

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

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## Abstract

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

The purpose of this research note is an exploration of the determinants of African growth after analysing reference literature to select the explanatory variables and conducting a replication study.

We examine growth in a panel of 54 African countries using the generalised method of moment system estimators (GMM-sys). Using GMM-sys to estimate growth models is not novel, and many previous studies have used this appropriate approach for growth analyses. 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. Based on the time-series data collected and the estimation methodology used, our findings show the variables that have had a significant impact on African growth from 2010 to 2019. The real per-capita GDP with one order of lags is the variable with the highest magnitude in all models, and it is expected of us. We have found evidence that there is trade dependency with the Southern and Eastern Asian developing countries' cluster, mainly led by the economies of the “two Asian giants”, i.e., China and India, but also that there is a third trade dependency with the developing countries' cluster in Europe and Central Asia, mainly led by the Russian economy.

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## 1. Introduction

Since the new millennium, Africa has had considerable GDP growth that has more than doubled. Over the last decade, six of the fastest-growing economies in the world were in Africa.

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

African countries that gained independence from colonial rule in the sixties experienced their own model of cultural, social, and economic development. According to the theory of development, all societies advance through similar stages of development, and this means that underdeveloped countries today are in the same condition as developed countries were in the past (Schwab, 2014, 2015). This means that underdeveloped countries are not merely a primitive version of developed countries, but they are unique in their features and structures (Hofstede et al., 2010).

Underdeveloped countries can accelerate their development, at instance, with capital flows and technology transfers, as well as increased integration in the global economy. Since countries' political and macroeconomic frameworks can be unstable, emerging African markets are often considered critical.

In other words, labour markets may be inadequately regulated, the rule of law may be poor, and corruption may be high, logistical difficulties may depend on infrastructural deficiencies, or trade may be difficult due to the absence of codes of conduct and best practices.

Can African markets grow and break with their colonial trading past? On the other hand, can Africa successfully integrate in the global economy as it has in other areas of the world?

Despite the difficulties, many African countries are encouragingly drawing up action agendas and implementing structural reforms (Nafziger, 2012; Kuada, 2014; Mazrui and Wiafe-Amoako, 2015; Mol et al., 2017; Heshmati, 2017, 2018; Oluwatayo and Ojo, 2018; Wiafe-Amoako, 2021).

In the last decade, Africa has experimented with high levels of growth, however there are still governance weaknesses. This means that debate on the determinants of African growth is central for economists and scholars. Economies in transition – emerging and developing – are experiencing a certain socio-economic dynamism and will have new challenges to face in the future (Dallago and Casagrande, 2023).

Interest in African emerging markets is growing at least for three reasons: (i) governance in developed and developing countries, especially in Eastern and Southern Asia, is concerned about ensuring the supply of strategic raw materials to manufacturing industries; (ii) the so-called “African lions” – Ethiopia, Ghana, Kenya, Mozambique, Nigeria, and South Africa – have experienced fast growth (IMF, 2019); (iii) it expects that the African Continental Free Trade Area Agreement-AfCFTA will increase income in countries by at least 9% by 2035 (World Bank, 2020, 2022). Multilateral and free trade agreements will be important for the success of African countries, as a consequence of the economic and geopolitical processes that are affecting the globalised world.

Therefore, the purpose of this research note is an exploration of the determinants of African growth after analysing reference literature to select the explanatory variables for conducting a replication study.

The rest of the paper has been structured as follows: (i) the reference literature, (ii) the data analysis, (iii) conclusions.

## 2. The reference literature

We have found the reference literature to select the explanatory variables of African growth 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*.

A clustering of the reference literature on African growth is shown in Table 1. Development economists have produced many empirical studies about the drivers of growth. However, their findings can change over time and based on the countries considered. As a result, authors can explain growth in a different way based on the specific research questions or analysis methods they adopt. From the reference literature, it emerges that differences in economic policy among countries can explain their gaps in economic growth.

Neoclassical economic theory considers capital accumulation as a driver of growth, but endogenous growth models have also highlighted the key role of employment, productivity, human capital formation, and technology, as a result, unemployment and low knowledge capital cause slow growth (Solow, 1956, 1957; Lucas, 1988; Romer, 1990; Grossman and Helpman, 1990, 1991; Barro and Sala-i-Martin, 1992, 1997).

In other words, development can depend on public and private investments, foreign direct investments, and international aid. The latter, if granted on the basis of the level of development reached by the recipient countries, has proven to be better. Moreover, in a globalised world, a part of trade is along global value chains. For example, African trade with China has intensified as a result of diplomatic actions in countries rich in natural resources.

From our clustering over the reference literature, the most questioned variable in empirical studies is the governance climate. The institutional level reached by countries affects their business environment.

In other words, there is a positive nexus between the quality of institutional and business environment with growth, but it requires sound governance (Acemoglu and Robinson, 2012; Acemoglu et al., 2019; Babajide et al., 2021; Festré, 2021; Glegg et al., 2021; Lin, 2021; Razin, 2022). Indeed, studies suggest that productivity, innovation, and stable macroeconomic framework can affect growth based on the quality of institutional and business environment in the country.

This cluster analysis has been used to determine which explanatory variables to include in econometric models. We develop our models starting from the macroeconomic determinants of growth most frequently used in the empirical studies, such as openness, inflation, unemployment, external debt, net-ODA, FDI inflows, received remittances, natural resource rent, urbanisation, public expenditure, fixed and human capital formation, innovation, productivity, and last but not least the governance climate.

Furthermore, the academic and political debate on the trade-off between efficiency in resource allocation and public interventionism in the economy led us to separately consider in our models the variables related to public expenditure, fixed and human capital formation, innovation, and productivity.

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

Clusters	Authors	Summary
GOVERNANCE CLIMATE	Gaibullov 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.
	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.
	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 explanatory variables are openness, gross fixed investments, human capital formation, and foreign direct investments.
	Ogbusabor 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 investments, employment, and foreign direct investment are the other significant drivers of growth in the region.
FINANCIAL	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.
	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.

<b>DEVELOPMENT, DEBT AND PUBLIC EXPENDITURE</b>	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 to be dangerous to growth.
<b>ICT ADVANCEMENT</b>	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.
<b>FOREIGN CAPITAL INFLOWS</b>	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.
	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.
<b>HUMAN CAPITAL FORMATION</b>	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.
	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 (2018)	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 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.
<b>OPENNESS</b>	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.
	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.
<b>CHINESE INFLUENCE</b>	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.
<b>URBANISATION</b>	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 Rojidi (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	(COUNTRY)	
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 investments 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. Variables and econometric model

We have used a set of explanatory 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<sup>1</sup>. Time-series have been integrated, when necessary, on few missing values with data from the IMF (World Economic Outlook-WEO), otherwise from secondary sources (CIA-World Factbook's country surveys). As a result, the reliability of our panel-dataset is at the 98%.

In Table 2, we show the main descriptive statistics and proxies for the variables used. An acceptable level of variability over the time dimension exists, while the cross-sectional dimension shows a higher level of this for some variables. At Table A.1 in the Annex, we show the statistical association between variables, which anyway is not excessive.

**Table 2.** Main statistics and description of the used variables.

Variables	Mean	Standard Deviation		Proxy and source
		Within	Between	
Real per-capita GDP	2,687	963.0	3,330	Middle income per-capita as proxy of economic growth UNCTAD (USD)
FDI Inflows	4,985	4,606	5,729	FDI inflows of as proxy of activities of international investors UNCTAD (% of GDP)
Inflation	189.7	603.4	372.7	Consumer price index as proxy of monetary stability UNCTAD (trend % with the annual average growth rate)
Openness	75.96	19.48	41.60	Openness degree by country as proxy of international integration UNCTAD (% of GDP)
Natural Resources Rent	10.59	5.323	9.637	Available resources rent as proxy of revenues from raw materials WB-WDI (% of GDP)
Government Expenditure	16.66	4.166	7.443	General government consumption as proxy of the bureaucracy WB-WDI (% of GDP)
Productivity	91.55	4.312	4.475	Gross value added at factors cost as proxy of productivity WB-WDI (% of GDP)
External Debt	40.15	13.12	27.04	External debt stock as proxy of the credit-worthiness of country WB-WDI (% of GNI)
Unemployment	9.149	0.922	7.285	Labour market efficiency WB-WDI (% of labour force)
Military Expenditure	3.395	16.18	10.51	Expenditures for keeping the armed forces WB-WDI (% of GDP)

