

Ease of Doing Business and Economic Growth: A Panel Analysis of Selected Sub-Sahara African Countries

Prof. Silva Opuala-Charles¹, Oshilike Ijeoma Victoria², Christian Nkama³

*^{1,2,3}Garden City Premier Business School, Plot 13, Herbert Macauley Street, Old GRA, Port
Harcourt, Rivers State, Nigeria
president@gacpbs.com¹, Victoria.oshilike@gacpbs.com²*

Abstract: Entrepreneurship emerges as a catalyst for growth and advancement through production and trade. This work jointly examines the influence of ease of doing business and worldwide governance indicators on economic growth of selected SSA countries from 2010 to 2020. Adopting an empirical approach, the study tries to ascertain this relationship using a random effect panel regression model and Kao co-integration estimation. A balanced panel consisting of Forty one (41) out of forty eight (48) countries were selected for the analysis. Eight (8) variables out of eleven (11) ease of doing business indicators, and three (3) out of six (6) governance indicators were selected for the study. They were chosen based on their appropriateness for the research according to the authors instincts and prevalent challenges bedeviling Sub-Saharan African countries. We identify a positive significant relationship between getting credit and economic growth, while a negative association between political stability and regulatory requirement. The study recommends greater access to finance for businesses, especially small and medium enterprises (SMEs), and capacity building among others, as one of the ways to maximize the dividends of local and international trades across the region. Sub-Saharan governments should establish a robust evaluation and monitoring framework to catalyze the success of policy interventions.

Keywords: Ease of Doing Business; SMEs; Sub-Sahara African Countries; Worldwide Indication.

INTRODUCTION

Ease of doing business and trade liberalization adds up to 5 percentage points to economic growth. The foundation of doing business rests upon the fundamental premise that lucid and consistent regulations greatly enhance the efficacy of economic activities. These regulations establish robust property rights, streamline dispute resolution processes, and furnish contractual counterparts with safeguards against misuse. The effectiveness of such regulations in fostering growth and progress is significantly heightened when they exhibit efficiency, transparency, and ease of comprehension for their intended recipients. Additionally, the robustness and comprehensiveness of these regulations profoundly influence how societies equitably allocate the advantages and bear the expenses associated with development strategies and policies (World Bank, 2017).

The Doing Business survey conducted by the World Bank involves the classification of nations based on their suitability as potential hosts for Foreign Direct Investment (FDI), gauged by the ease of conducting business within their borders. This assessment hinges on the Ease of Doing Business index, a quantitative gauge of the impact of regulations across various stages of a business's lifespan. The majority of these enterprises are categorized as small and medium-sized enterprises (SMEs) (World Bank, 2019). The positioning of economies within the ranking, spanning from 1 to 190, reflects their level of ease in conducting business, a determination drawn from 11 distinct factors. To put it succinctly, the aggregation of all factors influencing business outcomes culminates in what is termed as the Ease of Doing Business index. A nation's placement within the Ease of Doing Business ranking is subject to variation based on the regulatory landscape and framework governing the initiation and operation of enterprises within that nation. While certain countries may exhibit more favorable conditions for business endeavors, others may present greater obstacles, thereby influencing the cultivation of entrepreneurial ventures within their boundaries.

In general, it is conventional knowledge that fewer or less complex regulations tend to result in a higher ranking, but at a cost based on the country's regulatory environment. Protecting the rights of creditors and investors, as well as setting up or improving property and credit registries, may require additional regulations (Wikipedia, 2023). However, this is absolutely not the case. According to World Bank (2020), the scores favor economies that implement a risk-based methodology towards regulation, utilizing it as a means to tackle societal and environmental issues. This approach involves placing a more substantial regulatory load on activities that present considerable risks to the population, while imposing lighter burdens on activities with lower levels of risk. Consequently, the economies that attain the highest positions in the ease of doing business rankings are not those devoid of regulations. Instead, they are economies where governments have adeptly formulated regulations that streamline marketplace interactions while avoiding unnecessary obstacles to the advancement of the private sector.

It is important to note that the Ease of Doing Business Index is not a measure of a country's overall economic performance, but rather a measure of the regulatory environment for businesses. The World Bank Group also releases a separate report on the ease of starting a business specifically which also factors in the number of procedures, time, and cost to start a business, minimum capital requirements and the existence of business registration information online.

The Doing Business report unveils findings for two aggregate measures: the score measuring the ease of doing business, and the ranking denoting the ease of doing business, which stems from the said score. The ease of doing business ranking facilitates a comparative assessment of economies against one another, while the ease of doing business scores establish a benchmark against regulatory best practices, revealing their proximity to optimal regulatory performance across individual Doing Business indicators. Across different years, the ease of doing business score serves to showcase the absolute shifts in the regulatory landscape for local entrepreneurs within an economy, illustrating how it has evolved over time. In contrast, the ease of doing business ranking exclusively highlights the relative changes in the regulatory milieu compared to other economies.

Table 1: What Ease of Doing Business Measures?

Indicator set	What is measured
Starting a business	Procedures, time, cost and paid-in minimum capital to start a limited liability company for men and women
Dealing with construction permits	Procedures, time, and cost to complete all formalities to build a warehouse and the quality control and safety mechanisms in the construction permitting system
Getting electricity	Procedures, time, and cost to get connected to the electrical grid, the reliability of the electricity supply and the transparency of tariffs
Registering property	Procedures, time, and cost to transfer a property and the quality of the land administration system for men and women
Getting credit	Movable collateral laws and credit information systems.
Protecting minority investors	Minority shareholders' rights in related-party transactions and in corporate governance.
Paying taxes	Payments, time and total tax and contribution rate for a firm to comply with all tax regulations as well as post filing processes
Trading across borders	Time and cost to export the product of comparative advantage and import auto parts.
Enforcing contracts	Time and cost to resolve a commercial dispute and the quality of judicial processes for men and women.
Resolving insolvency	Time, cost, outcome, and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency.
Labor market regulation	Flexibility in employment regulation and aspects of job quality

Source: Doing Business Report (2019)

The selection of the 11 distinct sets of indicators for the Doing Business assessment has been systematically influenced by economic research and precise firm-level information, particularly derived from the World Bank Enterprise Surveys. These comprehensive surveys furnish data that spotlight the primary hindrances encountered in business operations, as recounted by entrepreneurs representing over 136,880 enterprises spanning 139 economies. Noteworthy factors such as financial accessibility and availability of electricity, for instance, emerge as pivotal aspects underscored by these surveys as being significant for businesses. This recognition has in turn served as the catalyst for shaping the design of the Doing Business indicators pertaining to obtaining credit and securing a reliable electricity supply.

