
Productivity (t-1)							0.321	0.176	*	0.328	0.185	*
External Debt	-0.034	0.032		-0.037	0.030							
External Debt (t-1)							0.032	0.022		0.029	0.023	
Unemployment	0.050	0.040		0.052	0.040							
Unemployment (t-1)							-0.059	0.030	**	-0.060	0.029	**
Military Expenditure	-0.018	0.033		-0.010	0.034							
Military Expenditure (t-1)							0.025	0.047		0.035	0.047	
Health Expenditure	0.000	0.031		0.006	0.033							
Health Expenditure (t-1)							0.000	0.041		0.004	0.042	
Received Remittance	-0.027	0.011	**	-0.027	0.010	***						
Received Remittance (t-1)							-0.011	0.018		-0.010	0.017	
Net ODA	-0.073	0.038	*	-0.080	0.039	**						
Net ODA (t-1)							-0.029	0.033		-0.032	0.034	
Urban Population	0.066	0.051		0.071	0.052							
Urban Population (t-1)							0.138	0.063	**	0.140	0.063	**
Human Capital Formation	-0.006	0.014		-0.006	0.014							
Human Capital Formation (t-1)							0.013	0.013		0.012	0.013	
Gross Fixed Investment	0.023	0.044		0.013	0.045							
Gross Fixed Investment (t-1)							-0.051	0.028	*	-0.056	0.030	*
ICT diffusion	0.101	0.056	*	0.108	0.057	*						
ICT diffusion (t-1)							0.078	0.074		0.086	0.075	
Governance Climate	0.231	0.082	***	0.244	0.081	***						
Governance Climate (t-1)							0.146	0.118		0.153	0.113	
Imports from HDCs	-0.014	0.037		-0.023	0.036							
Imports from HDCs (t-1)							-0.025	0.040		-0.036	0.038	
Imports from LMDCs in Latin America or Caribbean	-0.023	0.010	**	-0.023	0.010	**						
Imports from LMDCs in Latin America or Caribbean (t-1)							-0.006	0.011		-0.007	0.011	
Imports from LMDCs in Europe or Central-Asia	0.001	0.011		0.003	0.011							
Imports from LMDCs in Europe or Central-Asia (t-1)							-0.020	0.015		-0.017	0.014	
Imports from LMDCs in Eastern-Asia or Pacific	0.004	0.020		0.003	0.019							
Imports from LMDCs in Eastern-Asia or Pacific (t-1)							-0.037	0.026		-0.042	0.027	
Imports from LMDCs in Southern-Asia	-0.011	0.016		-0.015	0.016							
Imports from LMDCs in Southern-Asia (t-1)							0.013	0.014		0.011	0.015	
Imports from LMDCs in North Africa or Middle East	-0.003	0.011		-0.005	0.011							
Imports from LMDCs in North Africa or Middle East (t-1)							0.001	0.013		0.002	0.012	

Imports from LMDCs in Sub-Saharan Africa	-0.044	0.021	**	-0.056	0.026	**						
Imports from LMDCs in Sub-Saharan Africa (t-1)							-0.027	0.026		-0.035	0.029	
Exports to HDCs	-0.038	0.022	*	-0.036	0.021	*						
Exports to HDCs (t-1)							0.022	0.014		0.023	0.013	*
Exports to LMDCs in Latin America or Caribbean	0.016	0.006	***	0.018	0.006	***						
Exports to LMDCs in Latin America or Caribbean (t-1)							0.006	0.005		0.007	0.006	
Exports to LMDCs in Europe or Central-Asia	-0.014	0.006	**	-0.012	0.005	**						
Exports to LMDCs in Europe or Central-Asia (t-1)							0.005	0.007		0.007	0.007	
Exports to LMDCs in Eastern-Asia or Pacific	0.004	0.008		0.003	0.007							
Exports to LMDCs in Eastern-Asia or Pacific (t-1)							-0.015	0.009	*	-0.016	0.008	**
Exports to LMDCs in Southern-Asia	-0.011	0.006	*	-0.011	0.006	*						
Exports to LMDCs in Southern-Asia (t-1)							-0.001	0.006		-0.001	0.006	
Exports to LMDCs in North Africa or Middle East	-0.004	0.007		-0.003	0.007							
Exports to LMDCs in North Africa or Middle East (t-1)							0.003	0.004		0.004	0.004	
Exports to LMDCs in Sub-Saharan Africa	-0.013	0.010		-0.014	0.009							
Exports to LMDCs in Sub-Saharan Africa (t-1)							0.011	0.009		0.009	0.010	
Sub-Saharan Africa Countries				yes						yes		
Lions' Countries				yes						yes		
Time Dummies	yes			yes			yes			yes		
Standard Error	0.109			0.108			0.117			0.117		
Regressors Wald-Test (p-value)	(0.000)			(0.000)			(0.000)			(0.000)		
Time Dummies Wald-Test (p-value)	(0.000)			(0.000)			(0.000)			(0.000)		
AR (2) Test (p-value)	(0.541)			(0.507)			(0.428)			(0.410)		
Non-Observations (%)	54 (10)			54 (10)			54 (10)			54 (10)		
Observations (%)	486 (90)			486 (90)			486 (90)			486 (90)		
Cross-Sectional Units	54			54			54			54		
Sargan Test (p-value)	(0.433)			(0.404)			(0.102)			(0.096)		
Hansen Test (p-value)	(0.578)			(0.582)			(0.386)			(0.400)		
Instruments	49			51			49			51		

*Note: *** significance for α = 0.01 ** significance for α = 0.05 * significance for α = 0.10.*

Source: our elaboration.