Health Expenditure	6.504	1.403	3.144	Domestic general health expenditure as proxy of public health care WB-WDI (% of general government expenditure)
Received Remittances	3.591	2.103	4.407	Transfers from the migrant labour force as proxy of foreign incomes WB-WDI (% of GDP)
Net ODA	8.225	6.361	9.972	Net official development assistance as proxy of international aids WB-WDI (% of GNI)
Urban Population	44.77	4.138	18.52	Urban population level as proxy of the growth of urban areas WB-WDI (% of total population)
Human Capital Formation	39.70	12.89	6.808	Human capital formation as proxy of educational level UNDP (%)
Gross Fixed Investments	23.62	5.454	8.258	Internal structural investments as proxy of infrastructural capital WB-WDI (% of GDP)
ICT diffusion	77.91	15.47	35.60	Mobile cellular subscriptions as proxy of ICT diffusion WB-WDI (per 100 people)
Governance Climate	35.62	2.363	12.72	Composite index as proxy for the governance by Scalamonti (2021) our elaboration from WB-WGI (%)
Imports [Exports] from [to] HDCs	46.78 [52.12]	6.338 [10.84]	16.77 [23.34]	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	2.092 [1.136]	0.868 [1.372]	1.928 [2.210]	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	3.429 [1.347]	1.424 [1.792]	3.068 [1.533]	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	15.40 [11.85]	4.141 [10.26]	7.087 [14.14]	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	6.607 [6.655]	4.345 [5.026]	5.896 [10.58]	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 Africa or Middle East	2.380 [2.098]	1.102 [1.941]	2.291 [3.559]	Merchandise imports [exports] from [to] low- and middle-developed countries (LMDCs) in North Africa or Middle East WB-WDI (% of total merchandise imports [exports])
Imports [Exports] from [to] LMDCs in Sub-Saharan Africa	21.41 [22.80]	7.088 [7.955]	21.24 [21.02]	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.

Our estimation strategy examine growth using the Generalised Method of Moment System estimators (GMM-sys). We have computed over the time-series 2010-2019 the average value every two time-units, then having a stationary time-series of five years. Using GMM-sys to estimate growth models is certainly nothing new, and many previous studies have utilised this approach for growth analyses, therefore, it is suitable for a replication study such as ours.

We have adopted the "two-step" GMM-sys estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). This procedure is more efficient than the differencing, especially for a panel dataset as ours, where N is less than T. In other words, this estimator allows correcting for endogeneity when using a panel with variables that are potentially endogenously determined (Bond et al., 2001).

By using the orthogonality conditions, the GMM estimators allow efficient estimation even in the presence of heteroskedasticity. Especially, the GMM-sys then takes into account weakly exogenous instruments, and it is also relevant for short panel-data. As a result, we have also used the finite sample bias correction by Windmeijer (2005) for robust standard errors in the models.

Finally, an unbiased GMM-sys estimator depends on the validity of the instruments (Roodman, 2009a, b). Instruments should be correlated with endogenous instrumented variables while conforming to the orthogonality condition to prevent errors (Baum, 2003). A high p-value for Sargan and Hansen is confirmation of the correct specification of models under the null-hypothesis of non-overidentification and instrumental validity.

On the one hand, Sargan relies on the assumption of homoscedastic errors, but this puts limitations on the strength of the test when the assumption is weak. On the other hand, the test is not exposed to the weaknesses of a large number of instruments, unlike the Hansen test.

Based on our heterogeneous dataset, there is a high probability of idiosyncratic shocks in each country, and there is a potential violation of the homoskedasticity assumption. To consider the Sargan test alone may be misleading, while considering both tests can be more convenient. However, the Hansen test fits our case better. We have also tested the cross-sectional dependence with the Pesaran (2021) test to control if units (N) in the panel are uncorrelated, as there may be common effects for all units due to unobserved variables.

The dependent variable is real per-capita GDP, and the dynamic specification is given by the same dependent variable with one order of lags into models. We have estimated models with regressors at time t, and t-1 to consider also the lagged effect of macroeconomic policies on variables, or persistence effect on the trade. Sub-Saharan African and Lions countries dummies have then been added to grasp the effect.

The models have been estimated with the open-source statistical software Gretl, as below [1]:

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

where,  $Y_{it}$  is the vector of the dependent variable;  $Y_{i,t-1}$  is the vector of the dependent variable with one order of lags in the right side of the equation;  $X_{i,t-1}$  is the vector of time-variant explanatory variables, which grasp the lagged effect of macroeconomic policies and those of persistence on the trade when they are with one order of lags in the models;  $D$  is vector of control dummy variables, time dummies included to prevent a contemporaneous correlation due to time-related shocks;  $\lambda$  and  $\epsilon_{it}$  are the vectors of the idiosyncratic unobserved individual and time-specific effect; finally,  $\alpha$ ,  $\beta$  and  $\theta$  are vectors of the coefficients that want to be estimated,  $\epsilon_{it}$  is the vector of the idiosyncratic error-terms in the regressions.

### 3.2. Findings and interpretation

Estimated models with the significant variables are shown in Table 3. The estimations are stable and models are robust to specification tests. In the Annex, at the Table A.2 and A.3, we show additional models for controlling the variables of the macroeconomic framework and merchandise trade.

The real per-capita GDP with one order of lags is the significant variable with the highest magnitude in all models, and it is expected of us. This is a confirmation of the dynamic approach's suitability for capturing the effects of past policies and trade.

Inflation could be 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).

However, its significance and positive magnitude for the variable with one order of lags may be affected by competitive devaluations in the related foreign exchange markets implemented by policy-makers to encourage import-export, otherwise, it may be related to short-term assessments of labour market efficiency.

Openness is significant and it is not uncommon for more liberalised economies to be better positioned along global value chains, at instance, benefiting from positive externalities on productivity by learning-by-doing in trade, or by collaborations and 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 the manufacturing industry's upgrading, promote technological and institutional advancement, finally, increase capital accumulation. As a result, intermediate manufacturing imports and goods exports rise. Thus, productivity reflects the manufacturing industry's ability to produce a value-added to outputs.

A higher productivity has important implications for growth. Nevertheless, the variable in below models is not significant, but it is in the model shows in the Annex, although with the negative sign. This evidence may depend on the positioning of countries' manufacturing industry along the global value chains.

Natural resource rent is 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. As a result, a negative sign for the variable with one order of lags refers to a crowding-out effect, i.e., the Dutch disease due to an abundance of natural resources and commodities.

FDI inflows can concur to growth in different way in developing and emerging economies, however their proofs can be contrasting (Poku, 2016; Shittu et al., 2020; Hagan and Amoah, 2020). Indeed, we have found FDI inflows negatively contribute to growth. Nevertheless, this evidence is not strong and estimated coefficient is low. In other words, this evidence can depend on the complementarity degree and substitution effect between the FDIs and governmental policies on domestic investments and human capital formation, otherwise, by the increased competition in markets.

As a result, after removing the effect of FDI inflows from model, the effect of received remittances has been found to be significant. Remittances have an effect on the economies to which they are directed through the Keynesian multiplier. Even if all the income is consumed by the households that received the remittances, this would indirectly stimulate the exogenous component of demand, as there will be a general increase in aggregate income. This suggests that migrant workers' earnings are contributing to African growth (Adusah-Poku, 2016).

Remittance inflows have a linkage with population growth and migration rates from underdeveloped countries to developed countries with better growth prospects. Indeed, the urban population growth with one order of lags is also significant in models (Bruckner, 2012; Onjala and K'Akumu, 2016; Oluwatayo and Ojo, 2018). Economic growth follows the population increase and the extension of urban areas and global cities, but this depends on sound governance.

The institutional quality and stability positively influence the countries' growth. In other words, an improvement of the institutional and business environment can produce spillover effects on growth.

The governance climate is another important indicator of the level of development reached by an economy. Even if it is not significant in below models, it is significant in the model shows in the Annex.

The effect of net-ODA is not significant. International aid can crowd-out growth if it is not directed by the governance toward social and economic progress or poverty reduction (Alemu and Lee, 2015);

Adusah-Poku, 2016; Cai et al., 2018). Indeed, democracy and political rights promote growth, while, the protectionism of elite's interests 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 has not found significance, even if the use of new technologies as the internet or mobile have been found to be significant to growth in studies. However, its significant or absence may depend on the variable used as proxy (Batuo, 2015; Donou-Adonsou et al., 2016; David, 2019; David and Grobler, 2020; Ngameni et al., 2022). Moreover, according to Haftu (2019) many people are still lagging behind in Africa in adopting new information and communication technologies.

In line with our expectations the gross fixed investments and unemployment rate have been found to be significant (Seetanah and Rojidi, 2011; Calderon and Boreux, 2016; Shittu et al., 2020). These variables impacted on the income equation and labour market.

As well, external debt has been found to be significant. This means that African countries have needed to finance growth (Mbate, 2013; Kedir et al., 2017; Mensah et al., 2019; Ehigiamusoe and Lean, 2020; Idun, 2021).