Table 2: Examples of areas not covered by Doing Business

Doing Business does not measure	Macroeconomic stability
	Development of Financial System
	Quality of the Labour Force

	Incidence of Bribery and Corruption
	Market Size
	Lack of Security

Source: Doing Business Report (2019)

Doing Business, while influential, does not encompass numerous crucial policy domains, and even within the spheres it evaluates, its purview remains limited. It falls short of assessing the complete spectrum of elements, policies, and institutions that collectively shape the caliber of a nation's commercial milieu and its overall global competitiveness. Similarly, Doing Business offers a confined viewpoint when it comes to the infrastructure hurdles that businesses, especially in developing nations, grapple with. The focus is channeled through these indicators, failing to tackle the magnitude to which subpar roadways, railways, ports, and communication networks might amplify operational expenses for firms and erode their competitive standing. Also, Doing Business does not attempt to quantify all costs and benefits of a particular law or regulation to society as a whole. The indicators related to tax payments gauge the comprehensive tax and contribution rate, which, when considered independently, represents an expense for businesses. Nevertheless, these indicators do not encompass—nor are they designed to do so—the positive outcomes that stem from the societal and economic initiatives funded through tax proceeds.

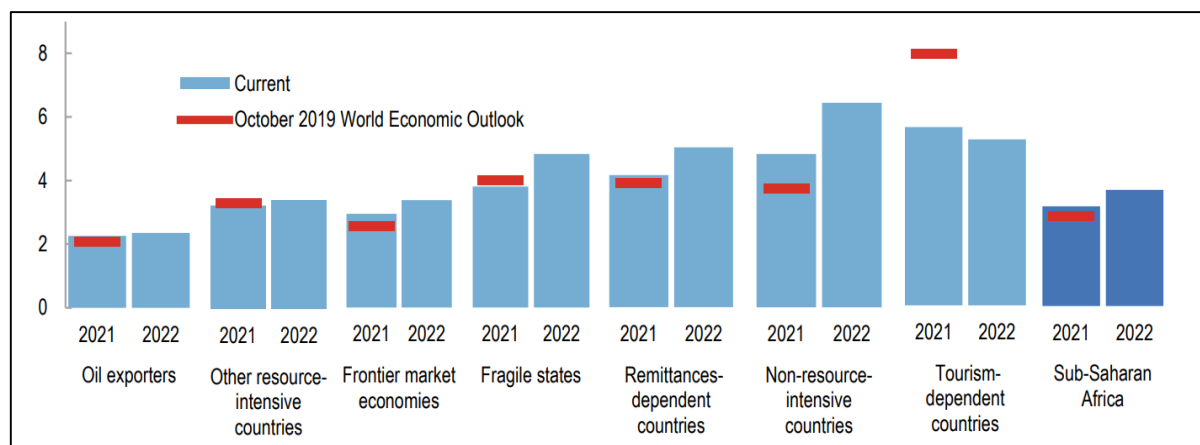
Ease of Doing Business, Trend in Sub Saharan Africa

The ease of doing business in Sub-Saharan Africa has long been a subject of scrutiny due to its potential impact on economic growth and development. This region, consisting of 48 countries south of the Sahara Desert, has witnessed various efforts to improve the business environment and attract investment. The concept of ease of doing business in Africa encompasses the regulatory environment within which businesses operate across the continent. This environment is shaped by various factors, including government policies, legal frameworks, bureaucratic procedures, and infrastructure development. According to the World Bank's "Doing Business Report," which assesses business regulations and their enforcement across 190 economies, Africa presents a diverse landscape characterized by significant disparities in ease of doing business. It's essential to note however that while improvements in the ease of doing business can contribute to economic growth, they are just one of many factors at play.

Sub-Saharan African countries have implemented reforms to enhance their business environments. For instance, Rwanda stands as a notable example, having streamlined registration processes, and reduced the time and cost of starting a business. In 2021, the country was ranked 38th globally for ease of doing business, showcasing the positive outcomes of pro-business reforms (IMF, "Regional Economic Outlook: Sub-Saharan Africa," 2021). Still within the expanse of Sub-Saharan Africa, Togo emerges as a positive outlier. Nevertheless, the Sub-Saharan African region at large maintains a status of underperformance in terms of the ease of doing business, recording an average score of 51.8. This stands significantly below the OECD high-income economy benchmark of 78.4 and the global average of 63.0. In comparison to the previous year's figures, the Sub-Saharan African economies only witnessed a marginal uptick of 1 percentage point in their average ease of doing business score during the Doing Business 2020 assessment, indicative of the fact that across the region, there remains room for advancement. In contrast, the Middle East

and North Africa region exhibited a more substantial increase, raising their average score by 1.9 points.

Figure 1: Sub-Saharan Africa: Real GDP Growth Projections, 2021–22



Source: IMF, World Economic Outlook Database.

Sub-Saharan Africa's economic growth landscape exhibits a rich tapestry of variegated performances. While some countries have surged forward, propelled by factors like abundant natural resources or strategically advantageous geographical locations, others grapple with fragility, conflict, and the challenges of limited economic diversification. The International Monetary Fund (IMF) underscores the region's economic growth trajectory as intrinsically linked to global commodity prices, given the prevalent reliance of many countries on revenue generated from commodity exports (IMF, "Regional Economic Outlook: Sub-Saharan Africa," 2021). The World Bank's Doing Business Report suggests that a better business climate in African nations can attract FDI, boost economic growth, and create jobs. The African Development Bank's 2020 Economic Outlook highlights the importance of a streamlined regulatory framework in boosting investor confidence and SMEs. This aligns with the African Union's Agenda 2063, which emphasizes private sector-led development and economic diversification. Prioritizing business ease can empower local economies, boost global competitiveness, and contribute to sustainable development.

