The Effect Of Rule Of Law On Total Factor Productivity In Kenya.

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ABSTRACT. *Economies across the globe have witnessed wide variations in incomes, inviting researchers and policy makers to explore various interventions to bridge the gap. Among the interventions floated is focusing more on productivity levels than the accumulation of inputs. Total Factor Productivity, defined as a measure of output growth not explained by factor inputs, has been fronted as the solution to the widespread variations. Kenya targets achieving an annual Total Factor Productivity growth rate of 2.5 from the current 0.352 to achieve vision 2030 and Sustainable Development Goals. One way to increase Total Factor Productivity is by creating an enabling and conducive environment where factor inputs operate. Institutions, specifically the Rule of Law, play a vital role in ensuring a thriving environment. This study, therefore, sought to establish how the Rule of Law affects Total Factor Productivity in Kenya both in the short run and in the long run. The study adopted an Auto Regressive Distributed Lag Model with an error correction term, which was informed by the presence of co-integration relationships as established by the ARDL bound test. The study utilized a time series data set for the period 1996 to 2020, obtained from secondary sources. The ARDL bound test for co-integration was employed since variables were found to be of mixed series. The study found a positive long-run relationship and a negative short-run relationship between the Rule of Law and Total Factor Productivity in Kenya. Consequently, the study recommended that the government of Kenya should provide both technical and budgetary support to those institutions that promote the entrenchment, adherence and upholding of Rule of Law as one of the ways of improving TFP levels.*

Key words: *rule of law, total factor productivity, auto regressive distributed lag model*

I.   Introduction

Background of the Study.

   Income variations across the globe continues to attract the attention of scholars, policymakers, and researchers on a plausible explanation for income variations. The difference in productivity levels, with the emphasis being on total factor productivity, has been fronted as the answer to the income variations since conventional economic theories such as Solow and endogenous growth theories have failed to explain the same. Total factor productivity refers to the variable that accounts for effects in output not explained by capital and labor. Therefore, factor input accumulation isn't enough to guarantee high economic growth rates and per capita incomes. Subsequently, prudent and efficient utilization of factor inputs becomes a key concern for policymakers. The utilization of resources shifts the discussion to productivity levels. Observations can support the shift in the debate that countries with the same level of endowment of natural resources and within the exact geographical locations have been shown to develop differently. Equally, at the micro-level, firms in one industry have different profitability margins despite having access to the same level of materials and being in the same environment. This paradox justifies why the focus has shifted to productivity levels.

   A country's output can be explained as a function of its input which includes the conventional inputs of labor and capital, as well as the efficiency parameter, which is the TFP.

Total Factor Productivity

   Total Factor Productivity refers to the variable that accounts for effects in output not explained by capital and Labor. The efficiency parameter is highly significant in achieving economic growth, as observed by studies such as Van (2009), Park (2010), Eichegren, Park & Shin (2012), Aiyar & Duval (2013), Tran (2013), Zhao (2015) and Anne (2019). Eichengreen, Park, & Shin (2012) established that 85 percent of growth stagnation could be attributed to an average decline in TFP. In contrast, a corresponding decrease in capital and Labor has a relatively minor role; therefore, improving productivity levels is a significant policy intervention in catching up with developed economies. Equally, Aiyar et al. (2013) established that the poor growth performances of Latin America were primarily because of negative TFP and not because of impediments to factor accumulation in comparison

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with emerging Asian Tigers such as China, whose tremendous growth is associated with a steady growth of TFP. Tran (2013), observed that for poor and developing economies to attain developed status, they have to change the focus from factor accumulation to improvements in the productive capacity of the available resources. In Kenya, Anne (2019) found that TFP was the most significant contributor to economic growth. TFP importance cannot be underrated since it's a vital ingredient for economic growth. TFP growth allows society to improve their welfare, which is the sole goal of any government. Consequently, it's worthwhile for policymakers and researchers to ask which interventions are needed to spur TFP growth rate, which is the aim of this project.

Despite the massive investments in physical capital and increase in the labor force over the years, and the improvements in human capital as supported by high levels of school enrolment rates and an increase in institutions of higher learning, a look at Kenya's TFP over the years shows TFP oscillating between a constant trend and a decreasing trend as shown in Figure 1.1.
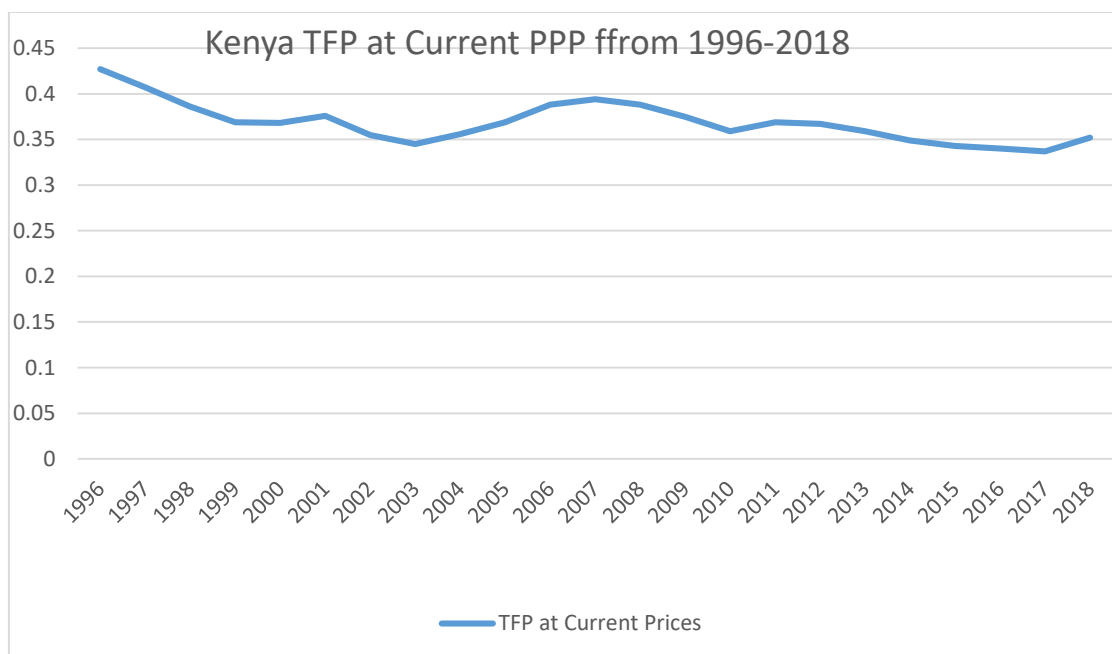

Figure 1. 1 The trend in TFP in Kenya for the period 1996-2018
Data Source; Penn International Tables (2019).

The Kenya TFP trend shows a decreasing rate, with the highest at 0.427 in 1996 and the lowest at 0.337 in 2017. According to Global Competitive Index (2021, Kenya ranks 95 out of 141 economies with a productive score of 54.1. The GCI is anchored in economic growth literature and has a progressive scale of 0-100, where 100 represents the frontier and is developed under 12 pillars, including institutional and governance quality. The GCI report (2021) showed that the productivity level in Kenya lags behind in comparison to world leaders especially the emerging South East Asia nations.

According to the GCI report (2021), the top five productive economies globally are Singapore, the USA, Hong Kong, Netherlands, and Switzerland, with productive scores of 84.8, 83.7, 83.1, 82.4, and 82.3, respectively. The bottom five economies are Mozambique, Haiti, Congo Democratic Republic, Yemen, and Chad, with 38.1, 36.3, 36.1, 35.5, and 35.1, respectively. East Asia and Pacific Region are the most productive, with a median score of 73.9, followed by Europe and North America. Sub-Saharan Africa is the least productive, with a median score of 46.3. However, on a positive note, SSA was the most improved with an improvement rate of 2.3 percent. Mauritius was the most productive economy in SSA, with a score of 64.3, followed by South Africa with 62.4. Guinea Bissau, Burundi, Uganda, Rwanda, and Namibia recorded the most significant improvements with 2.9, 2.7, 2.1, 1.9, and 1.8 percent, respectively. Kenya's improvement rate was 0.5 percent.

Low productivity levels in Kenya have been identified as the biggest threat to the transformation envisaged in Vision 2030 of achieving an annual GDP growth rate of 10 percent. This is an apparent shortfall bearing in mind until 2020, Kenya's GDP growth rate was 6.4 percent. Kenya's National Productivity Policy observes that productivity has remained low at an index of 0.84 in comparison to the East Asia countries, where the productivity index is five.