The macroeconomic variables related to public spending, such as government and health expenditure, and human capital formation, are non-significant in models (Seetanah and Rojidi, 2011; Akhmat et al., 2014; Mijiyawa, 2013; Nsiah et al., 2016; Franses and Welz, 2022). However, assessing these impacts may be difficult, especially in developing economies, because they could be related to unconsidered exogenous variables in models (Pinkovskiy and Sala-i-Martin, 2014; Boreux and Calderon, 2016).

The government expenditure is a proxy for bureaucratic size of government. It can be associated with negative impacts on growth, and the issue in allocation of available resources (Arizala et al., 2020).

While, a more training or educational level is associated with higher growth (Kagochi et al., 2013; Kayaoglu and Naval, 2017; Ibrahim, 2018; Anetor, 2020; Nwani, 2021). However, the direct and indirect impact on growth may be positive, negative, or neutral.

Finally, the effect of the military expenditure has been found to be significant and with a negative sign in the model shown in the Annex (Ahmed, 2012; Shaaba and Ngepah, 2018).

In the Annex, we show models with variables for African countries' merchandise trade across clusters of developed and developing countries, as specified by the World Bank Group researchers.

These additional variables are needed to consider the globalisation process and should contribute to explaining the countries growth. As a result, it is necessary to include these variables within our analysis framework.

In the models shown in the Annex at Table A.3, the significant merchandise trade variables for African growth are lagged imports from cluster of HDCs and exports to cluster of HDCs with a negative impact, as well as lagged exports to cluster of HDCs with a positive impact. Furthermore, we have found a proof of a linkage with the cluster of developing economies in Eastern-Asia or Pacific, and those in Southern-Asia, mainly driven by China and India fast growing economies. Furthermore, we also found third evidence for the cluster of developing economies in Europe or Central-Asia, mainly led by Russia.

In the former cluster, imports and exports have been found to be significant and negatively affecting growth, while in the second, exports have negatively affected growth. Their statistical significance can depend on the linkages found by the studies analysing the development in the South-South framework.

However, we have also found evidence confirming linkages between countries in the North-South framework. These two proofs highlight the trade relationship existing along global value chains between African markets and developed and developing countries.

**Table 3.** The GMM-system models.

	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)		Model (6)							
	Real per-capita GDP																	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.						
Real per-capita GDP (t-1)	1.054	0.166	***	1.067	0.148	***	0.998	0.155	***	0.951	0.130	***	0.871	0.125	***	1.133	0.171	***
FDI Inflows	-0.006	0.015		-0.002	0.012		-0.008	0.013		-0.009	0.012		-0.014	0.008	*			
FDI Inflows (t-1)	0.007	0.008		0.006	0.008		0.004	0.008		0.005	0.007		0.004	0.008				
Inflation	-0.663	0.145	***	-0.631	0.145	***	-0.586	0.134	***	-0.639	0.165	***	-0.534	0.125	***	-0.713	0.153	***
Inflation (t-1)	0.894	0.214	***	0.827	0.210	***	0.795	0.216	***	0.874	0.227	***	0.771	0.200	***	0.927	0.205	***
Openness	-0.211	0.102	**	-0.210	0.099	**	-0.207	0.109	*	-0.146	0.095		-0.137	0.108		-0.221	0.085	***
Openness (t-1)	0.242	0.098	**	0.227	0.082	***	0.234	0.090	***	0.196	0.086	**	0.201	0.082	**	0.253	0.081	***
Natural Resources Rent	0.056	0.037		0.072	0.032	**	0.055	0.033	*	0.038	0.036		0.031	0.043		0.081	0.041	**
Natural Resources Rent (t-1)	-0.044	0.032		-0.060	0.031	*	-0.058	0.035	*	-0.040	0.029		-0.047	0.033		-0.053	0.029	*
Government Expenditure	-0.107	0.071								-0.100	0.079					-0.082	0.070	
Government Expenditure (t-1)	0.049	0.094								0.099	0.082					-0.005	0.095	
Productivity	-0.383	0.338		-0.415	0.291		-0.316	0.308								-0.505	0.337	
Productivity (t-1)	-0.172	0.272		-0.048	0.251		0.011	0.316								-0.201	0.203	
External Debt	-0.240	0.053	***	-0.218	0.050	***	-0.235	0.060	***	-0.215	0.053	***	-0.225	0.068	***	-0.214	0.053	***
External Debt (t-1)	0.229	0.057	***	0.206	0.056	***	0.227	0.067	***	0.219	0.060	***	0.223	0.070	***	0.202	0.056	***
Unemployment	-0.108	0.054	**	-0.135	0.059	**	-0.116	0.062	*	-0.111	0.051	**	-0.098	0.060		-0.137	0.059	**
Unemployment (t-1)	0.103	0.050	**	0.109	0.055	**	0.096	0.056	*	0.089	0.046	*	0.085	0.050	*	0.121	0.053	**
Military Expenditure	-0.019	0.070								-0.016	0.075					-0.032	0.062	

Military Expenditure (t-1)	0.040	0.091					0.030	0.085			0.068	0.086
Health Expenditure	-0.011	0.065					-0.031	0.060			-0.002	0.064
Health Expenditure (t-1)	-0.028	0.060					-0.004	0.056			-0.027	0.055
Received Remittances	0.007	0.009	0.002	0.009	0.003	0.010	-0.002	0.008	-0.004	0.010	0.005	0.008
Received Remittances (t-1)	0.011	0.009	0.015	0.009	0.010	0.008	0.009	0.008	0.007	0.008	0.020	0.012 *
Net ODA	0.014	0.051	0.014	0.049	0.003	0.051	-0.012	0.043	-0.022	0.044	0.029	0.051
Net ODA (t-1)	0.018	0.039	0.029	0.042	0.009	0.039	0.009	0.046	-0.014	0.038	0.043	0.044
Urban Population	-0.454	0.375	-0.716	0.381 *	-0.523	0.330	-0.534	0.345	-0.341	0.295	-0.764	0.410 *
Urban Population (t-1)	0.452	0.398	0.733	0.374 *	0.563	0.334 *	0.560	0.374	0.411	0.323	0.755	0.419 *
Human Capital Formation	0.003	0.029			0.003	0.028			0.002	0.028		
Human Capital Formation (t-1)	0.032	0.027			0.032	0.025			0.031	0.028		
Gross Fixed Investments	0.102	0.059 *			0.082	0.060			0.052	0.062		
Gross Fixed Investments (t-1)	-0.058	0.062			-0.041	0.059			-0.034	0.064		
ICT diffusion	-0.058	0.064	-0.032	0.063	-0.043	0.067					-0.056	0.060
ICT diffusion (t-1)	-0.033	0.070	-0.052	0.073	-0.030	0.080					-0.064	0.065
Governance Climate	0.046	0.158	0.131	0.156	0.086	0.176	0.072	0.150	0.037	0.165	0.086	0.156
Governance Climate (t-1)	-0.005	0.221	-0.150	0.228	-0.055	0.261	0.012	0.205	0.094	0.235	-0.081	0.213
Sub-Saharan Africa Countries	yes		yes		yes		yes		yes		yes	
Lions' Countries	yes		yes		yes		yes		yes		yes	
Time Dummies	yes		yes		yes		yes		yes		yes	
Standard Error	0.092		0.095		0.092		0.093		0.093		0.095	
Regressors Wald-Test (p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Time Dummies Wald-Test (p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
AR (2) Test (p-value)	(0.748)		(0.980)		(0.921)		(0.572)		(0.621)		(0.715)	
Non-Observations (%)	54 (20)		54 (20)		54 (20)		54 (20)		54 (20)		54 (20)	
Observations (%)	216 (80)		216 (80)		216 (80)		216 (80)		216 (80)		216 (80)	
Cross-Sectional Units	54		54		54		54		54		54	
Sargan Test (p-value)	(0.424)		(0.521)		(0.184)		(0.334)		(0.043)		(0.728)	
Hansen Test (p-value)	(0.779)		(0.845)		(0.685)		(0.718)		(0.607)		(0.943)	
Pesaran Test (p-value)	(0.351)		(0.366)		(0.421)		(0.272)		(0.410)		(0.283)	
Instruments	49		39		43		41		39		43	

Note: \*\*\* significance for  $\alpha = 0.01$  \*\* significance for  $\alpha = 0.05$  \* significance for  $\alpha = 0.10$ .

Source: our elaboration.

## 4. Conclusions

### 4.1. Concluding remarks

Although this replication study can marginally contribute to expanding the specialised literature on African growth, nevertheless, it introduces an element of novelty by analysing African growth in relation to specific openness degrees proxied by merchandise imports and exports with the clusters of developed and developing countries as defined by the World Bank Group researchers. Therefore, based on the time-series data collected and estimation methodology used, our results show the variables that significantly have influenced African growth from 2010 to 2019.

