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Examining the impact of tax policies and institutional reforms on economic growth: A systematic approach on Djibouti

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Abstract

Institutions are rules, guidelines, and regulations that regulate how agents participate in economic transactions, such as the purchasing and selling of commodities and services, as well as the usage of assets. They impact the objectives of major economic players in society, influencing expenditures in both tangible and intellectual capital, technology, and commodity. It also entails proper amounts of tax collections, which are critical for long prosperity, but many nations' tax systems persist in their poorest connection in the encouragement of progress and state-building. Hereby, the present study examined the role of tax policies and institutional reforms in promoting the economic growth of Djibouti during the period 2000 to 2021. The paper employed a Vector Error Correction model (VECM) and a Granger causality test to capture the long-run and short-run dynamic connection between the variables. As well as determining the direction of these associations. The findings presented that during the short-run tax policies and institutional reforms have an insignificant influence on economic growth. Whereas, the long-run outcome revealed that business taxes, government effectiveness, and institutional quality have a positive impact on economic growth. Further, the Granger causality test illustrated one-way causality between GDP, government effectiveness, and regulatory quality. The findings contribute by providing evidence to the region and for the country itself on the way of managing taxation and implementing rigorous institutional regulation in hope of promoting economic growth.

Keywords: Tourism Income, Economic Growth, Causality

JEL codes: O40, O11, L83

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1. INTRODUCTION

Both academics and policymakers are curious about whether taxes or the allocation of total tax revenue across various tax sources have a distinct impact on a nation's ability to expand under a given degree of fiscal pressure. For instance, the "common knowledge" on the link between taxes and economic growth; a switch from direct to indirect taxation is related to higher GDP growth. However, the above reasoning should be addressed carefully, as the IMF and the OECD, the two main international organizations that deal with economic issues, assert that high labor taxes are detrimental to economic growth and that a switch from direct to indirect taxes has a growth-enhancing impact on a country's GDP. Indeed, a lower-middle income country such as Djibouti, embracing an aggressive tax policy with its current income status might be reasonably harmful to the level of economic growth in the sense of impacting the rate of household consumption which alternatively is detrimental for the production sector. Likewise, the implementation of such severe taxation by the Djiboutian government without fully providing a compensation package such as investing in human capital sectors; e.g. Education, Health, and infrastructure; would only be considered completely ineffective, relatively when we take into account the overall performance of the country's growth which is undermined by poor policy taxation.

Several influential papers have addressed the effect of tax on economic growth; (Hanlon et al., 2015; Khlif and Hussainey, 2016), assert taxes have an effect on how the government spends its money; by contending that taxes are the primary source of infrastructure modernization, provides fund injection to public finance and in the best scenario transforms state's institutions to more sustainable structure, it is also the main source for public service provision, all of which are common pillars of economic growth in both developing and developed nations. Theoretically, other experts propose tax rate reductions and tax base expansions to lessen economic distortions while maintaining a steady degree of fiscal pressure. For instance, Consumption taxes make it possible to adhere to these standards, mainly, because it has a larger tax base than labor income and allows households to fund their consumption decisions with other sources of income than salaries. Additionally, by raising both the supply and demand for workers as well as investment, labor tax reductions should promote economic growth (Baiardi et al., 2019).

Although the negative effect of the abovementioned macroeconomic factor (Tax) on GDP has relatively been revealed by many studies however an influential paper demonstrated a collective negative impact on the GDP; establishing a dichotomy in the field of tax policy. In a group of 21 OECD nations spanning from 1971 to 2004, Arnold et al. (2011) found that tax revenue is adversely and substantially connected with per capita GDP, but a transition from direct to indirect taxation is favorably and strongly associated with per capita GDP. To be more specific, they establish a "tax and growth hierarchy" in which corporation taxes, individual income taxes, consumption taxes, and real estate taxes are the taxes that have the biggest negative effects on economic growth.

In fact, as much as scholars reconcile and emphasize tax reforms to accommodate the state's level of growth; the cost of such as transition should be taken into consideration. Kate and Milionis (2019) argue that tax reforms are to some extent costly, both in terms of the political costs and the administrative burdens they entail. Even when tax improvements are technically effective and unrelated to equality issues, the so-called status quo bias is substantial and imposes certain barriers. On the administrative side, complicated tax systems are also difficult to change, and when they are, the transition costs may be high and have a significant adverse effect on economic development, even ideally efficient tax measures may not be put into practice and, even if they are, they may not have a major impact on economic development.