As observed in figure 1, most of the countries that make up the far right of the graph are African countries. This is however neither surprising nor indicative of the fact that these countries are dead trade zones or lack the capacity to drive development through entrepreneurship, rather, these rankings stem out of relative analysis. For inherent benchmark of each economy with respect to regulatory best practices, the ease of doing business score captures it. It's also pertinent to note that most economies in the Sub-Saharan Africa region (12) make up the bottom 20 of the Ease of doing business ranking table (World Bank, 2022) with cumbersome tax compliance processes not backed by efficient structures risk management systems. Conversely, Nigeria and Togo are among the 10 economies improving the most across three or more areas measured by ease of doing business in 2018/2019.

Literature Review

While there is empirical evidence that the ease of doing business is a significant predictor of FDI, some authors still argue that singular investor incentives, including tax breaks, typically don't help the overall investment climate unless they are properly paired with other incentives. Hossain et al

(2018) investigates the impact of Ease of Doing Business on Inward FDI over the period from 2011 to 2015, drawing a sample from 177 countries across the globe from 190 countries listed in World Bank. They measured Ease of Doing Business using 5 of its indicators; starting a business, getting credit, registering property, paying taxes and enforcing contracts. Their result shows that 'Enforcing Contracts' have a positive significant impact on Inward FDI, with 'Getting Credit' and 'Registering Property' having a negative significant impact on Inward FDI. On the other hand, 'Starting a Business' and 'Paying Taxes' have no significant impact on Inward FDI. Klapper, et al., (2004) undertook an investigation aimed at assessing the influence of the commercial landscape on the inception of new enterprises within an economic framework. They employed an assemblage of international data encompassing companies across both Western and Eastern Europe, meticulously gleaned from the comprehensive Amadeus database. Their research divulged that formidable regulatory impediments pose a substantial deterrent to the initiation of businesses, particularly within sectors inherently predisposed to demanding entry expenditures, such as telecommunications (encompassing telephony, wireless communication, etc.) and computer services.

Bétilla (2021) conducted an analysis on the influence of the Ease of Doing Business on economic growth within the context of 44 African nations spanning from 2010 to 2018. The research employed a composite Ease of Doing Business index from the World Bank and gauged economic growth through the actual annual GDP growth rate. Furthermore, the study delved into the relationship between Ease of Doing Business and economic growth using a dynamic approach via the System Generalized Method of Moments (System-GMM) estimation technique. The outcomes demonstrated a noteworthy and positive correlation between Ease of Doing Business and economic growth, indicating that making regulatory improvements in business practices could serve as a strategy for African countries to attain and maintain economic advancement.

Similarly, utilizing panel data encompassing 155 countries sourced from the World Bank's Doing Business report spanning from 2006 to 2016, Adepoju (2017) estimates the impact of ease of doing business on the GDP per capita growth rate. The investigation considers other elements of the business climate and incorporates out-of-steady-state dynamics within its model specifications. This is achieved by introducing the Worldwide Governance Indicators (WGI) and the lagged value of log GDP per capita as supplementary explanatory variables. The analysis unveils noteworthy evidence that the ease of doing business holds a globally significant effect on the annual growth rate of GDP per capita. However, the estimated coefficients for the Doing Business indicators, when considering the entire sample, lack statistical significance and thus do not impact the annual growth rate of GDP per capita. Conversely, these indicators do exhibit statistical significance and influence within subsamples. Moreover, segmenting the dataset based on country income group classifications yields mixed results, as certain indicators suggest an adverse relationship with the per capita GDP growth rate. The findings offer validation for the assertion that the ease of doing business serves as a pivotal element for economic growth, while underscoring the fact that its impact varies across distinct groups of countries.

In a wider scope, Bajra et al. (2022) explores whether the ease of doing business (EDB) frontier enhances economic growth (GR) within a dataset of 47 European and Central Asian countries. They categorized them into lower-middle, upper-middle, and high-income economies. Their findings indicate that these economies have not yet attained the EDB frontier. Notably, the high-income economies display greater advancement in their EDB frontier, particularly regarding legal

reforms, fulfilling infrastructure requirements, securing financial access, and enhancing the quality of policy-making institutions. Specific EDB indicators are identified as exerting a positive influence on growth. Ultimately, the analysis demonstrates that if a nation falls short of achieving at least 72 percent of the EDB index, it ceases to provide a supportive environment for economic growth.

Approaching from a different dimension, Bonga and Mahuni (2018) launched an investigation into Africa Free Trade Zone Member States; how ease of doing business drives growth in their respective economies. With an annual times series data for the period of 2010 to 2016, they employed panel data analysis using Stata Statistical Software. Their research results pertaining to the bloc suggest that factors such as corruption, cross-border trading, credit accessibility, property registration, construction permit procedures, and business initiation hold noteworthy influence over the economic growth of the bloc. Additionally, matters of insolvency resolution and investor protection also raise concerns. Striving for optimal outcomes, they carried out country effect test, and went further to categorize the AFTZ bloc into three segments based on their average GDP. For each of these groups, standard three-panel models were employed, and the efficacy was evaluated through the reported adjusted R-squared and overall R-squared values. They finally noted that to improve the economic wellbeing of each state does not lie on the bloc only but on individual efforts as well, since individual differences prevail. Maingi (2018) employed an explanatory research design to explore the connections between economic integration, GDP growth, ease of doing business, and FDI within the East African Community (EAC). Using simple and multiple regression, hierarchical regression, and path analysis, his focus was on Kenya, Tanzania, Uganda, Rwanda, and Burundi. The study uncovered that the creation of an economic bloc enhances FDI attraction, as a larger market resulting from economic integration appeals to potential foreign investors. However, a conducive business environment (Ease of Doing Business) within the integrated region is also essential for effective FDI attraction. His findings further reveal that sustainable economic growth plays a catalyzing role in increasing FDI attraction due to its indication of potential return rates and population purchasing power.