The problem of low productivity prompted the establishment of a legal framework to guide improvements in productivity levels through the enactment of The National Productivity Authority Act (2013), which drove the renaming of the Productivity Centre of Kenya (PCK) to National Productivity and

Competitiveness Centre (NPCC). It's in the backdrop of this severe threat that low productivity levels pose to attaining Vision 2030 and SDGs that led to this study. Kenya has a long way to go to enhance productivity and compete globally. One way to improve the productivity level of Kenya is to improve institutional quality.

Isaksson (2007), after reviewing extensive literature on TFP, concluded that there are five drivers of TFP: innovation, education, market efficiency, physical infrastructure, and governance / institutional quality. The author noted that high-quality institutions provide a friendly environment and policies that increase productivity spurring economic development. Institutions are essential components, and their quality is generally associated with productivity. It is this driver of TFP that this study explored.

The Rule of Law and Institutions

The significance of institutional matrix in the growth agenda of different economies has been explored exhaustively with the empirical works of Acemoglou, Robinson & Johnson (2000), (2004), (2012), Rodrick (2007), Lubker & Weeks (2002), and North (1990) providing significant contributions. Institutions are the game's rules that configure human interactions in the social, economic and political arena. The need to constrain human behavior is necessary because humans are rational beings who act on the principle of self-interest to derive maximum benefit or utility, hence the need for self-made rules. Interactions of human beings and other economic agents, such as firms, are occasioned by transaction and production costs. Institutions play a vital role in their interplays since they determine both the transaction and production costs, ultimately determining the feasibility of an exchange.

Additionally, exchange agreements and contractual obligations are needed to facilitate smooth interactions among the economic agents. Therefore, resources are required to define, interpret, and enforce contracts that affect the country's economic performance. According to Acemoglou, Robinson & Johnson (2004), there are two institution categories: inclusive and extractive.

Inclusive institutions relate to a system of checks and balances, secure property rights, an impartial law system, an independent judiciary, and prudent utilization of public resources. The former promote the effectiveness of contractual enforcements and reduce transaction and production costs per exchange, ensuring maximum gains from the trade exchange are realized. Gains in terms of profits, wealth, or welfare are the incentives to trade and innovation, which is vital for economic growth. Inclusive social, political, and economic institutions are essential to an effective institutional matrix that creates a favorable economic environment that nurtures creativity, innovation, and productivity. Inclusive institutions promote private property rights, secure property rights, patents, and enforce contractual obligations, which help build investors' confidence in a country.

On the other hand, extractive institutions relate to non-existent property rights, a biased law system, disregard for the law, and a judiciary directed by the executive. Okinade & Adebayo (2021) observed that the latter create a weak and poorly developed infrastructure that cannot check excesses, corruption, abuse of power, and violation of the Rule of Law. A poorly-developed institutional framework hinders the channelization of capital from fostering productive investment, promoting increased productivity and sustainable growth. Extractive institutions do not instill confidence in property rights, private property, and enforcement of contracts, lowering the likelihood for investors to invest. Additionally, Barbier & Burgess (2021) opines that strong institutions are a catalyst for speedy growth. Institutions encourage and nurtures various economic activities that promote the accumulation of human capital and innovations brought about by complexities in economic processes that call for productivity improvement.

North's (1991) work demonstrated the effect of institutions in explaining why Spain, which was the great power of the 16th century in Europe, declined while the Northlands and England flourished. According to the author, protecting private property, securing property rights, and enforcing contracts made the difference between Spain and England. Additionally, Acemoglou et al. (2004) highlighted the example of South Korea and North Korea, which are similar in many aspects. South Korea, which adopted inclusive institutions, fostered economic growth, productivity, and prosperity. North Korea adopted extractive institutions that are hell-bent on the suffering of most citizens to benefit a few elites in power, continued to stagnate in growth, productivity, and innovation.

The importance of institutions was captured adequately by North and Thomas (1973) in their work when they observed that factors emphasized by the economic theories, including innovations and human capital development, are not growth factors, but rather outcomes of growth and therefore the plausible explanation for different levels in incomes is institutions. Additionally, Acemoglou, Robinson & Johnson (2004) collaborated with North and Thomas (1973) regarding the importance of institutions in output growth, observing that institutions determine the structure of economic incentives in the country and help in efficient allocation of resources. Therefore, the caliber of institutions is a vital consideration in expounding the overall economic performance, since their evolutions leads to growth, stagnation, or decline. The Horn Economic and Social Policy Institute (2009) report captured the nexus between institutions and TFP. The findings were that the dismal performance of TFP in Sub-Saharan Africa resulted from poor institutions and restrictive trade policy. The findings suggested that improving institutional quality in SSA provides considerable room to speed up TFP growth rates. Equally, a comparative analysis of the report shows that SSA has the lowest institutional quality and TFP.

Adherence to the Rule of Law is a vital determinant for the institutional quality. The WGI defines the Rule of Law as the perceptions of the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts as well as the likelihood of crime and violence. The rule of Law is the cornerstone and foundation of democracy, forming the basis of economic development. Furthermore, the Rule of Law creates an enabling environment for steady and fundamental growth, translating to increased rates of economic growth and a more even society. Countries that have disregarded the Rule of Law have witnessed massive embezzlement of public resources, abuse of human and property rights, and lawlessness that often results in anarchy.

Data from the WJP Report (2021) ranked Denmark as the top country in the Rule of Law index with a score of 0.90, followed by Norway in the second position with a score of 0.89 and Finland in the 3rd rank with 0.87. DRC, Colombia, and Venezuela were ranked the poorest scoring 0.33, 0.32, and 0.28, respectively. Globally, more countries registered a decline. Namibia was ranked first in SSA with a score of 0.62, followed by Rwanda in the second position with a score of 0.61, and Mauritius closed the top three spots with 0.60. The poor performers in SSA were Cameroon, with a score of 0.37, Mauritania with 0.35, and DRC with 0.33, respectively. Ethiopia and Malaysia registered the highest improvement rates at 5.6 and 5.1 percent, respectively. On the other hand, Cameroon and Iran had the highest decline rates at 4.6 and 4.1 percent, respectively.

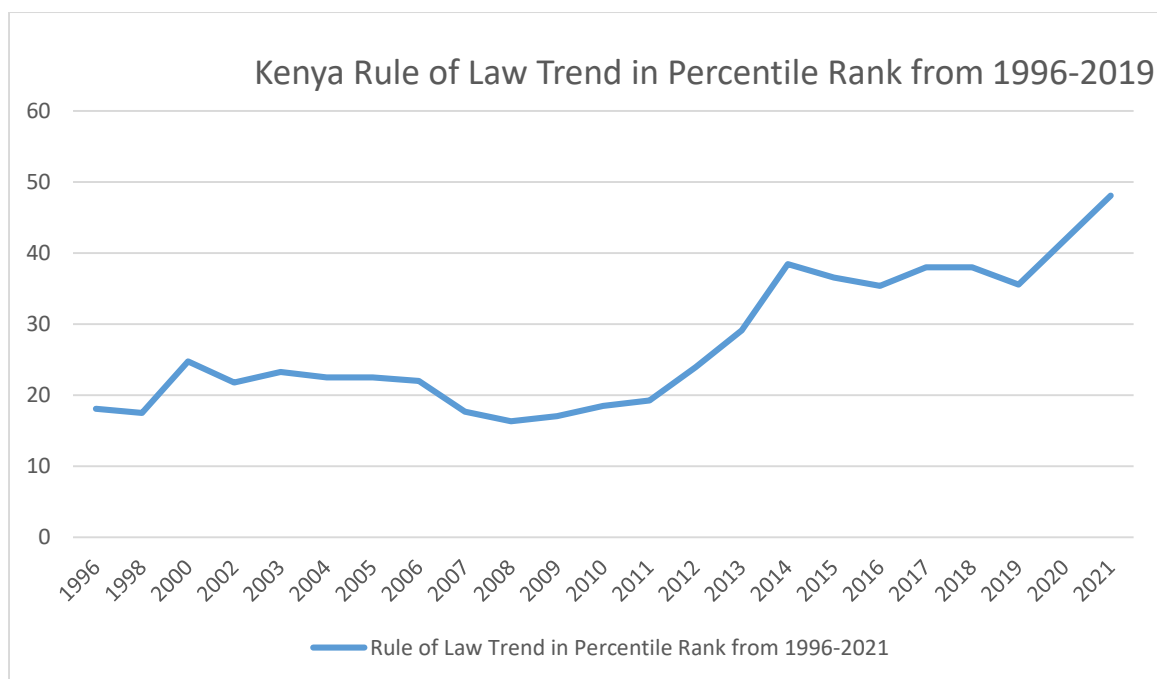As obtained from the WGI Report (2021), Kenya's trend in the Rule of Law is represented in Figure 1.2.