Although tax is not the only driver of economic growth, institutional reforms also have a decent attributable share of economic betterment. Researchers' interest in understanding the factors that contribute to institutional variation between

nations and the critical processes through which institutional performance affects the standard of individual macroeconomic conditions has increased significantly over the past thirty years. The main finding of the majority of studies is that increasing the quality of institutions (via institutional reform programs) has a positive impact on economic development, investment, and innovation.

Indeed, numerous research findings have shifted more in favor of highlighting the beneficial effects of institutions for economic growth and development and in favor of establishing that economic development results in substantive institutional transformation and broader, progressive social change. The capacity of institutions to adjust to the shifting economic environment (via institutional reform transformation improvement programs) and to create new norms and practices for conducting transactions determines how well economies may expand (Buterin et al., 2017; Haidar, 2012; Nedić et al., 2020).

Institutional reforms are therefore crucial for a country's economy to run smoothly at any given time, but they also need a considerable period to offer impetus to market opportunities and technologies. Most frequently, the influence of institutional reforms is defined by the level of state's rule of law, political stability, and low levels of corruption which in turn is used to describe how institutions affect boosting economic activity and lowering uncertainty (Corrado and Rossetti, 2018). Similarly, when fostering an environment that encourages investment and growth, it is crucial to consider how the political, economic, and social climate is perceived and embodied via the effectiveness of institutions.

Consequently, the main contributions of this study to the literature comprise several aspects. First, we are focusing on East Africa, a lower-middle income country (Djibouti) with relatively unavailable and inexistent literature papers. Second, we juxtapose a potential macroeconomic factor (Tax) with a governmental-related variable (institutions). To the authors' knowledge, no research has yet taken into account incorporating both the ad hoc effect and the relationship between institutional reforms and Tax policy on GDP stimulation. By doing so, two tax component variables; namely tax on labor and business was selected, whereas bureaucratic effectiveness and Djiboutian regulatory quality were considered cardinal factors for institutional reforms. The current study employs a vector error correction model to capture the long-run association, while a granger causality test was performed to examine the causal effect between the selected variables. Finally, we empirically answer the following questions: Are the overall tax levied on the business sector and labor income interlinked with GDP growth in the short and long run, in the context of contributing to state economic growth? Does institutional reform implementation assist states' total GDP growth?

2. A REVIEW OF THE PREVIOUS WORK

2.1. Taxation and Economic Performance

A tax is an obligatory financial charge or another sort of imposition that is levied upon a taxpayer (an individual or other legal entity) by a governmental body in order to pay for certain public expenses. It is worth noting that taxation and the economy are interconnected; reasonably, the growth rate and taxation are all influenced by the economy's structure and pace of expansion, which reversibly affects the state's revenue depending on the situation. Additionally, taxes help to encourage structural change, welfare advancement, and economic progress (see Li, Xiong, and Xie, 2018; Dramane, 2022).

Simionescu and Albu (2016) examined how the typical value-added tax (VAT) affected five Central and Eastern countries' economic growth. Various panel data models, including the random effect, dynamic panel, and panel vector-autoregression, throughout the period of 1995 to 2015 revealed that the VAT had a favorable impact on economic growth. Similarly, the relationship between economic growth and the VAT exhibits a bidirectional Granger causation. Yet, only for Hungary did the Bayesian linear models show that the VAT had a favorable impact on GDP. On the other hand, when VAT rates rise, some nations see short-term declines in GDP rates.

Using the ARDL method, Mashkoor et al,. (2010)

studied the link between tax on income and the rate of economic growth between 1974 and 2009. The real GDP growth was greatly influenced by the direct tax to GDP ratio, which demonstrated that a high level of direct taxes could apparently accelerate GDP. Moreover, increasing consumption taxes while cutting taxes on labor and capital can promote the dynamics that drive economic growth. Nevertheless, some studies point out that depending on the country, the time period, and the environment, the influence of tax burden and tax system on economic activity will vary. For instance, in a study performed on twenty-eight EU, Stoilova (2017) contends that Selective consumption taxes, personal income taxes, and property taxes are more beneficial to economic progress. Reversely, Yazbeck. (2020) conducted on the funding of the healthcare sector through labor taxes in low- and low-middle-income nations. According to the author, there is little support for the implementation of labor-tax funding for health care in these nations, while there is a shred of ongoing evidence that such policy may raise inequality and split the health system.