Furthermore, about the question we have raised in the introduction, where it asks whether Africa can break with its colonial commercial past, we have found proofs of the existence of a trade dependency added to that with the cluster of developed countries, in which certainly the ex-colonising countries are situated. Indeed, we have found evidence that there is trade dependency with the cluster of developing countries in Southern and Eastern Asian, mainly led by the economies of the "two Asian giants", i.e., China and India, but also that there is a third trade dependency with the cluster of developing countries in Europe and Central Asia, mainly led by the Russian economy.

A more developed institutional and business environment should lead to sustainable long-run African growth, but this depends on sound governance. As a result, governance climate has been found to be significant in the models for controlling the variables of the macroeconomic framework shown in the Annex at Table A.2.

The significance found in the import from LMDCs in Eastern-Asia or Pacific, export to LMDCs in Southern-Asia, and export to LMDCs in Europe or Central-Asia can depend on favourable trades between developing economies that, at instance, have a similar institutional and business environment, or which have a similar technological gap respect to developed countries. However, the significance found in the trade with HDCs highlights the linkage along global value chains between African markets and developed ones.



Global value chains have expanded in the new millennium, and low transport costs, low trade barriers, few embargoes, as well as technological and financial spillovers, have made this possible, but this has also meant greater uncertainty in the markets, which are then closely interconnected with each other (World Bank, 2020, 2022). This means that economies in transition have to face negative aspects related to globalisation. As a result, there is a trade-off between the lowering of trade barriers, and technological advancements, which derives from an international specialisation of productions, and the exposure of countries and their firms to economic and political unbalances and shocks (Togati and Visaggio, 2016).

Especially, in developing countries, trade in semi-finished products has intensified firms' activities along global value chains, however, these goods may escape from national accounting due to the absence of international accounting harmonisation (Wolf and Zedillo, 2015). As a result, products transit from one country to another after they have had an increase in value equal to the labour cost, in turn, this latter may have been unaccounted. This may mean that a "country-factory" can show macroeconomic structures characterised by only consumed income, as small economies focusing on import-export activities with a dominant manufacturing production.

Finally, the primary limitation of our analysis with panel data is that African countries cannot share the same growth function. This may explain why some variables related to public expenditure, innovation, or the human capital formation have not been found to be significant in this study. Moreover, growth is not stable over time and it results from the different endowments of factors, therefore, countries' competitiveness evolves at distinct stages (Schwab, 2014, 2015). In addition, there are also cultural factors that can contribute to promoting growth and explaining the gap between countries (Hofstede et al., 2010).

#### 4.2. Policy implications

In the future, African growth could depend more on 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 could lead the growth, both by pursuing incentive policies on exports rather than imports, or, by improving the opportunities for firms (Glegg et al., 2021). Therefore, 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).

In the capitalist system there will be 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 near 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 a "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).

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 automatism 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. Therefore, the HDI and SPI-index are well-being indicators prioritising the social progress respect to economic one.

#### Footnotes

<sup>1</sup> 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 Príncipe. 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.

Annex

Table A.1. The correlation matrix.

	Real per-capita GDP	FDI Inflows	Inflation	Openness	Natural Resources Rent	Government Expenditure	Productivity	External Debt	Unemployment	Military Expenditure	Health Expenditure	Received Remittances	Net ODA	Urban Population	Human Capital Formation	Gross Fixed Investment	ICT diffusion	Governance Climate	Imports From HDCs	Imports from LMDCs in Latin America or Caribbean	Imports from LMDCs in Europe or Central-Asia	Imports from LMDCs in Eastern-Asia or Pacific	Imports from LMDCs in Southern-Asia	Imports from LMDCs in North Africa or Middle East	Imports from LMDCs in Sub-Saharan Africa	Exports to HDCs	Exports to LMDCs in Latin America or Caribbean	Exports to LMDCs in Europe or Central-Asia	
Real per-capita GDP	1.000																												
FDI Inflows	-0.030	1.000																											
Inflation	-0.059	-0.060	1.000																										
Openness	0.349	0.405	-0.066	1.000																									
Natural Resources Rent	0.217	0.097	-0.039	-0.049	1.000																								
Government Expenditure	0.113	0.161	-0.003	0.271	-0.094	1.000																							
Productivity	0.042	-0.082	0.075	-0.099	0.330	-0.065	1.000																						
External Debt	0.205	0.301	-0.016	0.492	-0.285	0.150	-0.225	1.000																					
Unemployment	0.329	-0.027	0.035	0.413	0.003	0.358	0.126	0.071	1.000																				
Military Expenditure	0.144	-0.056	0.009	0.010	0.221	0.058	0.051	-0.080	0.130	1.000																			
Health Expenditure	0.210	-0.174	-0.090	-0.034	-0.311	0.203	-0.228	0.110	0.257	-0.087	1.000																		
Received Remittances	-0.237	0.139	0.016	0.095	-0.207	0.228	-0.183	0.025	0.044	-0.074	-0.019	1.000																	
Net ODA	-0.353	0.198	0.217	0.004	-0.095	0.221	0.032	0.071	-0.173	-0.009	-0.293	0.101	1.000																
Urban Population	0.508	0.076	-0.109	0.318	0.163	0.124	0.104	0.131	0.468	0.155	0.024	-0.099	-0.100	1.000															
Human Capital Formation	-0.046	0.103	-0.039	0.015	-0.082	-0.007	-0.080	0.137	-0.038	0.049	0.070	0.004	-0.030	-0.082	1.000														
Gross Fixed Investments	0.177	0.414	-0.147	0.267	0.112	0.113	-0.001	0.182	0.071	-0.063	0.056	-0.021	-0.218	0.205	0.059	1.000													
ICT diffusion	0.526	-0.049	-0.112	0.134	-0.101	0.042	-0.158	0.206	0.347	0.022	0.416	0.064	-0.451	0.471	0.016	0.185	1.000												
Governance Climate	0.303	0.020	-0.180	0.116	-0.397	0.168	-0.262	0.250	0.098	-0.190	0.573	0.080	-0.314	0.113	0.052	0.253	0.559	1.000											
Imports from HDCs	0.271	0.045	-0.137	0.082	0.155	-0.067	0.037	0.256	-0.032	0.039	-0.030	-0.199	-0.104	0.451	-0.050	0.251	0.113	0.036	1.000										
Imports from LMDCs in Latin America or Caribbean	0.092	-0.066	-0.080	-0.091	0.085	-0.209	0.076	-0.068	0.004	0.004	-0.052	0.060	-0.117	0.372	-0.075	0.057	0.205	0.050	0.234	1.000									
Imports from LMDCs in Europe or Central-Asia	0.041	-0.026	-0.023	-0.072	0.143	-0.043	0.019	-0.060	0.050	0.299	-0.135	0.085	0.032	0.245	-0.006	-0.044	0.145	-0.204	0.240	0.234	1.000								
Imports from LMDCs in Eastern-Asia or Pacific	-0.201	0.082	-0.013	-0.205	0.070	-0.230	-0.048	-0.156	-0.428	-0.002	-0.222	-0.043	0.129	-0.189	-0.029	-0.042	-0.212	-0.150	-0.048	0.240	0.234	1.000							
Imports from LMDCs in Southern-Asia	-0.186	-0.010	-0.018	-0.009	-0.069	-0.187	-0.108	0.149	-0.172	-0.057	-0.140	-0.026	0.065	-0.392	0.040	-0.153	-0.245	-0.090	-0.088	0.240	0.234	0.234	1.000						
Imports from LMDCs in North Africa or Middle East	0.052	-0.078	-0.047	0.078	0.114	-0.135	-0.057	0.015	0.170	0.257	-0.112	-0.168	0.001	0.224	0.030	0.025	0.044	-0.348	0.283	0.283	0.283	0.283	0.283	1.000					
Imports from LMDCs in Sub-Saharan Africa	-0.091	-0.051	0.144	0.045	-0.154	0.283	0.017	-0.134	0.243	-0.075	0.188	0.174	0.035	-0.267	0.031	-0.164	0.023	0.154	-0.784	0.283	0.283	0.283	0.283	0.283	1.000				
Exports to HDCs	0.311	0.197	-0.133	0.187	0.055	0.125	-0.156	0.182	0.033	0.076	0.179	-0.053	-0.024	0.168	-0.031	0.355	0.174	0.161	0.348	0.348	0.348	0.348	0.348	0.348	0.348	1.000			
Exports to LMDCs in Latin America or Caribbean	0.123	-0.035	-0.041	0.226	-0.045	0.124	0.131	-0.045	0.188	-0.025	-0.045	-0.043	-0.061	0.337	-0.049	0.100	-0.096	-0.033	0.301	0.301	0.301	0.301	0.301	0.301	0.301	0.301	1.000		
Exports to LMDCs in Europe or Central-Asia	-0.127	-0.027	-0.029	-0.158	-0.065	-0.067	0.045	-0.059	-0.102	0.005	-0.057	-0.066	0.059	-0.017	-0.050	-0.017	-0.009	-0.051	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	1.000	