4. Concluding remarks and policy implications

Our exploratory analysis shows the significant variables are affecting African growth. A more developed institutional and business environment in African countries can to lead a long-run sustainable growth, but this depends on a sound governance. Indeed, after the obvious per-capita GDP with one order of lags, governance is the variable with the highest magnitude. However, among the significant variables, higher openness has had a positive impact on African growth. To

which the significance found also for inflation can be linked, as competitive devaluations positively contribute to exports and income growth.

In particular, exports to LMCDs in Latin American and Caribbean have had a positive impact, and this can depend on favourable trades between developing economies that, for example, have a similar institutional and business environment, or that have the same technology available. However, the HDCs export with one order of lags also contributed positively to African growth, although more marginally and showing a minimal significance. This highlights the linkage along global value chains between African markets and developed countries. Finally, the variable that captures the ITC diffusion has also contributed positively to African growth. As a result, the use of new technologies as the internet or mobile are important to growth.

In the next future, African growth will be dependent on a sound governance, but countries should improve their institutional and business environments in order to achieve more inclusive and sustainable growth (Acemoglu et al., 2019; Lin, 2021). African governance can lead the growth, both by pursuing incentive policies on exports rather than imports, or, by improving the opportunities for firms (Glegg et al., 2021). Sound institutions and forward-looking policies can lead firms toward progress, technological specialisation, and wellbeing (Kurtishi-Kastrati, 2013; Collier, 2014; Trebilcock, 2015; Kim and Heshmati, 2019; Farahane and Heshmati, 2020; Babajide et al., 2021).

However, changes in institutional structures are generally burdened: (i) by a heavy inertial mass to change in defence of the elites' interests; and (ii) by the slowness of adaptive responses typified by many societies. As a result, the acceptance of a new techno-economic paradigm as well as a new socio-institutional system is a difficult process, as the country will have to bear a greater sunk-cost due to the specificity of its historical development path and the variety characterising the capitalistic system as an expression of the institutional structure (Acemoglu and Robinson, 2012; Granovetter, 2017).

The socio-economic and institutional transition processes will inevitably lead to internal contradictions within capitalism and to paradigmatic fluctuations. Recurring crises are showing that the governance of globalisation is an important issue related to capitalism (Dallago and Casagrande, 2023).

The capitalist system there is still a certain selfish impulse to the capital accumulation, such that intrinsic instability is not its failure, but constitutes its vital impulse (Razin, 2022). Therefore, the capitalism is changing by its nature, and its ability to self-production does not contribute to making the socio-economic system stable for too long.

In other words, the social progress depends on the choices made by the agents and the probability that an endogenous shock to the system occurs, such that it triggers a dynamic process of change (Hallett et al., 2010). This process would evolve the system for incremental leaps and the alternative solutions prospected would be those close to the optimal points of the Paretian-frontier. It is precisely the proximity of the socio-economic system to such Pareto-efficient points that triggers change, which makes mobile over time the steady-state achieved by the system. This means that perturbations, triggered by the agents within the socio-economic system, push it towards the "natural" search for possible Nash's equilibriums, which would then be chosen among those sustaining and not among those responding to the maximisation logic (Festré, 2021). Finally, this socio-economic insight could then be well formalised in successful studies and with a

scientific rigour within a mathematical model defining the axioms.

The global pandemic and war in Eastern Europe are showing that global governance is an important issue at the current stage of globalisation (Cowling and Tomlinson, 2011; Autor et al., 2016; Eichengreen, 2018; Saccone, 2021). The evolution of the world economy has for too long been left solely to the regulatory automatisms of the markets, and this has increased social inequalities.

The trajectory followed by globalisation is progressively abrading the stability and social cohesion in the advanced and emerging economies, as it is not consciously governed. Globalisation, on the other hand, can foster convergence between countries while also increasing economic and political competition between them by causing a disruption in global balances (Heshmati and Lee, 2010; Valli, 2018; Obstfeld, 2020; Marelli and Signorelli, 2022).

For instance, difficulties in multilateral trade negotiations within the World Trade Organisation-WTO have resulted in a generalised focus shift toward regional agreements, which have grown in number and complexity over the last decade. African countries signatories to the AfCFTA agreement have accepted to limit their governance's unilateral action in order to jointly improve their attractiveness. The AfCFTA agreement may be the biggest trade area in the world, with which the African countries could enhance the position of their manufacturing systems along the global value chains and reach sustainable development in the direction of the SDGs. Nonetheless, the AfCFTA agreement is burdened by significant lags in its agenda.

A greater attention has then been given to the growth-wellbeing relationship in recent years. Two commonly adopted indicators are per-capita GDP and the Human Development Index-HDI by the United Nations. The first is widely used, and it is annually available for all countries, although it measures only the economic dimension of development and suffers from some methodological issues, it remains a reliable growth index. The second is better, but data may not be available for all countries.

In other words, HDI is a composite and synthetic indicator measuring, on average, the country's performance based on three aspects: life expectancy at birth, schooling, and income. However, another indicator that considers the social impacts also is the Social Progress Index-SPI, developed by Porter et al. (2014) starting from the works by Sen, North, and Stiglitz. This index measures society's ability to satisfy basic human needs and improve people's quality of life, so that everyone can aspire to achieve the best possible personal fulfilment. As a result, the HDI and SPI-index are well-being indicators that prioritise social progress over economic progress.

Footnotes

[1]Northern-Africa: Algeria, Egypt, Libya, Morocco, Tunisia; Western-Africa: Benin, Burkina-Faso, Cabo Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo. Central-Africa: Burundi, Cameroon, Central African Rep., Chad, Congo Dem. Rep., Congo Rep., Equatorial Guinea, Gabon, Liberia, São Tomé

and Principe. Eastern-Africa: Comoros, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, Uganda. Southern-Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe. Sub-Saharan Africa: Western-, Central-, Eastern- and Southern-Africa.

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