The Literature focusing on African countries has also highlighted the significant role of taxation on economic betterment. Ojong, Anthony, and Arikpo (2016) researched how taxes affect the Nigerian economy. The study's goals were to investigate the effects of non-oil revenue on the Nigerian economy, firm income tax's effects on the economy of Nigeria, and the link between petroleum profit tax and the country's GDP. The association between the dependent and independent variables was established using OLS multiple regression models. The results showed a strong correlation between the growth of the Nigerian economy and the tax on oil profits. Additionally, the findings demonstrated that; non-oil earnings and the expansion of the Nigerian economy are significantly correlated. The research also showed that there is no connection between the growth of the Nigerian economy and corporate income tax. In a similar context, Okafor (2016) and Akwe (2014) looked into how income tax affected Nigeria's GDP. Their study used the same statistical approach and a number of federal income tax revenue ranging from 1981 to 2007. The outcome of the regression analysis revealed a strong and positive correlation between the various tax income components and the expansion of the Nigerian economy. Similarly, Onaolapo et al. (2013) investigated how value-added tax affected the creation of revenue. A stepwise regression analysis was used to analyze the data. The result demonstrated that value added tax positively impacted.

Furthermore, a study conducted by (Angelopoulos et al., 2007; Kate and Milionis, 2019) mostly contradicts previous studies on the negative effect of corporate income tax on the economy such as (Arnold et al., 2011) contend; higher corporation taxes may encourage private innovative activities and help produce funds for beneficial public investment and may promote growth while simultaneously introducing for the state some cutting edge technologies. The relationship between corporate tax rates and growth, on the other hand, may be more adverse for trailing nations that are more focused on technological imitation because they must entice foreign investment by lowering tax rates (Kasadha et al., 2020; Osipov, 2017).

Vatavu et al. (2019) studied the effect of tax on the welfare state; surprisingly, the findings confirmed that greater taxation injects the economy with higher quality deliverance. Nonetheless, their influence on human development (HDI) is considerably constrained. It is worth noting that people of nations with high HDI are more likely to pay more taxes over time, considering how taxes and well-being are associated. Therefore, realistic tax changes should entail a balance between equality and a respectable level of living that promotes a longer life expectancy, more tax revenues, and efficiency. It is worth noting that human development is predicted to have a link with taxes and economic progress as long as authorities can implement fiscal policies that boost social and cultural spending in order to improve people's well-being. The Scandinavian nations and Switzerland, which have high levels of government investments in public services like education, have the highest human development indices. In particular, Norway has a dual tax structure that levies flat taxes on capital in-

come and progressive taxes on labor income. The expansion of the economy is unaffected by these fiscal policies, despite their emphasis on high taxes and wealth distribution. In a similar vein, the Swedish government prioritizes income equality while offering top-notch services to its people; such as in the areas of retirement plans, healthcare, and education (Angell, 2011). In a formal way, the major models for contemporary welfare states are Sweden and Norway, as both countries offer social and economic benefits to all their residents while imposing substantial income taxes in order to close income gaps.

On the other hand, Baiardi et al. (2019) investigated the linkages between per capita GDP, tax receipts, and tax structure. The results showed that while there is no evidence of a strong association between revenue tax adjustments and economic growth, there is some indication of a negative and statistically significant association between tax and economic development. Certainly, the ideal tax rate and tax system depend on a variety of variables and vary greatly from nation to nation. In a similar vein, Kaneva et al. (2022) investigated how tax policy affected economic growth and assessed the contribution of relevant tax tools to accelerating several sector recoveries. The findings indicated that, between 2000 and 2021, tax levels in Central Europe and the Baltic States negatively impacted GDP per capita growth rates. Another important conclusion is that; the growth rates of real GDP per capita were favorably impacted by increases in both total employment and the investment-to-GDP ratio. Typically, based on empirical research, Vegh and Vuletin (2015) concluded that less procyclical tax policy was more common for economies with significantly better institutional environments and profound integration into the global financial markets.