Figure 1. 2 The trend of Rule of Law in Kenya from 1996-2021
Data Source; World Governance Indicators Report (2021).

Figure 1.2 shows an upward trend for the period under review. However, the performance has declined in 2008 and in the recent past, from 2014 to 2019 but with an improvement in the last two years. The highest score obtained was 48.08 percent in 2020, while the lowest was 16.35 percent in 2008. Kenya was ranked 102 out of 128 countries in the index. This was a marginal improvement as previously, Kenya was ranked position 105. However, the current status leaves room for improvement, and more needs to be done for Kenya to score above average.

Cuenca & Sanchez (2019) captured the relevance of the Rule of Law in analysing MDGs and SDGs. The author noted that one of the reasons that MDGs were not achieved is because of failure by member countries to follow the Rule of Law principle, which was agreed by the United Nations General Assembly. The author opined that SDGs would suffer the same fate as the MDGs if countries disregard Rule of Law principles, especially in less developed economies.

Rule of Law has been chosen as the variable of interest since the sub-indicators constituting the Rule of Law index touch on other governance indicators according to WGI. Rule of Law is also among the six World Governance Indicators (WGI) that measure governance and institutional quality. Cuenca & Sanchez (2019) noted that upholding the Rule of Law promotes productivity by ensuring disputes are solved amicably, enhancing fairness, accessibility, involvement, openness, empowerment, and equality to the law. It's, therefore, not a

coincidence that Kenya ranks poorly on the Rule of Law and productivity index. A diagnosis is needed, which justifies the need for this study.

Problem Statement.

Kenya has made significant achievements in factor accumulation, as evident by the growth in capital and labor. As per the author's computation, the capital stock has grown at 138.2 percent during 1996-2021, while labor has also grown significantly at 107.96 percent in the same period. The quality of human capital has greatly improved with high school enrolment rates and better health care. However, TFP growth hasn't been in tandem with the growth of factor inputs depicting decreasing trend from an index value of 0.427 in 1996 to 0.352 in 2018, according to data from World Penn Tables (2019). Kenya's performance and improvement rate is still dismal, with an improvement rate of 0.5 percent which is still far below compared to improvement rate of the SSA, which is 2.3 percent according to the Global Competitiveness Index (GCI). Equally, a TFP of 0.352 is far below the recommended TFP Growth minimum rate of 2.5 for attaining Vision 2030, per the National Productivity Policy.

Failure to address the low productivity levels will risk achieving Kenya Vision 2030and the SDGs. One way to manage low productivity levels is through upholding the Rule of Law, which provides an apt approach for creating an efficient economy with an enabling environment, for improving the welfare of the citizens. Additionally, it is the fabric of economic prosperity as it promotes institutional quality, encourages efficient macroeconomic management, and ensures effective implementation of growth-enhancing policies that positively impact TFP. The need to uphold Rule of Law was underpinned in the UNGA at its 67th session, where member states affirmed their commitment to upholding the Rule of Law in a consensus of a declaration on Rule of Law. Moreover, the Agenda 2030 notes that sustainable development can't be achieved without an equitable and inclusive society, which can only be achieved through a strong Rule of Law.

Therefore, there is a need to address the Rule of Law to avert missing targets of the SDGs, as was the case for MDGs, as highlighted by Cuenca & Sanchez (2016) and Vision 2030.Therefore, there is the need to empirically test the interrelationship that exists between the two variables.

Significance of the Study.

The study sought to explain the importance of the Rule of Law in explaining the sub-optimal performance of Kenya's economy. It will be critical in advising different groups in the economy. First, the policymakers in understanding how Rule of Law and, by extension, institutional quality impacts the economic level in Kenya. This will assist them in developing policy interventions and allocating adequate resources geared toward entrenching, upholding, and adhering to the Rule of Law in Kenya. Secondly, National Productivity and Competitiveness Centre (NPCC), established to guide and suggest ways to improve productivity levels in Kenya, will find this study resourceful.

Thirdly, the study will assist civil society groups that carry out civil education to the citizens and help them understand how the Rule of Law affects the outcomes of economic activities. Additionally, this study will help civil society to prosecute their case on the need to uphold the Rule of Law, especially by the Executive, as they play their role of keeping the government in check. Scholars in academia and other independent researchers will find this study a great source of contribution in carrying out further research in the broader scope of governance and economic growth. Lastly, the curriculum developers can use this study to provide a basis for incorporating governance lessons in the school curriculum, especially in secondary and post-secondary education, to equip students to contribute better to societal matters and be agents of good governance after leaving school.

II. Literature Review

Theoretical literature.
This provides economic theories that have been found to explain the economic growth of a country.

Solow Theory.

The theory, as advanced by Solow (1956), postulates that, economic growth rate is driven by accumulation of factor inputs and improvement in productivity levels. A country's output can be presented in a simple form of a Cobb Douglas function **Y= A*K$^\alpha$ *L$^\beta$** Where Y is output, K is capital, L is Labor, alpha and beta represent the respective factor shares of inputs in output, and A is the TFP.

The unexplained change in the output growth after accounting for the effect of factor accumulation is referred to as Solow residual. The theory postulates that TFP cannot be estimated, excluding capital and labor. Therefore, the factor inputs' contributions must be considered when calculating TFP estimates. TFP measures productivity, which is represented by the letter A. The Solow Residual can be computed as follows. Assuming the following Cobb-Douglas production function.

$Y_t = A_t (Kt^\alpha Lt^{1-\alpha})$ (2.1)

Where *Yt* denotes real GDP, *At* is TFP, *Kt* is total capital, and *Lt* is total Labor used in the production process. Obtaining the derivatives for equation (2.1) with respect to time yields

$$\frac{\Delta Yt}{Yt} = \alpha \frac{\Delta K\iota}{K\iota} + (1 - \alpha)\frac{\Delta L\iota}{L\iota} + \frac{\Delta A\iota}{A\iota} \tag{2.2}$$

Equation (2.2) is the key equation in the growth accounting framework. Specifically, the parameters *α* and *(1-α)* in (2.2) are input shares/elasticities, and α is obtained as

$$\alpha = (\Delta Y_t / \Delta K_t)(K t / Y_t \tag{2.3}$$

TFP is, therefore, a residual of the contributions of capital and labor, as shown below,

$$\frac{\Delta A\iota}{A\iota} = \frac{\Delta Yt}{Yt} - \alpha \frac{\Delta K\iota}{K\iota} - (1 - \alpha)\frac{\Delta L\iota}{L\iota} \text{ and } \alpha = (\Delta Y_t / \Delta K_t)(K_t / Y_t) \tag{2.4}$$

This provides the theoretical background in which the trend of TFP in Kenya has been tested.

Empirical Literature.

Rule of Law, as previously defined, refers to self-made constraints that shape human interaction in political, social, and economic spheres and is one of the critical governance indicators. At a broader level, considerable research linking governance and economic growth has been done, and substantial findings suggest that institutions determine productivity levels and economic growth. The importance of institutions in growth literature can be traced to the works of Acemoglou et al. (2004). However, contemporary studies have established the interrelationship between institutions and economic growth. Such studies include; Roth (2022) explored the nexus between the rule of law and labor productivity at the micro level limited to individual businesses in the European Union using a panel data set covering 1998-2005. The author employed a two-stage least square method and found that rule of law significantly determines labor productivity. Aloui (2019) conducted a study on governance, poverty eradication and productivity in Africa utilizing a panel dataset covering 1996 to 2016. The author similarly made use of the WGI to measure governance. The findings were that Rule of Law has no role in increasing productivity levels.

Shitero (2016) explored the connection between corruption, governance quality, and economic growth in Kenya. The author employed Contact Intensive Money as a proxy for governance quality and used OLS for its analysis. The results showed that the quality of governance and institutions have a significant effect on economic growth than the effects of corruption. Orayo & Mose (2016) conducted a comparative study using panel data on the contribution of governance to economic growth in EAC from 1999-2013. The authors used both Random Effect and OLS for their analysis. The governance parameter was measured using the six dimensions provided by the WGI. The results showed that only The Rule of Law was significant under the OLS model in Kenya. Ghulan & Jamil (2015), while undertaking a panel estimate of 12 Asian countries on the link between governance, Aggregate labor productivity (ALP), and Total Factor Productivity (TFP), established a positive relationship among the variables.