Cui et al. (2022) went further to investigate how the Ease of Doing Business Score from the World Bank's Doing Business project for the years 2004 to 2018 influences the economic growth of trade partner countries. Their analysis revealed that a more developed country finds it significantly more feasible to stimulate economic growth than less developed nations. Banwari (2019) in his non empirical inquiry, discusses the ranking of India in various indicators of measuring Ease of doing business and steps that India has taken to move up the ladder of Ease of doing business ranking. His study connotes that business environment is key if India must enter the "double digit" growth. He further lays down strategies to achieve this. In their study, Garcia and Hinayon (2018) utilized the Principal Components Analysis technique to condense the macroeconomic performance indicators into a smaller number of dimensions. Their goal was to uncover a noteworthy connection between these indicators and the Ease of Doing Business metrics. Their model achieved an adjusted R-squared value of 0.73, suggesting that approximately 73% of the overall variances in their model are accounted for by the principal components. Notably, among these components, economic growth exhibited the most significant positive influence on the ease of doing business.

Bota-avram (2014) delved into the concept of assessing the correlation between effective governance and the business environment. The governance indicators encompass six clusters of

factors pertaining to governance, while the quality of the business environment is encapsulated in the ease of doing business ranking, both formulated by the World Bank. Through a cross-country empirical analysis of 181 countries categorized by income groups, she identified noteworthy findings. Specifically, her study showcased a significant correlation between certain governance indicators, like government effectiveness and regulatory quality, and the ease of conducting business across all countries. Moreover, she brought to light that factors such as the rule of law, government effectiveness, regulatory quality, and control of corruption played pivotal roles in shaping the business environment, particularly for countries falling within the high-income bracket. The interrelation between corruption and the ease of doing business is explored by

In practice, the conclusions about the interactions between EoDB, its parts, FDI, and sustainable economic growth have not been consistent. When looked at separately, there is no obvious pattern to indicate that the various EoDB dimensions have an impact on economic growth. There seem to be divergent views on this, especially the fact that there are very diverse drivers of an economy culminating into growth. Several research works have been done on Ease of Doing Business and its effect on Investments. This is primarily because the inflow of investment is a direct impact of ease of doing business. Same can be seen with its relations to economic growth which theoretically has an indirect relationship with EoDB. However, there have been very few contributions or research that captures the worldwide Governance Indicators as it contributes to growth alongside EoDB. Furthermore, after reviewing some of these studies, it was discovered that there have been conflicting results across the studies. Predictors of economic growth vary across economies, each with its prevailing features, which makes response to EoDB vary. This study therefore seeks to explore the relationship between Ease of Doing Business and sustainable economic growth across countries Sub-Sahara Africa using time series data for a period of 2010 to 2020.

Methodology

For this study, we used secondary balanced panel data comprising of 41 Sub-Sahara African countries. Panel data covers more variability, more information and more efficiency than cross-sectional and pure time series data. The data was sourced from World Bank's; World Development Index 2021, Worldwide Governance indicators 2022, and Doing Business 2020. The period under study is 11 years from 2010 to 2020. 8 out of 11 ease of doing business metrics was taken for the study. These indices were chosen out based on the researcher's intuition on their appropriateness to the study and availability of data. These variables include; Dealing with construction permits (DP), Enforcing contracts (EC), Getting credit (GC), Paying taxes (PT), Protecting minority investors (PMI), Registering property (RP), Starting a business (SB), and Trading across borders (TAB). Also 3 out of the six worldwide governance indicators were chosen as control variables and they include; Political Stability and Absence of Violence/Terrorism (PS), Regulatory Quality (RQ), and Control of Corruption (CC). For sustainable economic growth, the real gross domestic product (GDP) of each country were used. For the ease of doing business, the respective scores is computed based on the methodology in the DB04/05/06 -15 studies, and DB16/17 -20 studies. A linear data interpolation was done using a 3-year simple moving average to account for data sets not available, and the natural logarithm of the dependent variable (GDP) was taken for the analysis.

Estimation

We conducted a descriptive statistic to have a grasp of our data and the inherent features of our data. The panel analysis begins with panel unit root tests to avoid possible spurious results. If the

series are non-stationary, the analysis continues with testing for the panel cointegration. Following the panel, unit root tests are used in this research: LLC test (Levin, Lin and Chu, 2002), IPS test (Im, Pesaran and Shin, 2003), Fisher-type tests using ADF and PP tests, and Hadri test (Hadri, 2000). The common framework used by most (though not all) panel unit root testing procedures is specified thus:

$$\Delta y_{it} = p y_{it-1} + \alpha_i + \delta_t + \varepsilon_{it}$$

where:

Δy_{it} represents y_{it-1} is the lagged level of the dependent variable for unit i at time $t-1$.

the first difference of the dependent variable for unit i at time t .

p is the coefficient of the lagged level term, which is of interest in the unit root test.

α_i represents individual-specific fixed effects or intercepts. These account for individual-specific heterogeneity in the levels of the variables.

δ_t represents time-specific fixed effects or intercepts. These account for time-specific heterogeneity in the levels of the variables.

ε_{it} is the error term, which is assumed to be independently and identically distributed (i.i.d.) across individuals and time periods.

This equation is commonly used in panel unit root testing procedures. These tests are designed to determine whether the variable y_{it} has a unit root, which would indicate that it is non-stationary. The presence of a unit root implies that the variable follows a random walk process and has a long-term trend component. If the unit root is rejected, it suggests that the variable is stationary, meaning it does not have a stochastic trend.