Ahmad et al. (2018) also looked at the factual connection between Pakistan's economic development and indirect taxation. Annual time series data from 1974 to 2010 were utilized for the estimate. The study's primary goal was to determine the long- and short-term relationships between indirect taxes and economic development. The long-run and short-run relationships between the variables were estimated using the (ARDL) technique for cointegrations. The results showed that indirect taxes have a long-term, considerably, negative impact on economic growth, while having a negligible short-term impact. For intake, indirect taxes would rise by 1%, resulting in a 1.68 % decline in economic growth. In another paper, Lin and Jia (2019) analyzed the relationship between direct tax rate, government revenue, and economic output. The author highlights numerous findings: The association between tax rates and GDP is comparable to the relationship between tax rates and wages, which is viewed as a labor input in the national economy. Furthermore, the economy's resource flow is another crucial component, however, it does not have the same impact as the employment rate. The high rate of taxation will limit citizens' consumption. While the labor costs will rise, the cost of capital will drop dramatically. Whereas, individuals' commodity consumption declines as a result of higher taxes, which also affects businesses' performance. Similar to those (Hussain, 2015) and (Coccia, 2018) who note that tax on corporate does not boost labor productivity.

Another study by (Langenmayr, Haufler, and Bauer, 2015) suggests that the level of international tax competition is a key factor in determining the best avenue of tax differentiation, which in turn depends on the practicable level of the corporate earnings tax. In reality, tax policy can have the best results for high-productivity enterprises when there is little tax competition and a high-profit tax rate. Instead, the best tax policy benefits low-productive enterprises when tax competition is fierce and profit taxes are low. A peculiar tax reform spectrum had been studied by (Hope & Limberg, 2022). The author analyzed several rich OECD countries from an interval period of 1965 to 2015. The author aimed to study the effect of tax reduction on people with high incomes on employment and economic growth. (Hope & Limberg, 2022) discovered that tax breaks for the wealthy result in an increased income disparity over the short- and medium-term. As a result, neither unemployment nor economic growth is significantly impacted by such measures. Indeed, Studies looking at how taxing the wealthy affects income inequali-

ty often reveal a strong inverse link between top marginal tax rates and top income shares. However, there are rare outliers that show that more progressive taxation has a positive impact on the state of the economy (Gemmell and Sanz, 2014).

From an environmental standpoint, Numerous studies show how different pathways might help environmental taxation policies induce economic growth. Several papers demonstrate that environmental taxation policy may boost economic growth via a variety of channels; According to (Nakada, 2004), green taxes promote environmental quality, which raises the output of other productive economic activities and, consequently, influences the overall factor productivity of the economy, which in turn promotes economic growth. Moreover, the increasing environmental tax encourages businesses to enhance their own abatement efforts, which lowers overall production after abatement at the expense of consumer spending. As a result of the decline in private consumption, people start spending more time studying instead of doing other things, which promotes the expansion of human capital. Additionally, an environmental tax can increase research intensity since it encourages the transfer of funds to R&D projects, which serve as the growth engine. Nevertheless, the reverse effect of embracing environmental taxation was found by (Liu et al., 2018; Hassan et al, 2020) in which, the environmental tax would certainly reduce GHG emissions but it would contract the economy.

2.2. Institutional Reforms and Economic Growth

There is consensus among scholars studying the relationship between institutions and economic growth contending that; there is a relationship and that it can be assessed, but there are frequently discrepancies in the importance of this relationship as well as in the factors that contributed to the expansion of institutions, and ultimately, economic growth and development. The majority of authors place a strong focus on the preservation of property rights, political freedom, and the degree of political turbulence (Buterin et al., 2017).

According to Chong and Calderon (2000), there is a two-way causal relationship between institutions and development, and growth itself by leading to the establishment of new, better institutions. The author continued by noting that poorer nations have greater institutional effects on economic growth. Moreover, Haidar (2012) studied the relationship between changes in company regulations and economic development in 172 nations. The empirical findings showed that each business regulatory change is typically associated with a 0.15% rise in GDP growth rate, indicating that business regulatory reforms are beneficial for economic growth. In a similar vein, Nedić et al. (2020) proposed a model that accounts for how institutional reform initiatives and regulatory quality have affected the GDP recovery of five Western Balkan countries. The World Bank Governance Indicators were applied to experimentally examine the effects of specific quality indicators of institutions on productivity expansion, and the Good Governance and Administrative Quality variable had the most statistically significant and beneficial effects. The Corruption Prevention and Rule of Law variable have a more noticeable, but slightly less strong, effect on GDP per capita.