Udah & Ayara (2014) established that high-quality governance structures and institutions are essential for improved welfare. The authors used a time-series data set for 1970-2011 with OLS and factor analysis estimation techniques to establish the connection between the three parameters. The quality of institutions was measured by adherence to the Rule of Law and was established to be a significant variable in explaining the economic performance in Nigeria. Van (2009) utilized a WGI data set to assess the link between governance and infrastructure development in Sub-Saharan Africa using a panel dataset covering 2000 to 2013. The study employed the two Stage Least Square Method and found a positive and significant relationship between the two variables. Although the author didn't capture TFP, it can be deduced that infrastructural development and good governance boost a nation's productive capacity.

Osborne (2012) analysed the effects of governance quality in conjunction with capital and Labor as part of TFP on a country's economic output using data from 43 countries from 1996 to 2010. The study utilized the WGIs to measure governance, including the Rule of Law. Rule of Law was the second most significant indicator of governance after corruption. The composite governance variable supported the hypothesis that better government quality positively impacts productivity, output, and economic growth. De (2010), while analysing the link between governance and growth in Asian economies, employed the OLS analysis technique using cross-sectional data from 1998- 2008. The author utilized the six governance indicators given by WGI to measure governance. The Rule of Law indicator was a significant factor in growth. Equally, countries with higher adherence to the Rule of Law grew faster by 1.2 percentage points annually.

Earle & Scott (2010) used democracy in establishing its link with economic growth. The authors concluded that democracy promotes stability since state stability or fragility affects both macro and micro outcomes. Cebula and Ekstrom (2009) investigated various forms of economic freedom and governance dimensions to assess their influence on growth in OECD countries for the period 2004 to 2007. Corruption control, political stability, and the Rule of Law measured governance. The findings were that economic growth was

positively affected due to political stability and the rule of law. Economic freedom, primarily determined by the role of institutions, positively affected economic growth.

A weak rule of Law negatively affects property rights protection, as Suyitno (2008) reported. The author observed that people are likely to invest in their lands if they know that in case of disputes, they will be resolved promptly. The author gives examples of Brazil, Indonesia, the Philippines, and Thailand, where there was an upsurge in land values after people were given title deeds. This is because they were willing and confident to develop their lands. Land is a primary factor of production and therefore, in countries where land disputes are resolved promptly, there is a better usage of the land, which in the long run boosts its productive capacity as a primary factor of production. Son & Kakwami (2007) studied the Rule of Law and pro-poor growth, which is more likely to benefit low-income people than non-poor people. The study was a cross-country analysis capturing 80 countries in Africa and Asia and covering 1984 to 2001. These findings were contrary to most studies since there was no association between the variables of interest.

Cavalcanti & Novo (2005) employed quartile regression methods. The results showed that productivity, as measured by output per work, increased by five percent as a result of a unit institutional improvement.The authors conducted a cross-sectional analysis for the years 1988 -2003 across countries. Gerring et al. (2005) used a cross-country regression model for the period 1950-2000 and got contra findings on the link between democracy, productivity, and economic growth. The results suggested that democracy has a negligible effect on productivity. Rodrick et al. (2004) concluded that institutional quality triumphs over all other factors. Anderson's (2003) work on the Rule of Law and Poverty levels observes how a weak rule of Law increases poverty. The author further observes that the poor populace suffers the most in countries where the state institutions and authorities don't adhere to the Rule of Law.

Acemoglou et al. (2004) disapprove of the geography hypothesis that relates variations in per capita incomes to differences in geographical scope in exploring the role of institutions. The authors concluded that institutions explain differences in income levels among countries by pointing out a reversal of fortune where prosperous economies in the sixteenth century are today poor. The author attributed this to institutional reversal, which led to a regression in income levels.

Rivera- Batiz (2002), in their cross-sectional study covering the period 1960-1990, developed a general model to proof that democracy enhances good governance, which increases the productivity levels of a country, spurring economic growth. The conclusion was that stable democracy was a significant determinant of TFP growth levels and output growth in 1960-1990 by taming the actions of corrupt officials.

Hall and Jones (1999) explored the role of social infrastructure in productivity growth. The authors argued that institutions are the fundamental causes of cross-country income-level variations. Their analysis showed that institutions promote productivity and, consequently, growth.

Other studies considered the effect of Rule of Law on TFP as part of democracy. Sen (1999) suggested that democracy is vital in improving living standards. Feng's (1997) research on the link between democracy and economic growth, while utilizing data from 96 countries from 1960 to 1980, found that democracy is a critical factor for growth. The conclusion made was that political stability and the Rule of Law, both vital elements for any functional democracy, is the channel through which democracy positively influences productivity and economic growth. Kaufmann & Kraay (1999) utilized a combination of cross-country investor surveys to evaluate the connection between governance indicators, per capita incomes, and literacy levels. The findings were that a unit increase in the Rule of Law was associated with a 2.5-fold increase in per capita incomes and a 25 percent increase in literacy. Increased literacy improves human capital, which is an essential determinant of TFP. Grandvoinet (2001) further notes that upholding the Rule of Law facilitates access to legal information and the court system necessary for poverty reduction measures. The author expounds that such access to information facilitated by upholding the Rule of Law reduces the poor's vulnerability to exploitation and deception. Moreover, access to information enables the vulnerable poor group to exploit viable opportunities and improve their livelihoods.

Concerning TFP research in Kenya, several studies have been done, the most recent one by Kithinji & Onono (2020), who researched on effects of e-commerce on output and TFP. Ndegwa (2019) looked at the association between TFP and Economic growth at an aggregate level. Gacanja, Were & Etyang' (2013) explored changes in productivity in several manufacturing subsectors. Kalio, Muteyo & Awour (2012) researched on effects of TFP on economic growth, while Gollin (2002) concentrated on sectorial productivity, specifically in the agriculture sector. Lastly, Onjala's (2002) focus was on the relationship between trade policy and TFP.

II.   Overview of the Literature.
Literature reviewed suggests a positive correlation exists among our variables of interest, namely Rule of Law and Total Factor Productivity. However, contra findings are present with studies such as Aluoi (2019), Son & Kakwani (2007), and Gerring et al. (2005) showing that the Rule of Law has either a negligible effect or has no effect at all. The reviewed literature shows the Rule of Law being assessed as an indicator of governance

as presented by the WGI dataset or as a measure of Institutional Quality. This brings out an important observation that institutional quality can be used as a proxy for Rule of Law since institutions are seen as the custodian and gatekeepers of the Rule of Law, an assumption that was employed in this study. Two studies closely connected to Kenya, namely Shitero (2016) and Orayo & Mose (2016), have been reviewed. Shitero (2016) focused on the corruption, institution, and economic development in Kenya, while Orayo & Mose (2016) focused on the effect of governance on economic growth in the wider EAC, where Kenya is a member state. No previous study has focused on the Rule of Law and its statistical relationship to TFP in Kenya, which is the research gap of this study.

III. Methodology

Research Design.
Explanatory research design was adopted to explain the association between the dependent and the regressors. The usefulness of the explanatory research design is explaining what is observed by descriptive studies.

Data Type and Source
Annual time series secondary data from 1996-2020 was used. The period has been chosen based on the available data on the variables under consideration. Data were collected from official World Bank and World Economic Forum. The sources of data were chosen based on their credibility

Theoretical Framework.
The study employed the seminal work of Solow in determining the model used. Consider a simple production function consisting of labor and capital as given below,

Q= F (K, L, t)
(3.3.1)

Where Q is output, K is capital, L is Labor, and t is time, which has been employed to capturethe technical change over time as represented by A in equation 3.3.2

Q= A(t) f (K, L) (3.3.2)

Taking the derivative of equation 3.3.2 and obtaining the quotient,

$$\frac{Q\bullet}{Q} = \frac{A\bullet}{A} + A\frac{df}{dK}\frac{K\bullet}{Q} + A\frac{df}{dL}\frac{L\bullet}{Q} \tag{3.3.3}$$

Where dot (•) indicates time derivatives

Defining r_k as $\frac{dQ}{dK}\frac{K\bullet}{Q}$ and W_l as $\frac{dQ}{dL}\frac{L\bullet}{Q}$ as the relative shares of capital and Labor and substituting in equation 3.3.3

Note that,

$\frac{dQ}{dK} = A\frac{df}{dK}$ and$\frac{dQ}{dL} = A\frac{df}{dL}$, the results therefore are,

$$\frac{Q\bullet}{Q} = \frac{A\bullet}{A} + r\kappa\frac{K\bullet}{K} + W\iota\frac{L\bullet}{L} \tag{3.3.4}$$

Where *Q/Q* is the rate of change of output, *K/K* is the rate of change of physical capital, and *L/L* is the rate of labor change.