In addition, the cross-sectional augmented Im, Pesaran and Shin (CIPS) unit root test proposed by Pesaran (Pesaran, 2007). This unit root test is specified as:

$$CIPS = \frac{1}{N} \sum_{i=1}^N CADF_i$$

It further suggests the following Augmented Dickey-Fuller regression with the cross sectional average of lagged and first-differences of the individual series:

$$\Delta y_{it} = \alpha_i + b_i y_{it-1} + c_i \bar{y}_{it-1} + d_i \Delta \bar{y}_{it-1} + \varepsilon_{it}$$

The Kao cointegration test was developed by Chihwa Kao in 1999 to test for cointegration in panel data. The test involves estimating the cointegrating relationship by first-stage regressions, and then performing second-stage unit root tests on the estimated residuals. The Kao test is particularly useful in situations where there are both I(0) and I(1) variables in a panel dataset. The null hypothesis of the Kao test is that there is no cointegration, which means that the variables are not related by a stable long-term relationship. If the null hypothesis is rejected, it suggests the presence of cointegration. For each cross-sectional unit (i.e., individual or entity), you estimate a cointegrating relationship using a panel regression model. The estimation equation for the first stage is as follows:

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}$$

Where:

Y_{it} is the dependent variable. X_{it} is a set of regressors, including lagged values of the dependent variable and other variables. α_i represents individual-specific fixed effects. β_i represents the coefficients to be estimated for each individual. ε_{it} is the residual term

Model Selection and Hausman Test

We proceed to estimate the coefficients of our model for all the countries xxxxx observations using the Pooled Ordinary Least Squares regression, neglecting time series and cross sectional data. It assumes that there is a common underlying relationship that applies to all groups or time periods. It does not distinguish between countries, hence denying any form of heterogeneity that may exist between the countries. In essence, we assume that all the coefficients with the intercepts are the same for all the individual countries. The equation for a simple pooled OLS regression can be expressed as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \mu_i$$

Where:

Y_i represents the dependent variable for observation i . β_0 is the intercept term. β_1 and β_2 are the coefficients that represent the effect of X_1 and X_2 on Y , respectively. X_{1i} and X_{2i} are the independent variables for observation i . μ_i is the error term, representing the difference between the observed value of Y_i and the predicted value based on the regression equation.

It's important to note that this approach might not be appropriate if there are significant differences in the relationships between groups or time periods. In such event, we will use other regression techniques. Substituting gives us

$$\begin{aligned} \ln GDP_i = & \beta_0 + \beta_1 DP_{1i} + \beta_2 EC_{2i} + \beta_3 GC_{3i} + \beta_4 PT_{4i} + \beta_5 PMI_{5i} + \beta_6 RP_{6i} \\ & + \beta_7 SB_{7i} + \beta_8 TAB_{8i} + \beta_9 PS_{9i} \\ & + \beta_{10} RQ_{10i} + \beta_{11} X_{11i} + \mu_i \end{aligned}$$

The robust Hausman test proposed by Wooldridge (2002) is used to determine the ideal econometric model (fixed or random effects). The Durbin–Wu–Hausman test (also called Hausman specification test) is a statistical hypothesis test in econometrics that evaluates the validity of a specific assumption in a regression model, known as the "exogeneity assumption". This assumption is crucial for ensuring that the estimated coefficients in a regression model are consistent and unbiased (Wooldridge, 2019). The Hausman test can be used to differentiate between fixed effects model and random effects model in panel analysis (Greene, 2017).

The null hypothesis in the Hausman Test is that the estimated coefficients which assumes that the explanatory variables and error term are uncorrelated, are consistent and efficient, even if they may not be unbiased. In other words, it assumes that there is no endogeneity or correlation between the independent variables and the error term (Wooldridge, 2019). The alternative hypothesis is that the coefficients estimated which allows for correlation between the explanatory variables and the error term, are both consistent and efficient (Wooldridge, 2019). Put simply,

H_0 : $Cov(x, \varepsilon) = 0$, Random Effect is preferred.

$H_1: \text{Cov}(x, \varepsilon) \neq 0$, Fixed Effect is preferred.

Decision Rule: Reject H_0 if the p value of the test statistic is less than 0.05 at 5% level of significance.

The test statistic is computed as:

$$H = (b_0 - b_1)'(\text{Var}(b_0) - \text{Var}(b_1))^{-1}(b_0 - b_1)$$

Where b_0 and b_1 are the estimated coefficients from the random effects and fixed effects models respectively. $\text{Var} b_0$ and $\text{Var} b_1$ are the estimated variance covariance matrices of the coefficients from the random effects and fixed effects respectively.

Table 3: Summary of Descriptive Statistics

	DP	EC	GC	PT	PMI	RP	SB	TAB	PS	RQ	CC	GDP
Mean	56.18	48.05	39.77	58.18	41.50	54.93	69.39	51.67	31.08	28.33	30.07	10.02
Median	59.30	47.40	37.50	59.10	36.70	54.80	73.40	56.90	29.05	25.96	26.44	10.05
Maximum	85.80	72.20	95.00	94.00	92.00	93.70	95.10	92.90	90.57	86.06	80.95	11.55
Minimum	20.20	25.20	5.00	12.00	10.00	22.50	4.30	1.30	0.48	0.47	0.48	8.40
Std. Dev.	14.07	11.49	20.19	18.44	15.60	12.12	17.60	20.69	20.82	18.97	21.35	0.62
Skewness	-0.39	0.02	0.71	-0.44	0.69	0.30	-0.91	-0.45	0.69	0.76	0.50	-0.11
Kurtosis	2.21	1.93	2.92	2.66	3.17	3.45	3.45	2.56	2.99	3.20	2.14	2.99
Jarque-Bera	22.99	21.69	37.72	16.46	36.47	10.38	66.05	18.60	35.58	44.57	32.89	0.89
Probability	0.0000	0.0000	0.0000	0.0003	0.0000	0.0056	0.0000	0.0001	0.0000	0.0000	0.0000	0.6421
Sum	25339.2	21672.5	17935.2	26238.6	18717.6	24775.5	31295.4	23303.5	14017.5	12776.3	13561.4	4520.6
Sum Sq. Dev.	89109.7	59389.5	183524.9	152949.4	109571.0	66149.0	139392.3	192671.9	195035.1	161914.9	205071.6	172.1
Observations	451	451	451	451	451	451	451	451	451	451	451	451