Exports to LMDCs in Eastern-Asia or Pacific	-0.032	-0.018	0.347	-0.108	0.252	-0.043	0.296	-0.044	-0.044	0.056	-0.301	-0.208	0.186	0.133	-0.077	-0.158	-0.194	-0.327	0.003	0.
Exports to LMDCs in Southern-Asia	-0.135	-0.110	-0.021	-0.193	-0.011	-0.208	0.089	-0.079	-0.201	-0.044	-0.228	0.062	0.015	-0.030	-0.028	-0.234	-0.060	-0.117	0.071	-0.
Exports to LMDCs in North Africa or Middle East	-0.064	-0.019	-0.013	0.206	-0.187	0.042	-0.007	0.101	0.265	-0.010	0.013	0.033	0.013	0.102	-0.045	0.025	-0.060	-0.108	0.222	0.
Exports to LMDCs in Sub-Saharan Africa	-0.236	-0.121	-0.085	-0.065	-0.265	0.007	-0.121	-0.157	0.034	-0.097	0.157	0.201	0.095	-0.306	0.123	-0.147	0.023	0.173	-0.528	-0.

Source: our elaboration.

**Table A.2.** The GMM-sys models for controlling the variables of the macroeconomic framework.

	Real per-capita GDP																
	Coeff.	Std. Err.	Sub-Saharan Africa Countries	Lions' Countries	Time Dummies	Standard Error	Regressors Wald-Test (p-value)	Time Dummies Wald-Test (p-value)	AR (2) Test (p-value)	Non-Observations (%)	Observations (%)	Cross-Sectional Units	Sargan Test (p-value)	Hansen Test (p-value)	Pesaran Test (p-value)	Instruments	
Real per-capita GDP (t-1)	0.960	0.051	***														
FDI Inflows	0.002	0.007															
FDI Inflows (t-1)	0.014	0.011															
				yes	yes	yes	0.156	(0.000)	(0.000)	(0.168)	54 (20)	216 (80)	54	(0.050)	(0.327)	(0.651)	17
Real per-capita GDP (t-1)	0.850	0.066	***														
Inflation	-0.643	0.106	***														
Inflation (t-1)	0.852	0.178	***														
				yes	yes	yes	0.111	(0.000)	(0.000)	(0.401)	54 (20)	216 (80)	54	(0.089)	(0.851)	(0.856)	17
Real per-capita GDP (t-1)	0.937	0.075	***														
Openness	-0.245	0.137	*														
Openness (t-1)	0.321	0.121	***														
				yes	yes	yes	0.144	(0.000)	(0.000)	(0.959)	54 (20)	216 (80)	54	(0.019)	(0.249)	(0.711)	17
Real per-capita GDP (t-1)	0.969	0.039	***														
Natural Resources Rent	0.073	0.064															
Natural Resources Rent (t-1)	-0.092	0.063															
				yes	yes	yes	0.153	(0.000)	(0.000)	(0.934)	54 (20)	216 (80)	54	(0.057)	(0.244)	(0.548)	17
Real per-capita GDP (t-1)	0.952	0.060	***														
Government Expenditure	-0.051	0.088															
Government Expenditure (t-1)	0.067	0.079															
				yes	yes	yes	0.157	(0.000)	(0.000)	(0.870)	54 (20)	216 (80)	54	(0.036)	(0.377)	(0.562)	17
Real per-capita GDP (t-1)	0.937	0.048	***														
Productivity	-0.564	0.300	*														
Productivity (t-1)	-0.174	0.240															
				yes	yes	yes	0.152	(0.000)	(0.000)	(0.709)	54 (20)	216 (80)	54	(0.017)	(0.426)	(0.931)	17
Real per-capita GDP (t-1)	0.902	0.046	***														
External Debt	-0.224	0.054	***														
External Debt (t-1)	0.226	0.054	***														
				yes	yes	yes	0.143	(0.000)	(0.000)	(0.678)	54 (20)	216 (80)	54	(0.010)	(0.378)	(0.551)	17
Real per-capita GDP (t-1)	0.937	0.067	***														
Unemployment	-0.119	0.065	*														
Unemployment (t-1)	0.122	0.059	**														
				yes	yes	yes	0.155	(0.000)	(0.000)	(0.948)	54 (20)	216 (80)	54	(0.030)	(0.360)	(0.885)	17
Real per-capita GDP (t-1)	0.900	0.047	***														
Military Expenditure	0.230	0.153															
Military Expenditure (t-1)	-0.290	0.162	*														
				yes	yes	yes	0.144	(0.000)	(0.000)	(0.807)	54 (20)	216 (80)	54	(0.008)	(0.437)	(0.609)	17
Real per-capita GDP (t-1)	0.955	0.057	***														
Health Expenditure	0.073	0.045															
Health Expenditure (t-1)	-0.034	0.051															
				yes	yes	yes	0.156	(0.000)	(0.000)	(0.873)	54 (20)	216 (80)	54	(0.008)	(0.378)	(0.119)	17
Real per-capita GDP (t-1)	0.964	0.039	***														
Received Remittance	-0.014	0.017															
Received Remittance (t-1)	0.023	0.016															
				yes	yes	yes	0.156	(0.000)	(0.000)	(0.920)	54 (20)	216 (80)	54	(0.037)	(0.448)	(0.007)	17
Real per-capita GDP (t-1)	0.856	0.106	***														
Net ODA	-0.080	0.078															
Net ODA (t-1)	0.004	0.039															

			yes	yes	yes	0.150	(0.000)	(0.000)	(0.846)	54 (20)	216 (80)	54	(0.100)	(0.384)	(0.798)	17
Real per-capita GDP (t-1)	0.786	0.130	***													
Urban Population	-1.310	0.771	*													
Urban Population (t-1)	1.557	0.918	*													
			yes	yes	yes	0.145	(0.000)	(0.000)	(0.936)	54 (20)	216 (80)	54	(0.111)	(0.278)	(0.690)	17
Real per-capita GDP (t-1)	0.927	0.041	***													
Human Capital Formation	-0.009	0.033														
Human Capital Formation (t-1)	0.008	0.037														
			yes	yes	yes	0.154	(0.000)	(0.000)	(0.940)	54 (20)	216 (80)	54	(0.028)	(0.340)	(0.643)	17
Real per-capita GDP (t-1)	0.893	0.084	***													
Gross Fixed Investment	-0.004	0.055														
Gross Fixed Investment (t-1)	0.107	0.057	*													
			yes	yes	yes	0.152	(0.000)	(0.000)	(0.961)	54 (20)	216 (80)	54	(0.038)	(0.378)	(0.554)	17
Real per-capita GDP (t-1)	0.885	0.170	***													
ICT diffusion	0.097	0.077														
ICT diffusion (t-1)	0.023	0.184														
			yes	yes	yes	0.153	(0.000)	(0.000)	(0.96)	54 (20)	216 (80)	54	(0.015)	(0.194)	(0.999)	17
Real per-capita GDP (t-1)	0.990	0.070	***													
Governance Climate	0.216	0.112	*													
Governance Climate (t-1)	-0.185	0.128														
			yes	yes	yes	0.160	(0.000)	(0.000)	(0.825)	54 (20)	216 (80)	54	(0.011)	(0.408)	(0.162)	17

Note: \*\*\* significance for  $\alpha = 0.01$  \*\* significance for  $\alpha = 0.05$  \* significance for  $\alpha = 0.10$ .

Source: our elaboration.