TFP is given as $\frac{A\bullet}{A} = \frac{Q\bullet}{Q} - (r\kappa\frac{K\bullet}{K} + W\iota\frac{L\bullet}{L})$ (3.3.5)

Taking the natural logarithm of equation 3.3.4

$$\frac{dLnQ}{dt} = \frac{dLnA}{dt} + r\kappa\frac{dlnK}{dt} + W\iota\frac{dLnL}{dt} \tag{3.3.6}$$

Rearranging equation 3.3.6

$$\frac{dLnA}{dt} = \frac{dLnQ}{dt} - r\kappa\frac{dlnK}{dt} - W\iota\frac{dLnL}{dt} \tag{3.3.7}$$

The Empirical Model.
The study adoptedSolow (1957) model while using a direct accounting estimation method as shown in equation (3.4.1)

$$Y_t = A_t K_t^{\alpha}(HL)_t^{1-\alpha}e^{ut} \tag{3.4.1}$$

where *Yt* is aggregate output (real GDP), *K* is the aggregate stock of capital, *HL* is human capital–augmented labor force, alpha denotes the share of capital while the complement of share gives the labor share, which is one minus alpha. *At* is an index of TFP. The error term (*ut*) captures all other variables not considered in the model.

The study adopted an ARDL model since variables were found to be of mixed series. This is because an ARDL model is more suitable with variables integrated of mixed order compared to other models such as VECM model, which provides both the long run and short term effects amongst variables as well. Additionally, an ARDL

model gives more accurate results when few observations are under consideration hence its adoption. The general form of an ARDL model is given as follows;

$$Y_t = \gamma_{0i} + \sum_{i=1}^{p} \delta i\, Y_{t-1} + \sum_{i=1}^{q} \beta i\, X_{t-1} + \varepsilon_t \tag{3.4.2}$$

Where

Y_{t-1} = Vector

X_{t-1} = Variables that are of the same order.

p and q = number of lags for the dependent and independent variables, respectively.

ε_t = error term

The presence of co-integration was confirmed through the ARDL Bound test, necessitating the adoption of an ARDL-ECT model.

The general format of the model, therefore, changes to;

$$Y_t = \gamma_{0i} + \sum_{i=1}^{p} \delta i\, Y_{t-1} + \sum_{i=1}^{q} \beta i\, X_{t-1} + \varphi ECT_{t-1} + \varepsilon_t \tag{3.4.3}$$

Where φ is the coefficient of ECT.

The study adopted and adapted Hakim et al. (2009) model to include the Rule of Law variable and other control variables as supported by the literature. The reformulation and adaptation were affirmed by Kithinji & Onono (2020), who adapted the model to capture their variable of interest: e-commerce. The adapted equation can be expressed as;

$$A = f(RL^{\alpha 1}, AHC^{\alpha 1}, GFCF^{*\alpha 2}, TO^{\alpha 3}, FD^{\alpha 4}) \tag{3.4.4}$$

Where A is the TFP, RL is the Rule of Law, GFCF represents Physical Capital, AHC represents education Adjusted Human Capital, TO represents Trade Openness, and FD is the Financial Development. For purposes of our regression analysis, equation (3.4.4) can be expressed mathematically as follows;

$$A_t = \alpha 0 + \alpha 1 RL_t + \alpha 2 GFCF_t + \alpha 3 AHC_t + \alpha 4 TO_t + \alpha 5 FD_t + E_t$$
(3.4.5)

Incorporating the variables of interest, the specific empirical model to be estimated is as follows;

$$\Delta TFP_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta TFP_{t-1}$$
$$+ \sum_{i=0}^{q} \beta_{2i} \Delta RL_{t-1} + \sum_{i=1}^{q} \beta_{3i} \Delta GFCF_{t-1} + \sum_{i=1}^{q} \beta_{4i} \Delta AHC_{t-1} + \sum_{i=1}^{q} \beta_{5i} \Delta FD_{t-1} + \sum_{i=1}^{q} \beta_{6i} \Delta TO_{t-1}$$
$$+ \varphi ECT_{t-1}$$
$$+ \varepsilon_t \tag{3.4.6}$$

Equation 3.4.6 helped us to achieve our objective.

Definitions and Measurement of Variables.

Dependent variable

Total Factor Productivity (TFP) - Refers to the variable that accounts for effects in output not explained by capital and Labor. TFP estimates were obtained from the World Penn Tables.

Independent Variables

Rule of Law (RL) - Perceptions of the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The data source was World Governance Indicators Report (2021).

Gross Fixed Capital Formation (GFCF) - Refers to new and second-hand assets acquired by the producers minus disposal that are included for the production of other goods and services for more than one year. Physical capital estimates will be obtained from the World Development Indicators.

Adjusted Human Capital (AHC) - Refers to the skills and knowledge of workers adjusted for quality improvements due to educational attainment between the ages of 15 and 64 years.

Trade Openness (TO) - Refers to the extent to which a country engages in transactions with the rest of the world. The variable was measured as the sum of exports and imports as a proportion to GDP, as defined in the empirical work of Rodrick and Rodriguez (1999). Data was obtained from the World Development Indicators (2021).

Financial Deepening (FD) – Financial deepening refers to the increasing provision of financial services, affecting TFP in two ways. First, the more developed a country's economic structure is, the more saving

mobilization is promoted and the higher the investments. Secondly, a better-developed financial sector ensures efficient utilization of the disseminated financial information on investment, as Bethelemy &Chauvin (2002) highlighted. The variable was measured using broad Money Supply as a proportion of GDP. Data was obtained from the World Development Indicators (2021).

Data Analysis and Diagnostic Test
The study used time-series data and employed an ARDL-ECT model in estimating the model coefficients. The study used STATA software to carry out pre-estimation tests and model estimation. Unit root test, co integration test, optimal lag length, normality test, heteroscedasticity and autocorrelation test were carried out to safeguard the validity, effectiveness and accuracy of the regression results.

IV. Results and Discussions.
Descriptive statistics.
Descriptive statistics are used to present variables' major characteristics and include the mean, median, standard deviation, maximum, and minimum as shown below.

Table 4. 1 Descriptive Statistics

Variable	Obs.	Mean	Std.Deviation	Minimum	Maximum
Year	25	2008	7.3598	1996	2020
Total Factor Productivity	25	0.3666	0.0225	0.3370	0.4270
Rule of Law Estimate	25	25.3276	7.9048	16.3500	38.4600
Adjusted Human Capital	25	21.9271	0.2415	21.5369	22.3133
Gross Fixed Capital Formation	25	8.49	6.32	1.93	1.95
Trade Openness	25	46.7420	8.2726	27.2303	60.4487
Financial Deepening	25	37.6035	2.56698	31.8736	42.8193

Source: Constructed from study data.

The descriptive studies presented in Table 4.2 show an average of 0.366 for TFP with a deviation of 0.0225. The Minimum and the maximum scores are 0.3370 and 0.4270, respectively. Rule of Law estimate has a mean of 25.3328 and deviates from its mean with 7.9049 with a minimum score of 16.35 and a maximum score of 38.46 for the period under review. Adjusted human capital has a mean score of 21.9271 and deviates from its mean with a score of 0.2415, a minimum of 21.5369, and a maximum of 22.3133. Gross fixed capital formation, a proxy measure for physical capital, has an average of US$ 8.49 billion and a standard deviation of US$ 6.32 billion, with a minimum score of US$ 1.93 billion and a maximum score of US$ 1.95 billion. Trade openness has an average of 46.742, deviating from its mean with 8.2725, a minimum score of 27.2303, and a maximum score of 60.4487. Lastly, Financial Deepening has a mean score of 37.6035 and a standard deviation of 2.5669. The minimum score for financial deepening is 31.8736, and the maximum score is 42.8194.

Diagnostic Tests.
The following diagnostics tests were performed; unit root test for stationarity, co-integration test, and optimal lag length.