The findings of several research have shifted in favor of highlighting the beneficial effects of institutions for economic progress as well as in favor of demonstrating the link between economic advancement and substantive institutional transformation and broader progressive social change. The capacity of institutions to change with the times (via institutional development and reform programs) and adopt new ways of doing business determines how well economies may thrive. Institutions are crucial for an economy to operate well at any one moment, but they also need to evolve over time to provide the rules and incentives that new markets and technology need (Masuch et al, 2017; López-Tamayo et al., 2018). Papaioannou and Siourounis (2008) determined the short- and long-term effects of reforms and political democratic transition on GDP. According to the study's panel data analysis, democracy increases actual annual per capita income by 1%. On the other hand, Growth significantly declines during the period of transition, and then, follow-

ing the period of change, it stabilizes even faster. It is determined that all of those nations may achieve exceptional economic development rates if strong institutional foundations prevail. This was further validated by (Buterin et al., 2017). Whereas (Uberti, 2016) identified how a greater emphasis on institutional reforms reduces corruption at the parliamentary level. Although this has been argued by (Zhao et al., 2021) in which the finding demonstrated the opposite effect.

Furthermore, Bartlett (2017) examined the link between institutional reform and economic growth in non-EU nations. Their findings indicated that candidate nations have stronger institutional consolidation than non-UE countries. And if they don't assume a more decisive part in the process, the reform initiatives will lead to the risk of stagnating or "running out of steam." The fact that post-socialist governments failed to successfully replace the outdated institutions of the previous system with more effective ones appears to be the one that is most pertinent. Furthermore, because of the lowered trust in the government and the failure to integrate into the informal institutional context, even small institutional reforms proposed did not succeed.

Reasonably, may intuitional reforms transpire due to common crises management instead of pure governmental intention transformation. For instance, Afonso et al. (2016) investigated the effect of several monetary and fiscal institutional reforms on the Brazilian economy. According to the author's reasoning; despite the relative success, it is crucial to remember that the procedures involved in creating the aforementioned monetary and fiscal instruments, as well as in implementing and consolidating them, were not the outcome of prior, efficient strategic planning. In general, institutional reforms were implemented in reaction to a string of domestic and, most importantly, foreign crises. The necessity to address both structural and economic difficulties permitted several governments to pass significant legislative amendments in the National Congress. Indeed, institutional rearrangement and upgrading is a path-dependent operation, and there are significant transaction costs in altering any former institutional artifacts therefore, both people and organizations have to approach such alteration with extreme caution (Afonso et al., 2016).

Ortmann and Ortmann (2017 p:93) Studied how the Vietnams government through consecutive institutional reforms ameliorated the state's whole performance. Several remarks were made by the author: First of all, although the VCP continues to be the most significant political force, pragmatic and administrative choices now take a far more significant role than ideological ones. This is due to the fact that the credibility of the government nowadays is largely determined by its performance. Second, the government has additionally made investments in fortifying its different institutions, which have better resources, therefore are able to rely on more highly skilled personnel and more advanced monitoring tools due to their increased budget. Moreover, the value of scientific data has increased over time and has grown more transparent and accessible. The environmental sector now has considerable influence on the government's development project, which now emphasizes the need for sustainability. Similarly, the judicial system has seen a substantial improvement. Since it is the first introduction, the Environmental Protection Law has undergone two revisions. The legislation has evolved over time and becomes diverse and thorough with each implementation of institutional and governmental reforms which retroactively increased the level of human development.