As we can see in table 3, the maximum and minimum mean score is 69.39 and 39.77 respectively. Clearly, it is obvious that when benchmarked against regulatory best practice, countries in sub-Saharan Africa on aggregate has performed poorly with respect to getting credit. In contrast, they have demonstrated resilience in starting a business with a mean score of 69.39. This suggests that, on average, most sub-Saharan Africa countries have relatively efficient processes for starting a business. While three (3) of the ease of doing business indicators under study, EC (48.05); GC (39.77); PMI (41.50), have a score of less than 50 on average, five (5) of them are above 50. It is obvious therefore that there is still much more to be done, and potentials to explore. A close observation of the max and min values in table 3 reveals that there's a significant amount of variability or dispersion in the data, which suggests our dataset is spread out over a wide range, rather than being concentrated around a central value. This is primarily due to the differences in policies, regulations, or inherent economic disparities/conditions across the countries under study. Furthermore, we could observe that for sub-Saharan African countries, the worldwide governance indicators have performed poorly over the period under study given it mean values. No doubt governance in Africa generally has not seen the best of days for most of it. Looking at the distribution, you could observe that dealing with permit (-0.39), paying taxes (-0.44), starting a business (-0.91), and trading across boarder (-0.45) are all slightly negatively skewed. This is suggestive that the distribution of these scores have a longer tail on the left side, indicating that might be a few countries with lower scores for this variable. This confirms the position of their respective mean values.

Table 4: Panel Unit Root Result

Variables	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF Fisher Chi-square	PP Fisher Chi-square	Order of Integration
DP	-15.2409 (0.0000)**	-8.28203 (0.0000)**	218.079 (0.0000)**	305.052 (0.0000)**	(1)
EC	-28.6845 (0.0000)**	-5.46901 (0.0000)**	129.300 (0.0007)**	67.8939 (0.8684)	(0)
GC	-16.8348 (0.0000)**	-6.76820 (0.0000)**	172.916 (0.0000)**	95.8332 (0.1409)	(0)
PT	-23.3930 (0.0000)**	-6.74346 (0.0000)**	125.395 (0.0015)**	102.856 (0.0595)	(0)
PMI	-7.28410 (0.0000)**	-3.74883 (0.0000)**	70.1005 (0.0000)**	101.457 (0.0000)**	(1)
RP	-3.48649 (0.0000)**	-5.12000 (0.0000)**	104.402 (0.0483)**	72.0430 (0.7760)	(0)
SB	-14.3322 (0.0000)**	-8.21390 (0.0000)**	225.161 (0.0000)**	264.353 (0.0000)**	(1)
TAB	-22.7311 (0.0000)**	-9.85354 (0.0000)**	245.307 (0.0000)**	318.872 (0.0000)**	(1)
PS	-7.16775 (0.0000)**	-2.90852 (0.0018)**	120.782 (0.0035)**	132.700 (0.0003)**	(0)
RQ	-15.1443 (0.0000)**	-8.57174 (0.0000)**	234.249 (0.0000)**	312.157 (0.0000)**	(1)

CC	-6.48563 (0.0000)**	-2.08544 (0.0185)**	125.453 (0.0014)**	142.832 (0.0000)**	(0)
lnGDP	-10.1367 (0.0000)**	-4.10968 (0.0000)**	157.938 (0.0000)**	225.274 (0.0000)**	(0)

Source: Authors' Computation (2023) using E-Views 12

**Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality. The p-values are all in parenthesis.

We took the results of Levin, Lin & Chu, Im, Pesaran and Shin, Fisher Chi-square (ADF) and Fisher Chi-square (PP) unit root testing approach for a comparative analysis. We took the position of the majority of the test statistics and at event of a tie, the Hadroni Unit root test estimation was applied. Given our results above, we can see that our variables are of mixed order of integration of I(0) and I(1), thus, while we accept the null hypothesis of some of the variables, we equally reject others. Since stationarity of the variables have been established, we go ahead to establish the co-integration tests in order to ascertain the long-run relationship among the variables.

Table 5: Kao Residual Cointegration Test

ADF	t-Statistic	Prob.
	-2.638051	0.0042
Residual variance	0.000616	
HAC variance	0.001002	

Source: Author's Computation (2023) using E-Views 12

The ADF test statistic is -2.638051, with a p-value of 0.0042. Since the p-value is less than common significance level of 0.05, we reject the null hypothesis. This suggests the presence of a stable long-term relationship (cointegration) among the variables in the study. This evidence suggests that there is a level of stability in the economic environment of the selected sub-Saharan African countries. It implies that even though there might be short-term fluctuations, the overall trend towards a more conducive business environment is likely to continue.

Panel Model Selection.

Table 6: Correlated Random Effects – Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	12.492489	11	0.3278

Source: Authors' Computation (2023) using E-Views 12

The p-value associated with the test statistic is 0.3278 is greater than 0.05, we fail to reject the null hypothesis and conclude that the random effect model is preferred. The model selection criteria suggest that the random effect is the most appropriate model for our analysis. This model accounts for both time-invariant individual-specific characteristics and random variations across individuals. In random effects regression, the individual-specific effect is considered to be a random variable that is specific to each individual. This random effect captures the unobserved, time-invariant characteristics of individual *i* that vary across individuals. It is estimated thus:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$

$$\varepsilon_{it} = \delta_{it} + \mu_{it}$$

Where:

α is the mean intercept for all countries or cross sections.

Y_{it} is the dependent variable (lnGDP) of each sub-Saharan African Country for a point in time t .

β is the coefficient that represents the effect of the independent variables under study (X_{it}) on lnGDP (Y_{it}).

ε_{it} is a combination of the country-specific random effect, assumed to follow a normal distribution with mean zero and constant variance, and the error term, representing the deviation of the observed value of Y_{it} from the predicted value based on the regression equation. Note that while δ_{it} varies cross sectionally, it remains constant over time.