Unit root test for stationarity.
Augmented Dickey-Fuller test (1979) was used to test the null hypothesis of presence of unit root. Phillip Perron's unit root test was also utilized to verify the accuracy of the ADF test. Both the ADF Test and the Phillip Perron test yielded similar results for all the variables. Variables were found to be of mixed series, meaning that variables were integrated of different orders. Only Adjusted Human Capital and Gross Fixed Capital Formation were stationery at level. Total Factor Productivity, Rule of Law, Trade Openness, and Financial Deepening were not stationary at level. Series that were found to have a unit root were transformed to make them stationery by differencing. Upon differencing, all four variables become stationary at first order. In conclusion, the variables were a mixed series where AHC and GFCF were *I (*0), while TFP, RofLEST, TO, while FD were *I* (1) as shown below.

Table 4. 2 Unit Root Test Results for the Variables

Variable	ADF Test unit root test		Phillip Perron Unit root test		Comment
	Test Statistic	*Critical value at 5%*	*Test Statistic*	*Critical value at 5%*	
lnTFP	0.659	-1.950	1.138	-1.950	*Non Stationery at Level*

lnRofLEST	0.780	-1.950	0.941	-1.950	*Non Stationery at Level*
lnAHC	6.183	-1.950	10.978	-1.950	*Stationery at Level*
lnTO	-0.898	-1.950	-1.082	-1.950	*Non Stationery at Level*
LnFD	0.246	-1.950	0.549	-1.950	*Non-stationery at Level*
LnGFCF	2.261	-1.950	3.430	-1.950	*Stationery at Level*

Source; Constructed from Study Data.

Table 4. 3 Unit Root Tests Results after First Difference

Variable	ADF Test unit root test		Phillip Perron Unit root test		Comment
	Test Statistic	*Critical value at 5%*	*Test Statistic*	*Critical value at 5%*	
dlnTFp	-3.692	-1.950	-3.123	-1.950	*Stationery at 1st Difference*
dlnRofLEST	-2.859	-1.950	-3.062	-1.950	*Stationery at 1st Difference*
dlnTO	-2.708	-1.950	-2.849	-1.950	*Stationery at 1st Difference*
dLnFD	-4.111	-1.950	-5.573	-1.950	*Stationery at 1st Difference*

Source; Constructed from Study Data.

Co-integration Test.

The study tested for co-integration relationships among the variables using the ARDL Bound test. The ARDL Bound test for Co-integration has several advantages, namely; (i) it can be used when series are of mixed orders, (ii) the method permits different lag length for each variable, and (iii) the method isappropriate where the number of observations is small. ARDL Bound test assumes that some variables are of I (0) and others are I (1) and consequently assigns both upper and lower limits upon which the computed F statistic is tested and an inference made. The decision criteria is that if the computed F- Statistics is below the lower bound, the series is I(0); therefore no co integration. If the F-Statistic exceeds the upper bound, there exists co-integration. If the computed F-Statistic is between the lower and upper bound, the co-integration test is deemed inconclusive. The ARDL bound test results for co-integration based on the F-Statistic are presented below.

Table 4. 1 Peasaran/Shin/Smith (2001) ARDL Bounds Test (F-Statistic)

Peasarn/Shin/Smith ARDL Bound Test t=-3.386					F=11.348			
L.L	U.L	L.L	U.L	L.L	U.L	L.L	U.L	
2.26	3.35	2.62	3.79	2.96	4.18	3.14	4.68	

NB; LL -Lower limit & UL - Upper limit
Source; Constructed from Study Data

The results show that the computed F-Statistic is greater than the upper limit, as presented in Table 4.5; therefore, the null hypothesis of no levels of relationships is rejected, confirming the existence of co integration relationship. Consequently, an ARDL model with an adjustment parameter, the error correction term, was used. ARDL model was employed since it's more suitable with variables integrated of mixed order compared to a VECM model. Additionally, an ARDL model gives more accurate results when few observations are under consideration hence its adoption.

Optimal Lag Length.

The study employed various information decision criteria to ascertain the number of lags to be considered. The various information criteria used are Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), Schwartz Information Criteria (SIC), and Final Prediction Error (FPE).The decision criteria is guided by considering the information criteria that produces the least value. Table 4.6 captures the results of each criteria.

Table 4. 6 Results for Optimal Lag Length Selection Order Criteria.

lag	LL	LR	df	FPE	AIC	HQIC	SBIC
0	118.305			9.1e-13	-10.6957	-10.6309	10.3973
1	239.169	241.73	36	3.3e-16	-18.778	-18.3246	16.6889
2	318.448	158.56	36	1.6e-17	-22.8999*	-22.0579*	19.0202*
3	1906.4	3175.9	36	3.6e-79*	-170.705	-169.474	165.034
4	3923.19	4033.6*	36	.	-361.637	-360.277	-355.37

Source; Constructed from Study Data.

AIC, HQIC, and SBIC give the optimal number of lags as two, while FPE gives three as the optimal number of lags. LR, however, yields four as the optimal number of lag to be considered. The study adopted the AIC, HQIC, and SBIC information criteria, which gives two optimal lags.

ARDL Model Regression Results.
After carrying out the pre-estimation diagnostic tests, which validate using an ARDL model, regression analysis was done. The natural log of TFP estimate was the dependent variable, as presented in Table 4.7.

Table 4. 7 ARDL Regression Results

Variable			Coefficient	Standard error	P-value
Constant					
ADJ	LnTFP	(L1)	-0.8679***	0.1924	0.006
LR	LnRofLEst		0.2243**	0.0839	0.044
	LnAHC		0.3433**	0.0940	0.015
	LnTO		1.098**	0.3179	0.018
	LnFD		-0.4782**	0.1228	0.014
	LnGFCF		-0.0367**	0.0139	0.047
SR	LnTFP	(L1)	-0.8911***	0.1768	0.004
	LnRoLEST	(D1)	-0.1672***	0.0367	0.010
		(D2)	-0.1296**	0.0339	0.019
	LnAHC	(D1)	-0.9032***	0.1486	0.004
		(D2)	-0.8602***	0.1542	0.005
	LnTO	(D1)	-0.4667***	0.1007	0.010
		(D2)	0.0433	0.0415	0.356
	LnFD	(D1)	-0.0217	0.0859	0.813
		(D2)	-0.3264**	0.0912	0.024
	LnGFCF	(D1)	-0.0688	0.0513	0.251
		(D2)	0.0011	0.0368	0.978
Constant			**-5.7591***	**0.9236**	**0.003**
R-Squared			**0.9899**		
Adjusted R-Squared			**0.9472**		

NB *** Significance at 1%, ** Significance at 5%, *Significance at 10%
Source; Constructed from Study data.

The ARDL model results are presented as shown in Table 4.7, which includes the adjustment parameter, the long run, and the short run coefficients. The goodness of fit, as shown by the R Squared, indicates that 98.22 percent of the changes in TFP are jointly explained by the explanatory variables considered in this study indicating a high explanatory power of the model. The adjustment parameter is abbreviated as ADJ. The adjustment parameter must possess a negative coefficient and be statistically significant to indicate the convergence of the model. Failure to have a negative sign means that the model is explosive; that is, there is no convergence to the equilibrium. The ECT has a coefficient of negative 0.8679 and a p-value of 0.006, meaning it's statistically significant at a one percent level of significance. This means the ECT term satisfies the two conditions of negativity and significance. A coefficient of -0.8679 means that the system corrects the deviations of the previous period at a speed of 86.79 percent in the current year; that is, 86.79 percent of previous period movements into disequilibrium are corrected within one period in the current year.

The long run coefficients obtained exhibited long-run relationship with the dependent variable, TFP. The key variable of interest, Rule of Law estimate, exhibited a positive long-run relationship with TFP, which is consistent with the existing theory. A unit change in the Rule of Law was found to cause a positive change in TFP by 0.2243 percent. The results are consistent with the findings of Roth (2022), Shitero (2016),Oraye & Mose (2016),Udah & Ayara (2014), De (2010),Earle& Scott(2010), and Kaufmann& Kraay (1999), who found that there exists a positive relationship between the rule of law and TFP. However, the results contradicted the findings of Aloni (2019), Son et al. (2007), and Gerring et al. (2005). Equally, Adjusted Human Capital and Trade Openness were significant at a five percent level of significance. A unit change in Adjusted Human Capital was found to cause a 0.3433 percent increase on TFP, while a unit change in Trade Openness was found to cause a 1.0898 percent positive change on TFP in the long run ceteris paribus. A long-run positive effect of Adjusted Human Capital can be attributed to the acquisition of more skills and experience, which contribute positively to TFP in the long run. Again, in the long run, education attainment promotes creativity and innovation, enabling graduates to fully engage in income-generating ventures and be productive in the economy. Trade Openness which measures a country's involvement in the global economy, leads to wider markets transfer of knowledge, skills, capital, and technology, which promotes TFP growth of the recipient country. Therefore, the more a country is open to global interactions, the more the transfers, as supported by Muwau (2019).