**Table A.3.** The GMM-sys models for controlling the variables of merchandise trade.

	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)		Model (6)		Model (7)	
	Real per-capita GDP													
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Real per-capita GDP (t-1)	0.904	0.076 ***	0.950	0.046 ***	0.915	0.048 ***	0.953	0.059 ***	0.892	0.062 ***	0.948	0.049 ***	0.904	0.057 ***
Imports from HDCs	0.300	0.190												
Imports from HDCs (t-1)	-0.294	0.172 *												
Exports to HDCs	-0.059	0.027 **												
Exports to HDCs (t-1)	0.096	0.035 ***												
Imports from LMDCs in Latin America or Caribbean			0.003	0.014										
Imports from LMDCs in Latin America or Caribbean (t-1)			-0.011	0.013										
Exports to LMDCs in Latin America or Caribbean			0.007	0.012										
Exports to LMDCs in Latin America or Caribbean (t-1)			0.009	0.011										
Imports from LMDCs in Europe or Central-Asia					0.016	0.025								
Imports from LMDCs in Europe or Central-Asia (t-1)					-0.032	0.027								
Exports to LMDCs in Europe or Central-Asia					-0.014	0.009 *								
Exports to LMDCs in Europe or Central-Asia (t-1)					0.011	0.013								
Imports from LMDCs in Eastern-Asia or Pacific							0.051	0.079						
Imports from LMDCs in Eastern-Asia or Pacific (t-1)							-0.068	0.070						
Exports to LMDCs in Eastern-Asia or Pacific							0.014	0.015						
Exports to LMDCs in Eastern-Asia or Pacific (t-1)							-0.028	0.016 *						
Imports from LMDCs in Southern-Asia									-0.038	0.022 *				
Imports from LMDCs in Southern-Asia (t-1)									0.008	0.025				
Exports to LMDCs in Southern-Asia									-0.007	0.023				
Exports to LMDCs in Southern-Asia (t-1)									0.004	0.027				
Imports from LMDCs in North Africa or Middle East											-0.015	0.024		
Imports from LMDCs in North Africa or Middle East (t-1)											0.006	0.025		
Exports to LMDCs in North Africa or Middle East											-0.001	0.008		
Exports to LMDCs in North Africa or Middle East (t-1)											0.003	0.011		
Imports from LMDCs in Sub-Saharan Africa													-0.061	0.065
Imports from LMDCs in Sub-Saharan Africa (t-1)													0.040	0.054
Exports to LMDCs in Sub-Saharan Africa													0.003	0.022
Exports to LMDCs in Sub-Saharan Africa (t-1)													0.015	0.024
Sub-Saharan Africa Countries	yes		yes		yes		yes		yes		yes		yes	
Lions' Countries	yes		yes		yes		yes		yes		yes		yes	
Time Dummies	yes		yes		yes		yes		yes		yes		yes	
Standard Error	0.138		0.155		0.150		0.150		0.150		0.156		0.152	
Regressors Wald-Test (p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Time Dummies Wald-Test (p-value)	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
AR (2) Test (p-value)	(0.420)		(0.882)		(0.980)		(0.843)		(0.935)		(0.916)		(0.959)	
Non-Observations (%)	54 (20)		54 (20)		54 (20)		54 (20)		54 (20)		54 (20)		54 (20)	
Observations (%)	216 (80)		216 (80)		216 (80)		216 (80)		216 (80)		216 (80)		216 (80)	
Cross-Sectional Units	54		54		54		54		54		54		54	
Sargan Test (p-value)	(0.010)		(0.026)		(0.029)		(0.010)		(0.028)		(0.026)		(0.026)	
Hansen Test (p-value)	(0.150)		(0.407)		(0.294)		(0.369)		(0.263)		(0.260)		(0.383)	
Pesaran Test (p-value)	(0.565)		(0.445)		(0.718)		(0.613)		(0.797)		(0.681)		(0.784)	
Instruments	19		19		19		19		19		19		19	

Note: \*\*\* significance for  $\alpha = 0.01$  \*\* significance for  $\alpha = 0.05$  \* significance for  $\alpha = 0.10$ .

Source: our elaboration.

## References

- Abdu M, Jibir A, Abdullahi S, et al. (2021) Drivers of manufacturing firms' productivity: a micro-perspective to industrialization in Nigeria. *SN-Business & Economics* 1:32. <https://doi.org/10.1007/s43546-020-00026-5>
- Abdu M, Musa BM, Jibir A (2022) Firm-level study of the drivers of internationalization of small- and medium-scale enterprises in Sub-Saharan Africa. *SN-Business & Economics* 2:52. <https://doi.org/10.1007/s43546-022-00227-0>
- Acemoglu D, Naidu S, Restrepo P, Robinson JA (2019) Democracy does cause growth. *Journal of Political Economy* 127:47–100 <https://doi.org/10.1086/700936>
- Acemoglu D, Robinson JA (2012) *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. New York, Crown.
- Addison T, Ghoshray A, Stamatogiannis MP (2016) Agricultural commodity price shocks and their effect on growth in Sub-Saharan Africa. *Journal of Agricultural Economics* 67:47–61. <https://doi.org/10.1111/1477-9552.12129>
- Adusah-Poku F (2016) Which form of foreign capital inflows enhance economic growth? Empirical evidence in Sub-Saharan Africa. *Asian Economic and Financial Review* 6:557–570. <https://doi.org/10.18488/journal.aefr/2016.6.10/102.10.557.570>