Table 7: Panel EGLS (Cross-section random effects)

VARIABLE	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
DP	0.000366	0.000571	0.641302	0.5217
EC	-0.001440	0.000825	-1.744902	0.0818
GC	0.001685	0.000262	6.428260	0.0000
PMI	-0.000354	0.000572	-0.618371	0.5367
PS	-0.000931	0.000460	-2.024683	0.0436
PT	0.000589	0.000508	1.160323	0.2466
RP	-0.000533	0.000500	-1.065786	0.2872
SB	-0.000145	0.000452	-0.321129	0.7483
TAB	-0.000356	0.000337	-1.053732	0.2926
RQ	-0.002949	0.001008	-2.926927	0.0036
CC	0.000435	0.000539	0.806223	0.4206
C	10.04274	0.109517	91.70010	0.0000
Prob. (F)	R Squared	Adj. R Squared	D.W Stat.	
0.000000	0.826663	0.801173	2.223321	

Source: Authors' Computation (2023) using E-Views 12

From our result above, we could see the position of the respective variables under study. While getting credit (GC), political stability (PS), and regulatory requirements (RQ) are statistically significant with a P value less than 0.05, the rest are not statistically different from zero. With a coefficient of (0.001685), getting credits is positively related to economic growth in the selected SSA countries. This implies that a unit increase in the getting credit rank of any of the selected SSA countries, on average will lead to approximately 0.17 percent increase in economic growth. On the contrary, there seems to be a negative relationship between political stability and economic growth. The economic implication of this is that an increase in the likelihood of political instability and/or politically motivated violence by one unit will on average, lead to a decrease in in economic growth by about 0.09 percent. This buttresses the importance of political stability in the development and continuous progression of any economy.

According to the African Centre for the Constructive Resolution of Disputes (ACCORD), the number of countries in SSA experiencing political instability has declined from 32 in 2002 to 22

in 2022. However, the region is still home to some of the most unstable countries in the world, including Somalia, the Democratic Republic of the Congo, and Yemen. In a more recent development, there has been numerous coups across the region which further throws the affected countries into political instability. On an aggregate level, the sole reason for such development is perpetual enslavement of the citizenry through bad leadership with colonial imprints all over these economies. Nonetheless, as events unfold, we look forward to a peaceful coexistence and fruitful harvest of good leadership, either democratically or otherwise. Going forward, our result reveals that similar relationship exist between regulatory quality and economic growth. With a t-value of 2.93 and a statistically significant coefficient, the semi elasticity of economic growth with respect to regulatory quality is approximately 0.29. This indicates that a unit increase in RQ for any of the selected SSA countries will decrease economic growth by 0.29 percent ceteris paribus. One possible explanation for this relationship is that excessive regulation can stifle innovation and economic activity. Also, poor regulatory design can lead to inefficiency, and high levels of bureaucracy associated with regulation can be a burden on businesses, especially small businesses. These findings are consistent with the findings of (Djankov et al., 2006; Kaufmann et al., 2010).

Table 8: Effect Specification

	S.D.	Rho
Cross-section random	0.610419	0.9928
Idiosyncratic random	0.051858	0.0072

Source: Authors' Computation (2023) using E-Views 12

The cross-section random represents the variation in the dependent variable across different entities (e.g., countries as in our case) that is not explained by the independent variables included in a model. The idiosyncratic random component represents the random variation in the dependent variable that is not accounted for by any of the independent variables in a model. It includes factors that are specific to individual observations within each entity.

The effect specification in table 8 shows that the S.D. of the cross-section random effects is 0.610419, with a Rho of 0.9928. This suggests that there is a significant amount of variation in economic growth among the selected SSA countries is due to country differences. The table also shows that the S.D. of the idiosyncratic random effects is 0.051858 and the Rho is 0.0072. This suggests that there is a relatively small amount of variation in economic growth among the selected SSA countries that is due to idiosyncratic factors that are specific to each individual and that do not change over time.

Conclusion and Recommendations

This work jointly examines the influence of ease of doing business and worldwide governance indicators on economic growth of selected SSA countries from 2010 to 2020. After pertinent econometric estimations and evaluations, the findings of the study highlight the intrinsic nature of indicators like political stability, getting credit and regulatory quality. Most of the measures, if not all, of a working economy whether economic or otherwise hinges on the stability of government, democratically elected or not. In economies marked by political stability, businesses can operate with confidence, knowing that their operations are less likely to be disrupted by abrupt political shifts. Our finding reveals a positive significant relationship with economic growth, which is also in accordance with existing theories. While stability which is a macro component is attained, the

economy is then driven by the micro subsectors which is often the case with developing nations. This indicator considers a crucial aspect of the business environment, particularly for small and medium-sized enterprises (SMEs) and startups. Entrepreneurship comes to light to facilitate growth and development through production and exchange. This study further authenticates this symbiotic association. There has to be an oversight to this relationship which addresses possible conflict arising from it. The quality of regulations will determine the level of conformity in the process. Institutional quality has not seen the best of days in some African nations which builds and keeps accountability on a slippery ground.

In conclusion, the ease of doing business and economic growth in Sub-Saharan Africa are intertwined yet distinct concepts. Improvements in ease of doing business can certainly contribute to economic growth. However, sustainable economic growth requires a holistic approach that addresses various challenges within the region, including but not limited to, infrastructure deficits, institutional weaknesses, and social inequalities. Policymakers must balance efforts to enhance the business environment with broader strategies to promote overall development in the region. To this effect the following recommendations were made

- a. **Promote Access to Finance:** Facilitate greater access to finance for businesses, especially small and medium enterprises (SMEs). This may involve initiatives such as credit guarantee schemes, financial literacy programs, and the development of a robust credit information infrastructure.
- b. **Monitoring and Evaluation Framework:** Establish a robust system for monitoring and evaluating the impact of policy interventions on the ease of doing business and economic growth. Regular assessments will assist in making better policies and ensure their effectiveness.
- c. **Streamline Regulatory Processes:** Implement measures to simplify bureaucratic procedures and reduce administrative barriers for businesses. This could involve the digitization of documentation processes, standardization of licensing requirements, and the establishment of one-stop service centers. However, this should be done with caution as some regulations are best left tedious or as they are especially with importations of certain commodities or services which are government priority.
- d. **Capacity Building and Skills Development:** At the center of all these are the human instruments that pioneer this chain of events. An efficient capacity is best for optima output. Therefore, human capital development needs to be prioritized by investing in education and training programs that equip the workforce with relevant skills for a dynamic business environment.