Financial Deepening and Physical Capital were found to affect TFP in the long run at five percent negatively. A unit change in Financial Deepening was found to have a 0.4782 percent decline in TFP, while a unit change in Physical Capital contributes to a 0.0367 percent decline on TFP in the long run, holding all other factors constant. A negative effect of Physical Capital on TFP can be attributed to the cost of projects with concern about inflated costs due to corruption and increased bureaucracy. As a result, the contribution of such capital projects is outweighed by the costs incurred therefore diluting the productive capacity of such projects meant to stimulate TFP growth positively. Exaggerated costs of projects have been a concern not only in Kenya but in most developing nations, as observed by Kenny (2010), where costs escalate up to 25 percent. As a result, the value of money is never obtained. The negative relationship between TFP and financial deepening contradicts the expected theoretical explanation because improvements in the financial sector are a catalyst of TFP growth. The results, however, concur with the empirical works of Hammouda et al. (2010), Odour & Khainga (2010), and Opondo (2020). The authors noted that the unexpected negative relationship could be explained by the inadequate capacity of the financial sector to allocate resources only to the productive sectors. Furthermore, the negative relationship can be as a result of misuse of loans and credit facilities where the resources end up in consumption purposes than investment.

In the short run, the first lag of TFP is significant at a one percent level of significance where a unit change in the previous year's TFP growth rate causes a 0.8911 percent decline on the current year's TFP growth rate, ceteris paribus. The finding conforms to the expectations that a poor growth rate in yester year will lead to a sluggish growth in the next year. Both the first and second lag of the Rule of Law variable were significant at one percent significance level. A unit change in the Rule of Law had a negative effect of 0.1672 percent and 0.1296 percent on TFP both in the first and second lag. The inverse relationship between the Rule of Law and TFP in the short run can be explained by the fact that Rule of Law, as previously captured, creates a conducive environment for other factor inputs to thrive well. The conducive environment is hell-bent on institutional reforms, which may take time before the benefits are realized hence the negative interaction in the short run.

Similarly, Adjusted Human Capital exhibited a negative effect on TFP in the short run, where both the first and the second lag were significant at one percent level of significance. In the first lag, a unit change in Adjusted Human Capital had a 0.9032 percent negative effect on TFP. In the second lag, a unit change caused a 0.8602 percent decline in TFP, ceteris paribus. An array of factors can explain the negative effect of human capital on Total Factor Productivity. First, according to Omollo (2013), is the mismatch between the education system and the labor market, where education institutions offer irrelevant or redundant skills to the economy, resulting in a large pool of educated population lacking key skills, ingenuity, and creativity. Secondly, the concern of half-baked graduates where the quality of education is questionable and as a result, graduates lack the ability to relate and translate theory to practice.

Thirdly, high unemployment rates in Kenya render the effect of investment in human capital through education attainment negative in the short run, before graduates are absorbed in the job market and be productive. Only the first lag of Trade openness was significant, where a unit change in Trade openness had a negative influence on TFP of 0.4667 at a one percent level of significance. The negative relationship is due to, in the short run, gains from international trade may not have been fully realized. As a result, a country may be experiencing unfavorable terms of trade. The second lag of financial deepening was found to be significant at one percent levels of significance. In contrast, a unit change in financial deepening caused a 0.3264 percent in TFP.

In conclusion, the Rule of Law, which was the variable of interest, exhibited both a long-run relationship and a short-run relationship with TFP. However, there is a positive relationship in the long run, while in the short run, the relationship is negative.

Additionally, Jarque-Bera test for normality, Breusch Pagan test for heteroscedasticity, and Breusch-Pagan-Godfrey LM test for serial correlation were carried out, and the results are presented in Table 4.8 below.

Table 4. 8 ARDL Model results for diagnostic tests.

Test	Statistics	P-value
Jarque-Bera Normality Test	0.2841	0.8676
Breusch Pagan Godfrey Heteroscedasticity Test	2.82	0.0933
Breusch-Godfrey LM Test for Serial Correlation	2.824	0.2239

Source; Constructed from study data.

As shown in Table 4.8, the Jarque-Bera statistic obtained, was not significant at a five percent significance level indicating normality of the residuals obtained. Similarly, the null hypothesis for the heteroscedasticity test and the LM test for serial correlation was not rejected at a five percent significance level since the p-values obtained were greater than 0.05, confirming that the model was homoscedastic and autocorrelation-free. Heteroscedasticity interferes with the validity of hypothesis testing while autocorrelation leads to model misspecification.

Additionally, the study employed the cumulative test for parameter stability to test for model stability and adequacy. Table 4.9 presents the results obtained.

Table 4. 9 Cumulative sum test results for model stability

Test Statistic	1% critical value	5% critical value	10 % critical value
0.2532	1.1430	0.9479	0.850

Source; Constructed from study data.

At all levels of significance, the test statistic is less than the critical values; hence we fail to reject the null hypothesis of no structural break, which affirms the model stability.

V. Summary, Conclusion And Policy Recommendation

Summary of the findings.

The nexus between the rule of law and total factor productivity remains contentious over time, and there has been no convergence of results. Previous studies have produced differing results on the connection between the two. On one hand, the proponents posit that the Rule of Law is important as it creates an enabling environment for other factors that determines the productivity levels and growth to thrive and drive economic growth. Moreover, Rule of law improves the productive capacity of a country through promoting respect for property rights, ensuring the stability of a country, and ensuring resources are well utilized by entrenching the principles of accountability and transparency. On the other hand, it has been argued that the Rule of Law has no effect or negligible effect, if any, on Total Factor Productivity. The mechanism through which the Rule of Law impacts productivity has also been a matter of debate, and consequently, Rule of Law has been disregarded as a determinant of TFP. It has been argued that the Rule of Law alone cannot affect productivity levels unless considered in the wider governance matrix. The study sought to establish the effect of the Rule of Law on Total Factor Productivity in Kenya.

The objective was achieved using an ARDL model and the results showed that, Rule of Law had a direct relationship with TFP in the long term and an inverse relationship with TFP in Kenya in the short term. With respect to other variables explored in conjunction with the Rule of Law, the variables exhibited a long-run relationship with TFP where Adjusted Human Capital and Trade Openness had a positive relationship, while financial deepening and Physical Capital yielded a negative relationship.

In the short run, the first and second lag of adjusted human capital and the second lag of Trade Openness was found to have a negative effect. The second lag of TFP had a negative relationship with itself. Similarly, the second lag of financial deepening was found to have an asymmetrical effect on TFP. The ECT term showed 87.19 % of the divergences corrected in a period.

Conclusions.

The study concluded that the Rule of Law positively affects TFP in the long term. Therefore, investment in institutions that promote entrenchment, upholding, and adherence to the rule of law should be encouraged. Additionally, the long-term growth of TFP can be enhanced by investments in Human capital and adopting policies geared to improving trade Openness.

Policy Implications.

Parliament, which is the legal institution mandated to oversee the distribution of resources, should support institutions that promote the rule of law with budgetary allocations for them to carry out their mandate effectively. Secondly, the education system should incorporate lessons on the rule of law, institutions, and the wider topic of governance to increase awareness amongst the citizens on the important role of the Rule of Law in the prosperity of a nation.

The government should endeavor to emphasize on improvements in human capital through educational attainment. To this end, provision of education as a merit good should continue. The government should also ensure that going into the future, graduates' skills and educational qualifications are desirable and applicable to the labor market to realize the benefits of improved labor quality. To this end, the government should continue implementing Competence Based Curriculum that is meant to address the disconnect between the education system and the labor market. More importantly, the Kenya National Qualifications Authority should be vigilant in safeguarding the quality and integrity of the qualifications conferred.

Secondly, the government should continue improving physical Capital to boost the economy's productive capacity. However, the concern about inflated costs should be addressed to ensure that such investments pay off and obtain the value for the resources committed. The government should also embrace an open-door policy to increase interactions on the global stage.