- Ahlerup P, Baskaran T, Bigsten A (2016) Government impartiality and sustained growth in Sub-Saharan Africa. *World Development* 83:54–69 <https://doi.org/10.1016/j.worlddev.2016.03.006>
- Ahmed AD (2012) Debt burden, military spending and growth in Sub-Saharan Africa: a dynamic panel data analysis. *Defence and Peace Economics* 23:485–506. <https://doi.org/10.1080/10242694.2011.627163>
- Akhmat G, Zaman K, Shukui T, et al (2014) Social Health Indicators and Economic Growth: Evidence from East Asia and Pacific, Middle East and North Africa, South Asia, and Sub-Saharan Africa. *Social indicators research* 119:663–686. <https://doi.org/10.1007/s11205-013-0538-x>
- Akobeng E (2016) Growth and institutions: A potential medicine for the poor in sub-Saharan Africa. *African Development Review* 28:1–17 <https://doi.org/10.1111/1467-8268.12163>
- Alemu AM, Lee J-S (2015) Foreign aid on economic growth in Africa: a comparison of low and middle-income countries. *South African Journal of Economic and Management Sciences* 18:449–462. <https://doi.org/10.17159/2222-3436/2015/v18n4a1>
- Anetor FO (2020) Human capital threshold, foreign direct investment and economic growth: evidence from sub-Saharan Africa. *International Journal of Development Issues* 9:323–337. <https://doi.org/10.1108/IJDI-01-2020-0014>
- Anoruo E, Elike U (2015) Human Capital-Economic Growth Nexus in Africa: Heterogeneous Panel Causality Approach. *International Journal of Economics and Financial Issues* 5:1017–1023.
- Arellano M, Bover O (1995) Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics* 68: 29–51 [https://doi.org/10.1016/0304-4076\(94\)01642-d](https://doi.org/10.1016/0304-4076(94)01642-d)
- Arizala F, Gonzalez-Garcia J, Tsangarides CG, Yenice M (2021) The impact of fiscal consolidations on growth in sub-Saharan Africa. *Empirical Economics* 61:1–33. <https://doi.org/10.1007/s00181-020-01863-x>
- Asongu SA (2014) Does money matter in Africa? New empirics on long-and short-run effects of monetary policy on output and prices. *Indian Growth and Development Review* 7: 142–180. <https://doi.org/10.1108/IGDR-12-2012-0048>
- Autor DH, Dorn D, Hanson GH (2016) The China shock: Learning from labor-market adjustment to large changes in trade. *Annual review of economics* 8:205–24 <https://doi.org/10.1146/annurev-economics-080315-015041>
- Babajide A, Ahmad AH, Coleman S (2021) Violent conflicts and state capacity: Evidence from Sub-Saharan Africa. *Journal of Government and Economics*, 3:100019. <https://doi.org/10.1016/j.jge.2021.100019>
- Barro RJ, Sala-i-Martin X (1992) Public finance in models of economic growth. *Review of Economic Studies* 59:645 <https://doi.org/10.2307/2297991>
- Barro RJ, Sala-i-Martin X (1997) Capital mobility in neoclassical models of growth. *Journal of Economic Growth* 2:1–26 <https://doi.org/10.1023/a:1009746629269>
- Batuo ME (2015) The role of telecommunications infrastructure in the regional economic growth of Africa. *The Journal of Developing Areas* 313–330 <https://doi.org/10.1353/jda.2015.0005>
- Baum CF, Schaffer ME, Stillman S (2003) Instrumental Variables and GMM: Estimation and Testing. *The Stata Journal*, 3:1–31 <https://doi.org/10.1177/1536867x0300300101>
- Bertocchi G, Guerzoni A (2012) Growth, history, or institutions: What explains state fragility in sub-Saharan Africa? *Journal of Peace Research* 49:769–783. <https://doi.org/10.1177/0022343312452420>
- Blundell R, Bond S (1998) Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics* 87:115–143 [https://doi.org/10.1016/s0304-4076\(98\)00009-8](https://doi.org/10.1016/s0304-4076(98)00009-8)
- Bond SA, Hoeffler A, Temple JR (2001) GMM estimation of empirical growth models. *Economics Papers from Economics Group, University of Oxford-Nuffield College*, No 2001-W21:1–33.
- Bruckner M (2012) Economic growth, size of the agricultural sector, and urbanization in Africa. *Journal of Urban Economics* 71:26–36. <https://doi.org/10.1016/j.jue.2011.08.004>
- Brueckner M, Lederman D (2015) Trade openness and economic growth: Panel data evidence from Sub-Saharan Africa. *Economica* 82:1302–1323 <https://doi.org/10.1111/ecca.12160>
- Cai J, Zheng Z, Hu R, et al (2018) Has international aid promoted economic growth in Africa? *African Development Review* 30:239–25 <https://doi.org/10.1111/1467-8268.12333>
- Calderon C, Boreux S (2016) Citius, Altius, Fortius: Is Growth in Sub-Saharan Africa More Resilient? *Journal of African Economies* 25:502–528 <https://doi.org/10.1093/jae/ejw006>
- Chang C-C, Mendy M (2012) Economic growth and openness in Africa: What is the empirical relationship? *Applied Economics Letters* 19:1903–1907. <https://doi.org/10.1080/13504851.2012.676728>
- Collier P (2014) Attracting international private finance for African infrastructure. *Journal of African Trade* 1:37–44 <https://doi.org/10.1016/j.joat.2014.09.002>
- Cowling K, Tomlinson P (2011) Post the 'Washington Consensus': Economic governance and industrial strategies for the twenty-first century. *Cambridge Journal of Economics* 35:831–852. <https://doi.org/10.1093/cje/ber003>
- Dallago B, Casagrande S (eds) (2023) *The Routledge handbook of comparative economic systems*. London, Routledge.
- David OO (2019) Powering economic growth and development in Africa: telecommunication operations. *Applied Economics* 51:3583–3607 <https://doi.org/10.1080/00036846.2019.1578852>
- David OO, Grobler W (2020) Information and communication technology penetration level as an impetus for economic growth and development in Africa. *Economic research-Ekonomska Istrazivanja* 33:1394–1418. <https://doi.org/10.1080/1331677X.2020.1745661>
- Doku I, Akuma J, Owusu-Afriyie J (2017) Effect of Chinese foreign direct investment on economic growth in Africa. *Journal of Chinese Economic and Foreign Trade Studies* 10: 162–171. <https://doi.org/10.1108/JCEFTS-06-2017-0014>
- Donou-Adonsou F, Lim S, Mathey SA (2016) Technological progress and economic growth in Sub-Saharan Africa: Evidence from telecommunications infrastructure. *International Advances in Economic Research* 22:65–75. <https://doi.org/10.1007/s11294-015-9559-3>
- Ehigiamusoe KU, Lean HH (2020) The role of deficit and debt in financing growth in West Africa. *Journal of Policy Modeling* 42:216–234 <https://doi.org/10.1016/j.jpolmod.2019.08.001>
- Eichengreen B (2018) *The populist temptation: Economic grievance and political reaction in the modern era*. Oxford University Press, Oxford.
- Elhiraika AB, Aboubakar O, Muhammad K (2014) Promoting manufacturing to accelerate economic growth and reduce growth volatility in Africa. *The Journal of Developing Areas* 1–20. <http://www.jstor.org/stable/23723963>
- Epaphra M, Kombe AH (2017) Institutions and economic growth in Africa: Evidence from panel estimation. *Business and Economic Horizons (BEH)* 13:570–590. <https://doi.org/10.22004/ag.econ.285110>
- Farahane M, Heshmati A (2020) Trade and economic growth: Theories and evidence from the Southern African Development Community. *IZA-Discussion Paper*, No. 13679:1–27.
- Fayissa B, Nsiach C (2013) The impact of governance on economic growth in Africa. *The Journal of Developing Areas* 91–108 <https://doi.org/10.1353/jda.2013.0009>
- Ferrucci L, Gigliotti M, Runfola A (2018) Italian firms in emerging markets: Relationships and networks for internationalization in Africa. *Journal of Small Business and Entrepreneurship* 30:375–395. <https://doi.org/10.1080/08276331.2017.1412611>
- Festré A (2021) Michael Polanyi's vision of government and economics: Spanning Hayek and Keynes. *Journal of Government and Economics*, 4:100026 <https://doi.org/10.1016/j.jge.2021.100026>
- Franses PH, Welz M (2022) Forecasting Real GDP Growth for Africa. *Econometrics* 10:3. <https://doi.org/10.3390/econometrics10010003>
- Gaibulloev K, Sandler T (2011) The adverse effect of transnational and domestic terrorism on growth in Africa. *Journal of Peace Research* 48:355–371. <https://doi.org/10.1177/0022343310395798>