It is imperative to recognize that the implementation of these recommendations requires a collaborative effort involving governments, private sector stakeholders, civil society, and international partners. More importantly, the government of these nations must be in harmony mutually, with common economic pursuit to get the best deals of an international partnership. It is crucial that these recommendations and strategies be tailored to the specific characteristics and challenges faced by each SSA country before adoption.

References

1. African Development Bank Group. (2020). African Economic Outlook 2020.

2. African Union. (n.d.). Agenda 2063: The Africa We Want.
3. Aghion, P., Akcigit, U., & Howitt, P. (2019). What Do We Learn from Schumpeterian Growth Theory? (No. w24109). National Bureau of Economic Research.
4. Adepoju, U. K. (2017). Ease of doing business and economic growth. *Working Paper, Department of Economics of the University of Ottawa*, (December).
5. Aterido, R., Hallward-Driemeier, M., & Pagés, C. (2011). Big Constraints to Small Firms' Growth? Business Environment and Employment Growth across Firms. *Economic Development and Cultural Change*, 59(3), 609-647.
6. Bajra, U. Q., Halili, Z., & Berisha, N. (2020). Frontier economies and economic growth: Evidence from European and Central Asian Countries. *Borsa Istanbul Review*, 20(3), 279–291. <https://doi.org/10.1016/j.bir.2020.04.002>
7. Banwari, V. (2019). Ease of doing Business in India – Road Ahead. *International Journal of Management Studies*, VI(1(1)), 114. [https://doi.org/10.18843/ijms/v6i1\(1\)/15](https://doi.org/10.18843/ijms/v6i1(1)/15)
8. Bétilla, R. R. (2021). The impact of Ease of Doing Business on economic growth: a dynamic panel analysis for African countries. *SN Business & Economics*, 1(10). <https://doi.org/10.1007/s43546-021-00143-9>
9. Bhattacharya, M, Paramati, S. R, Ozturk, I, Bhattacharya, S. (2016). The effect of renewable energy consumption on economic growth: evidence from top 38 countries. *Applied Energy* 162(C)
10. Bonga, W., & Mahuni, K. (2018). Assessing the Impact of Ease of Doing Business and Corruption on Economic Growth for Africa Free Trade Zone (AFTZ) Member States. *MPRA Paper*, (88932).
11. Bota-avram, Crsistina (2014) “Good governance and doing business: evidence from a cross-country survey.” *Transylvanian Review of Administrative Sciences*, No. 41, 27-45.
12. Cui, X., Yao, Y., Bian, Y., & Cui, L. (2022). Can better business environments promote trade partners’ economic growth? *Applied Economics Letters*, 29(6), 540–544. <https://doi.org/10.1080/13504851.2021.1875115>
13. Dabla-Norris, E., Mottaghi, L., & Suphaphiphat, N. (2013). The Size of the Bureaucracy and Economic Growth. *Journal of Public Economics*, 97, 220-230.
14. Deininger, K., & Byerlee, D. (2011). Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits? The World Bank.
15. Djankov, S., La Porta, R., López-de-Silanes, F., & Shleifer, A. (2002). The Regulation of Entry. *The Quarterly Journal of Economics*, 117(1), 1-37.
16. Djankov, S., McLiesh, C., & Ramalho, R. M. (2006). Regulation and Growth. Available at SSRN: <https://ssrn.com/abstract=893321> or <http://dx.doi.org/10.2139/ssrn.89332>.
17. Doing Business Archive. (n.d.). World Bank. <https://archive.doingbusiness.org/en/scores?topic=>
18. Garcia, C. M., & Hinayon, D. E. (2018). Components of Ease of Doing Business Inferred from Macroeconomic Performance Indicators. *Journal of Educational and Human Research Development*, 6, 161–171.
19. Greene, W. H. (2017). "Econometric Analysis." Pearson.
20. Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 90(1), 1-44.

21. Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. *Policy Research working paper*; no. WPS 5430. <http://hdl.handle.net/10986/3913>.
22. Khan, A., Hasan, R., & Datt, G. (2019). The Role of the Business Environment in Job Creation. *The World Bank Economic Review*, 33(3), 695-714.
23. Klapper L., Laeven L., Rajan R. (2004) “Business Environment and Firm Entry: Evidence from International Data.” *National Bureau of Economic Research, Working Paper No. 10380*
24. Maingi, M. W. (2018). Economic Integration, Ease of Doing Business, Economic Growth and Foreign Direct Investment in the East African Community. *Economic Integration, Ease of Doing Business, Economic Growth and Foreign Direct Investment in the East African Community*, 6(4), 1–58.
25. Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, 110(3), 681-712.
26. Mongay, J. and Filipescu D. (2012). “Corruption and ease of doing business: a correlation analysis in 172 nations and its implications in international business.” *In International Business: New Challenges, New Forms, New Perspectives*, 13-26. Palgrave Macmillan, NY: St. Martin’s Press LLC.
27. Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics* 61(1).
28. Pedroni, P. (2004). Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Economics Theory*, 20(3).
29. Pesaran, M. H. (2007). A Simple Panel Unit Root Test in The Presence of Cross-Section Dependence. *Journal of Applied Economics*, 22(2) 265e312.
30. Wikipedia contributors. (2023, January 16). Ease of doing business index. In *Wikipedia, The Free Encyclopedia*.
31. Wooldridge, J. M. (2019). "Introductory Econometrics: A Modern Approach." *Cengage Learning*.
32. World Bank Enterprise Surveys (EBES) (2023) <http://www.enterprisesurveys.org>
33. World Bank (2017). Doing business 2017: Equal opportunity for all. -World Bank
34. World Bank. (2019). Doing Business 2019: Training for Reform. World Bank Group.
35. World Bank. (2020). Doing Business 2020: Comparing Business Regulation in 190 Economies. World Bank Group.
36. International Monetary Fund. (2021). Regional Economic Outlook: Sub-Saharan Africa. Retrieved from <https://www.imf.org/en/Publications/REO?year=2021&sortby=Date&series=Sub-Saharan%20Africa>.