Areas for Further Research.

The study established the relationship between rule of law and Total Factor productivity. Rule of Law is amongst the six governance indicators provided by World Governance Indicators. Further research is needed to establish the nexus between the other five individual governance indicators and Total Factor Productivity. Additionally, the study can be re-looked at using another proxy measure of the Rule of Law and covering a longer duration to have more observations which was a limitation of this study.

References

[1]   Aiyar, M. S., Duval, M. R. A., Puy, M. D., Wu, M. Y., & Zhang, M. L. (2013). Growth Slowdowns And The Middle-Income Trap. International Monetary Fund

[2]   Akpan, G. E., & Effiong, E. L. (2012). Governance And Development Performance: A Cross-Country Analysis Of Sub-Saharan Africa. Governance, 3(14), 54-67.   .

[3]   Aresty, J. & Bridgesmith, L. (2019). World Justice Forum VI: Insights And Takeaways. IJODR, 6, 3.

[4]   Barbier, E. B., & Burgess, J. C. (2021). Institutional Quality, Governance, And Progress Towards The Sdgs. Sustainability, 13(21), 11798.

[5]   Ben Hammouda, H., Karingi, S. N., Njuguna, A. E., & Sadni Jallab, M. (2010). Growth, Productivity, And Diversification In Africa. Journal Of Productivity Analysis, 33, 125-146.

[6]   Bose, N., Haque, M. E., & Osborn, D. R. (2007). Public Expenditure And Economic Growth: A Disaggregated Analysis For Developing Countries. The Manchester School, 75(5), 533-556.

[7]   Cavalcanti, T. V., Magalhães, A. M., & Tavares, J. A. (2008). Institutions And Economic Development In Brazil. The Quarterly Review Of Economics And Finance, 48(2), 412-432.

[8]   Charemza, W. W., & Syczewska, E. M. (1998). The Joint Application Of The Dickey-Fuller And KPSS Tests. Economcs Letters, 61(1), 17-21.

[9]   Cheung, Y. W., & Lai, K. S. (1995). Lag Order And Critical Values Of The Augmented Dickey–Fuller Test. Journal Of Business & Economic Statistics, 13(3), 277-280.

[10]   Cuenca-García, E., Sánchez, A., & Navarro-Pabsdorf, M. (2019). Assessing The Performance Of The Least Developed Countries In Terms Of The Millennium Development Goals. Evaluation And Program Planning, 72, 54-66.

[11]   Dima, B., & Cuzman, I. (2010). New Empirical Evidence On The Linkages Between Governance And Growth.

[14]   Gachanja, P., Were, N., & Etyang, M. (2013). Total Factor Productivity Change In The Kenyan Manufacturing Sector

[15]   Gehlbach, S., & Earle, J. S. (2010). The Institutional Basis Of Successful Economic Reform: Privatization Effectiveness And Regime Change After Ukraine's Orange Revolution.

[16]   G. & Jamil, M. (2018). Testing The Governance-Productivity Nexus For Emerging Asian Countries. The Lahore Journal Of Economics, 23(1), 143-169

[17]   Gollin, D. (2002). Getting Income Shares Right. Journal Of Political Economy, 110(2), 458-474

[18]   Hall, R. E., & Jones, C. I. (1999). Why Do Some Countries Produce So Much More Output Per Worker Than Others? The Quarterly Journal Of Economics, 114(1), 83-116. Schneider, H. (1999). Participatory Governance.

[19]   Hussien, A. (2016). Understanding The Total Factor Productivity Shortfall In Sub-Saharan Africa. The Horn Economic And Social Policy Institute (HESPI) Working Paper 02/16

[20]   Isaksson, A. (2007). Determinants Of Total Factor Productivity: A Literature Review. Research And Statistics Branch, UNIDO, 1, 101.

[21]   Joseph Abuga Orayo & George N. Mose (2016). A Comparative Study On Contribution Of Governance On Economic Growth Countries In The East African Community.

[22]   Kalio, A. M., Mutenyo, J., & Owuor, G. (2012). Analysis Of Economic Growth In Kenya: Growth Accounting And Total Factor Productivity. Journal Of Business Management And Applied Economics, 6, 1-22.

[23]   Kaufmann, D., & Kraay, A. (2003). Governance And Growth: Causality Which Way? Evidence From The World, In Brief. Manuscript. World Bank Publication. Retrieved From
          Http://Siteresources.Worldbank.Org/INTWBIGOVANTCOR/Resources/Growthgov_Synth.Pdf

[24]   Keita, K. (2017). Does Corruption Affect Total Factor Productivity? An Empirical Analysis.

[25]   KITHINJI, E. M., & ONONO, P. A. (2020). Effect Of Electronic Commerce On Output And Total Factor Productivity In Kenya. Journal Of Economics And Political Economy, 7(2), 101-130

[26]   Kenny, C. (2010). Publishing Construction Contracts And Outcome Details. World Bank Policy Research Working Paper, (5247).

[27]   Laouij, Hamid, "Governance And Economic Growth In Developing Economies: A Comparative Study" (2017).Masters Theses. 2724. Retrieved From Https://Thekeep.Eiu.Edu/Theses/2724

[28]   Lübker, M., Smith, G., & Weeks, J. (2002). Growth And The Poor: A Comment On Dollar And Kraay. Journal Of International Development, 14(5), 555-571.

[29]   Malik, M. A., Masood, T., & Sheikh, M. A. (2021). Econometric Analysis Of Total Factor Productivity In India. The Indian Economic Journal, 69(1), 88-104.

[30]   Muwau, E. (2019). Economic Growth And Trade Openness: Evidence From Zambia (Doctoral Dissertation, The University Of Zambia).

[31]   Ndegwa, A. W. (2019). Total Factor Productivity And Kenya's Economic Growth (Doctoral Dissertation, University Of Nairobi).

[32]   North, D. (1990). Institutions, Institutional Change, And Economic Performance. Cambridge: Cambridge University Press.

[33]   Oduor, J., & Khainga, D. (2010). Economic Policy And Total Factor Productivity In Kenya. Discussion Paper No.33. Kenya Institute For Public Policy Research And Analysis.

[34]   Omolo, J. (2013). Employment Challenges In Kenya. African Journal Of
Economic Review. 1(1)

[35]   Opondo, M. A. (2020). Effect Of The Size Of The Informal Sector On Economic Growth, Total Factor Productivity, And Poverty Alleviation In Kenya (Doctoral Dissertation, Kenyatta University)

[36]   Park, J. (2010). Projection Of Long-Term Total Factor Productivity Growth For 12 Asian Economies. Asian Development Bank Economics Working Paper Series, (227).

[37]   Phillips, P. C., & Perron, P. (1988). Testing For A Unit Root In Time Series Regression. Biometrika, 75(2), 335-346.

[38]   Protus Shigoli Shitero. (2016). Corruption, Institutions, And Economic Development.

[39]   Rodrik, D. (2004). Institutions And Economic Performance-Getting Institutions Right. Cesifo DICE Report, 2(2), 10-15.

[40] Rivera-Batiz, F. L. (2002). Democracy, Governance, And Economic Growth: Theory And Evidence. Review Of Development Economics, 6(2), 225-247.
[41] Roth, F. (2022). The Rule Of Law And Labor Productivity Growth By Businesses: Evidence For The EU, 1998–2005. In Intangible Capital And Growth: Essays On Labor Productivity, Monetary Economics, And Political Economy, Vol. 1 (Pp. 43-72). Cham: Springer International Publishing.
[42] Solow, R. M. (1957), Technical Change And The Aggregate Production Function, Review Of Economics And Statistics, 39: 312-20
[43] Tran, T. T. (2013). Productivity Spillovers From Foreign Direct Investment: What If Productivity Is No Longer A Black Box? The Southeast Asian Journal Of Management, 1-18.
[44] Ubi, P. And Udah, E., B. (2014). Corruption, Institutional Quality And Economic Performance In Emerging Economy: Lessons From Nigeria. British Journal Of Economics, Management, And Trade, 4 (11). 1708-1722
[45] Udah, E. B., & Ayara, N. (2014). Institutions, Governance Structure, And Economic Performance Nexus In Nigeria. Journal Of Economics And Sustainable Development, 5(3).
[46] Zhao, X. (2015). Study On The Relationship Of Quality Governance And Economic Diversification In Developing Countries. Journal Of Grey System, 27(3), 165.