3. METHODOLOGY

3.1. Data Source and Description

The present study is examining the impact of tax policy and institutional reforms on economic growth. With a particular focus on Djibouti as a pivotal country, the research uses yearly time series data ranging from 2000 to 2021. Djibouti has experienced tremendous growth over the last decade by investing in transportation and port facilities and capitalizing on its geostrategic value. However, there are questions regarding the inclusivity and sustainability of this expansion in the future. GDP growth averaged 8% from 2013 to 2016, with GDP per capita growth averaging 6.3 percent throughout the same time, a remark-

able performance when compared to similar countries. However, this expansion has not been inclusive: 20.8 percent of the population remains in absolute poverty, unemployment is substantial (39 percent), and human resources outcomes are typically poor. Based on this information, the paper used the region's GDP as an index of economic growth. Additionally, the research takes into account variables like labor tax contribution and tax on business as indices for measuring the impact of the tax policies. While government effectiveness and regulatory quality are considered proxies for measuring institutional reforms. Within this scope, to carry on with the examination Vector Error Correction (VECM) model and Granger causality test are performed to capture the long-run and short-run dynamic relationship among the variables. As well as to determine the direction of these relationships. All the information was extracted from the World Bank Indicators.

3.2. Model Specification

The study uses a vector error correction model to assess the cointegration between the selected variables. Besides, we will perform a granger causality test to determine the direction and the causality among the variables (Gujarati, 2010). The VECM technique is a model that can be used to separate the long-run and short-run components from the data design process. It is a variant of the VAR (Vector Autoregressive) approach (Dirir, 2022). Therefore, the VECM approach can be expressed in the following equation:

$$\Delta Y_t = \sigma + \sum_{i=1}^{k-1} \gamma_i \Delta Y_{t-1} + \sum_{j=1}^{k-1} \eta_j \Delta X_{t-j} + \sum_{m=1}^{k-1} \xi_m \Delta R_{t-m} + \lambda ECT_{t-1} + \cdots + u_t \quad (1)$$

$$\Delta GDP_t = \sigma + \sum_{i=1}^{k-1} \beta_i \Delta GDP_{t-i} + \sum_{j=1}^{k-1} \phi_j \Delta TP_{t-1} + \sum_{l=1}^{k-1} \eta_l \Delta B_{t-l} + \sum_{m=1}^{k-1} \xi_m \Delta GE_{t-m} + \sum_{n=1}^{k-1} \vartheta_n \Delta RQ_{t-n} + \lambda ECT_{t-1} + u_t \quad (2)$$

The equation above contains the various variables used in the study. First, we observe the dependent variable which is GDP and the independent variables that consist of TP, B, GE, and RQ. The VECM equation has k-1 which implies that the lag length is reduced by 1. Then we perceive $\beta_i, \phi_j, \eta_l, \xi_m, \vartheta_n, \omega_p$ that stands for the short-run dynamic coefficients of the model's adjustment long-run equilibrium. Next, there is the ECT_{t-1} that signifies the error correction term. And finally, u_t which is the residuals (impulses).

Further, the goal was to document the causal relationships between the variables. and determine whether there is a causal relationship between the variables, the Granger causality test suggested by (Granger, 1969) was used. The model is explained in more detail below:

$$X_t = \sum_{l=1}^{p} \left(a_{11,1} \mathrm{X}_{t-1} + a_{12,1} \mathrm{Y}_{t-1}\right) + \mu_t \quad (3)$$

$$Y_t = \sum_{l=1}^{p} \left(a_{21,1} \mathrm{X}_{t-1} + a_{22,1} \mathrm{Y}_{t-1}\right) + \epsilon_t \quad (4)$$

As illustrated in equation 3 and 4p is the model order, $a_{ij,1}(i, j = 1,2)$ are the coefficients of the model, and μ_t and ϵ_t denotes the residuals. Ordinary least squares can be used to estimate the coefficients, and F tests can identify the Causality relationship between X and Y.

In addition to the econometrics equations above, the study employs the Dickey-Fuller test for Unit Root to examine the stationarity of the variables. According to Dickey and Fuller (1979), the test inspects the value of Ø. It specifically contrasts the null hypothesis that Ø = 1 in comparison to

Table 1. Description of Variables

Variable	Abbreviation	Measurement	Proxies
Dependent	GDP	The logarithm of GDP (current US$)	Economic Growth
Independent	TP	Labor tax and contributions (% of commercial profits)	Tax Policies
	B	Other taxes payable by businesses (% of commercial profits)	
	GE	Government Effectiveness: Percentile Rank	Institutional Reforms
	RQ	Regulatory Quality: Percentile Rank	

the alternative that Ø < 1. The test requires the employment of several forms in actual practice. The following equation express the test.

$$y_t = \alpha + \beta t + \emptyset y_{\epsilon-1} + e_t \quad (5)$$

$$\Delta y_t = y_t + y_{t-1} + \alpha + \beta t + \emptyset y_{t-1} + e_t \quad (6)$$

As expressed in equations (5) and (6), Ho: Ø = 1 suggests the variables are non-stationary while Ø < 1 implies the stationarity of the data. What is more, y_t stands for the overall study's data and the regression form is rewritten as Δy_t (Holmes et al., 2020).