- Glegg C, Harris O, Ngo T, Susnjara J (2021) Having the government as a client: Does this reduce earnings management of the firm? *Journal of Government and Economics*, 4:100022. <https://doi.org/10.1016/j.jge.2021.100022>
- Granovetter M (2017) *Society and economy: Framework and principles*. Cambridge, Cambridge University Press.
- Grossman GM, Helpman E (1990) Comparative advantage and long-run growth. *American Economic Review* 80:796–815 <https://doi.org/10.3386/w2809>
- Grossman GM, Helpman E (1991) Endogenous innovation in the theory of growth. *Journal of Economic Perspectives* 8:23–44 <https://doi.org/10.1257/jep.8.1.23>
- Haftu GG (2019) Information communications technology and economic growth in Sub-Saharan Africa: A panel data approach. *Telecommunications Policy* 43:88–99. <https://doi.org/10.1016/j.tepol.2018.03.010>
- Hagan E, Amoah A (2019) Foreign direct investment and economic growth nexus in Africa: New evidence from the new financial fragility measure. *African Journal of Economic and Management Studies* 11:1–17. <https://doi.org/10.1108/AJEMS-05-2019-0180>
- Hallett AH, Acocella N, Di Bartolomeo G. (2010) Policy games, policy neutrality and Tinbergen controllability under rational expectations. *Journal of Macroeconomics*, 32:55–67. <https://doi.org/10.1016/j.jmacro.2009.07.002>
- Heshmati A (ed) (2017) *Economic transformation for poverty reduction in Africa*. London, Routledge.
- Heshmati A (ed) (2018) *Determinants of economic growth in Africa*. London: Palgrave.
- Heshmati A, Lee S (2010) The relationship between globalization, economic growth and income inequality. *Journal of Globalization Studies* 1:87–117.
- Hofstede G, Hofstede GJ, Minkov M (2010) *Cultures and Organizations: Software of the Mind*, 3rd Edition. New York, McGraw Hill.
- Ibrahim M (2018) Interactive effects of human capital in finance–economic growth nexus in Sub-Saharan Africa. *Journal of Economic Studies* 45: 1192–1211 <https://doi.org/10.1108/JES-07-2017-0199>
- Idun AA-A (2021) Does Finance Lead to Economic Growth Convergence in Africa? *The Journal of Developing Areas* 55:23–55 <https://doi.org/10.1353/jda.2021.0051>
- IMF (2019) Reigniting growth in emerging market and low-income economies: What role for structural reforms?. In *World economic outlook: Global manufacturing downturn, rising trade barriers* (Ch. 3). International Monetary Fund, Washington DC.
- Jaunky VC (2013) Democracy and economic growth in Sub-Saharan Africa: a panel data approach. *Empirical Economics* 45:987–1008 <https://doi.org/10.1007/s00181-012-0633-x>
- Kagochi JM, Nasser OMA, Kebede E (2013) Does financial development hold the key to economic growth? The case of Sub-Saharan Africa. *The Journal of Developing Areas* 61–79. <https://doi.org/10.1353/jda.2013.0035>
- Kayaoglu A, Naval J (2017) Urbanisation, education and the growth backlog of Africa. *Journal of African Economies* 26:584–606 <https://doi.org/10.1093/jae/ejx019>
- Kadir A, Elhiraika A, Chinzara Z, Sandjong D (2017) Growth and development finance required for achieving sustainable development goals (SDGs) in Africa. *African Development Review* 29:15–26. <https://doi.org/10.1111/1467-8268.12230>
- Kim SN, Heshmati A (eds) (2019) *Panel data econometrics: Empirical applications*. Amsterdam, Elsevier.
- Koomson-Abekah I, Nwaba EC (2018) Africa-China investment and growth link. *Journal of Chinese Economic and Foreign Trade Studies* 11: 132–150 <https://doi.org/10.1108/JCEFTS-11-2017-0034>
- Kuada J (2014) Economic growth and poverty alleviation in Africa—linking hard and soft economics. *African Journal of Economic and Management Studies* 5:2–8 <https://doi.org/10.1108/AJEMS-03-2014-0016>
- Kumar A, Saleh O (2021) Foreign Aid and Sectoral Growth in Sub-Saharan Africa. *The Journal of Developing Areas* 55:14 <https://doi.org/10.1353/jda.2021.0033>
- Kurtishi-Kastrati S. (2013) The effects of foreign direct investments for host country's economy. *European Journal of Interdisciplinary Studies* 5:26–38.
- Lin JY (2021) New structural economics: A framework of studying government and economics. *Journal of Government and Economics*, 2:100014 <https://doi.org/10.1016/j.jge.2021.100014>
- Lucas RE (1988) On the mechanics of economic development. *Journal of Monetary Economics* 22: 3–42 [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Marelli E, Signorelli M (eds) (2022) *Economic policy: policies after the great recession and the pandemic shock*. Giappichelli. Torino.
- Mazrui AA, Wiafe-Amoako F (eds.) (2015) *African institutions: challenges to political, social, and economic foundations of Africa's development*. Rowman & Littlefield, Lanham.
- Mbate M (2013) Domestic Debt, Private Sector Credit and Economic Growth in Sub-Saharan Africa. *African Development Review* 25:434–446 <https://doi.org/10.1111/1467-8268.12040>
- Mensah, Lord, Allotey D, Sarpong-Kumankoma E, Coffie W (2019) What debt threshold hampers economic growth in Africa? *International Journal of Development Issues* 19: 25–42. <https://doi.org/10.1108/IJDI-03-2019-0056>
- Mijiyawa A (2013) Africa's recent economic growth: What are the contributing factors? *African Development Review* 25:289–302 <https://doi.org/10.1111/j.1467-8268.2013.12030.x>
- Mol MJ, Stadler C, Ariño A (2017) Africa: The new frontier for global strategy scholars. *Global Strategy Journal* 7:3-9 <https://doi.org/10.1002/gsj.1146>
- Nafziger EW (2012) *Economic development*. Cambridge University Press, Cambridge.
- Narayan PK, Narayan S, Smyth R (2011) Does democracy facilitate economic growth or does economic growth facilitate democracy? An empirical study of Sub-Saharan Africa. *Economic Modelling* 28:900–910. <https://doi.org/10.1016/j.econmod.2010.11.004>
- Ngameni JP, Kemmanang LF, Ngassam SB (2022) Growth gap between China and Africa: Do digital technologies matter? *Journal of the Knowledge Economy* 13:24–43. <https://doi.org/10.1007/s13132-020-00716-3>
- Nsiah C, Fayissa B, Wu C (2016) The spatial effects on the rate of economic growth: Evidence from Sub-Saharan Africa. *The Journal of Developing Areas* 50:275–288. <https://doi.org/10.1353/jda.2016.0005>
- Nwani SE (2021) Human capital interaction on foreign aid-growth nexus: evidence from South Asia and sub-Saharan Africa. *International Journal of Development Issues* 20:258–279. <https://doi.org/10.1108/IJDI-11-2020-0261>
- Obstfeld M (2020) Globalization cycles. *Italian Economic Journal*, 6:1–12. <https://doi.org/10.1007/s40797-020-00121-4>
- Ogbuabor JE, Orji A, Manasseh CO, Anthony-Orji OI (2020) Institutional quality and growth in West Africa: what happened after the great recession? *International Advances in Economic Research* 26:343–361. <https://doi.org/10.1007/s11294-020-09805-0>
- Oluwatayo IB, Ojo AO (2018) Walking through a tightrope: The challenge of economic growth and poverty in Africa. *The Journal of Developing Areas* 52:59–69. <https://doi.org/10.1353/jda.2018.0004>
- Orjala J, K'Akumu OA (2016) Relational patterns of urbanisation and economic growth in sub-Saharan Africa. *Development Southern Africa* 33:234–246 <https://doi.org/10.1080/0376835X.2015.1120655>
- Osei DB, Sare YA, Ibrahim M (2019) On the determinants of trade openness in low-and lower–middle-income countries in Africa: how important is economic growth? *Future Business Journal* 5:1–

10. <https://doi.org/10.1186/s43093-019-0002-8>
- Pesaran MH (2020) General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics*, 60: 13–50. <https://doi.org/10.1007/s00181-020-01875-7>
  - Pinkovskiy M, Sala-i-Martin X (2014) Africa is on time. *Journal of Economic Growth* 19:311–338. <https://doi.org/10.1007/s10887-014-9103-y>
  - Porter ME, Stern S, Green M (2014) *Social Progress Index 2014*, Washington, DC: Social Progress Imperative.
  - Razin A (2022) Understanding national-government policies regarding globalization: A trade-finance analysis. *Journal of Government and Economics*, 8:100060. <https://doi.org/10.1016/j.jge.2023.100060>
  - Roodman D (2009a) How to do Xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal* 9: 86–136. <https://doi.org/10.1177/1536867x0900900106>
  - Romer M (1990) Endogenous technological change. *Journal of Political Economy* 98: 71–102. <https://doi.org/10.1086/261725>
  - Roodman D (2009b) A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics* 71:135–158. <https://doi.org/10.1111/j.1468-0084.2008.00542.x>
  - Saccone D (2021) Can the Covid-19 pandemic affect the achievement of the 'Zero Hunger' goal? Some preliminary reflections. *European journal of health economics*. 54:1655-1667. <https://doi.org/10.1007/s10198-021-01311-2>
  - Scalamonti F (2021) The transition of the southern economies of Mediterranean Sea: The macroeconomic framework and the determinants of foreign investments. *Industry*, 3:533–578. <https://doi.org/10.1430/98711>
  - Scalamonti F (2022) Rethinking SMEs' internationalisation process: Emerging markets and cross-cultural distance. *Generis*, Moldova.
  - Schwab K (2014) *The Global Competitiveness Report*. Geneva, World Economic Forum.
  - Schwab K (2015) *The Global Competitiveness Report*. Geneva, World Economic Forum.
  - Seetanah B, Rojid S (2011) Analysing the sources of economic growth in Africa using growth an accounting and a panel VAR approach. *The Journal of Developing Areas* 367–390. <https://doi.org/10.1353/jda.0.0094>
  - Shaaba SC, Ngepah N (2018) Military Expenditure, Industrialisation, and Economic Growth in Africa: Evidence from a Panel Causality Analysis. *African Journal of Business & Economic Research* 13:29–48. <https://doi.org/10.31920/1750-4562/2018/v13n3a2>
  - Shittu WO, Yusuf HA, El Houssein AEM, Hassan S (2020) The impacts of foreign direct investment and globalisation on economic growth in West Africa: examining the role of political governance. *Journal of Economic Studies* 47:1733–1755. <https://doi.org/10.1108/JES-09-2019-0446>
  - Solow RM (1956) A Contribution to the theory of economic growth. *Quarterly Journal of Economics* 70:65–94. <https://doi.org/10.2307/1884513>
  - Solow RM (1957) Technical change and the aggregate production function. *Review of Economics and Statistics* 39:312–320. <https://doi.org/10.2307/1926047>
  - Togati T, Visaggio M (2016) Lucas Island Model: A “case study” for improving students' skill in interpreting macroeconomic models. *Journal of Economics and Economic Education Research*, 17: 118–142.
  - Toh K (2016) Emerging growth economies in sub-Saharan Africa. *The American Economist* 61:229–244.
  - Trebilcock M (2015) Between theories of trade and development: the future of the world trading system. *The Journal of World Investment & Trade* 16:122–140. <https://doi.org/10.1163/22119000-01601004>
  - Udeagha MC, Ngepah N (2021) The asymmetric effect of trade openness on economic growth in South Africa: a nonlinear ARDL approach. *Economic Change and Restructuring* 54:491–540. <https://doi.org/10.1007/s10644-020-09285-6>
  - Valli V (2018) *The American Economy from Roosevelt to Trump*. Palgrave, London.
  - Walle YM (2014) Revisiting the finance–growth nexus in Sub-Saharan Africa: Results from error correction-based panel cointegration tests. *African Development Review* 26:310–321. <https://doi.org/10.1111/1467-8268.12083>
  - Wiafe-Amoako F (ed) (2021) *Africa 2020-2022*. Rowman & Littlefield, Lanham.
  - Windmeijer F (2005) A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics* 126:25–51. <https://doi.org/10.1016/j.jeconom.2004.02.005>
  - Wolf M, Zedillo E (2015) *The shifts and the shocks: What we have learned and have still to learn from the financial crisis*. Penguin, New York.
  - World Bank (2020) *World development report: Trading for development in the age of global value chains*. World Bank, Washington DC.
  - World Bank (2022) *World development report: Finance for an equitable recovery*. World Bank, Washington DC.