4. FINDINGS AND INTERPRETATION

During 2000 and 2021, GDP had an average of 9.13%, and it had a maximum of 9.5% and a minimum of 8.7%. The standard deviation for TP and GE was found to be much higher (6.2% and 5.1%), followed by those for RQ (4.2%), GDP (0. 2%), and B (0.1%). Smaller standard deviation values often indicate that the datasets are closer to the average, while larger standard deviation values typically indicate that the datasets are spread. Lastly, it appears that all the variables are positively skewed except for TP which indicates a negative skewness of (-0.17) See table 2.

Another crucial method for getting assumptions between variables before they are approached is the correlation matrix. In Table 3 the results for GDP display a strong positive correlation with TP and a moderate association with B and RQ. Whereas, we observe a strong negative association between the GDP and GE. This implies an increase in labor tax, business taxes, and regulatory quality rises economic growth, and vice versa.

In order to ascertain whether the random walk assumption is present in the long-term fluctuated period information, the ADF and Phillip perron test unit root tests are used. Consequently, in accordance with table 4, the outcome for both tests reveals that all the variables are stationary at first difference except for B which displayed stationarity both at the level and first difference. Hence, we can proceed with the cointegration approach since the panel unit root test results indicate that certain variables are stationary at a level while others are stationary after the first difference and the variables did not reach the second difference.

One of the metrics used to evaluate the VAR model is the optimal lag of use. Autocorrelation difficulties in a VAR system may be handled by establishing the ideal lag, which is important for evaluating how long a variable takes to react to other variables. This test also verifies the data supplied by the Vector error correction model estimate. (LR), (AIC), (FPE), (SC), and (HQ) are evaluated to estimate lag candidates. According to the data in table 5, the ideal lag for the research is lag 1.

Table 2. Descriptive Statistics

ITEMS	GDP	TP	B	GE	RQ
Mean	9.124	29.63	2.454	19.92	25.37
Maximum	9.541	36.00	2.700	33.33	35.07
Minimum	8.741	23.00	2.200	13.46	19.71
Std. Dev.	0.285	6.207	0.159	5.187	4.244
Skewness	0.096	-0.176	0.059	0.970	0.582
Kurtosis	1.452	1.040	2.031	3.316	2.547
Jarque-Bera	2.228	3.634	0.873	3.541	1.429
Observations	22	22	22	22	22

Table 3. Matrix of Correlation

	GDP	TP	B	GE	RQ
GDP	1.000	-	-	-	-
TP	0.859	1.000	-	-	-
B	0.179	0.338	1.000	-	-
GE	-0.556	-0.641	-0.152	1.000	-
RQ	0.029	0.341	-0.044	-0.480	1.000

The cointegration test is used to determine the cointegration of non-stationary variables. If there is cointegration, the examination of the VECM model can be pursued. Table 6 shows a cointegration with statistical values greater than the Trace statistic test criterion. As a consequence, we establish the existence of a long-term relationship between the variables. As a result, we shall proceed with the error correction technique.

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Table 7 denotes the results of the short-run estimation. Based on the results, we observe that all the variables have an insignificant influence on the GDP during the short period. This suggests that taxes on business, labor tax contribution, government effectiveness, and regulatory quality have no prominent impact on the economic growth of Djibouti. On the other hand, we perceive that GDP has a positive impact on regulatory quality. For instance, a 1% increase in GDP will rise 45% of the regulatory quality of Djibouti.

Table 8 expresses the long-run estimates between tax policies, institutional reforms, and the economic growth of Djibouti. The results indicate that TP has a negative impact on the GDP. This implies that the tax contributed by the Djiboutian laborers decrease the economic growth by 0.052%. Nevertheless, tax on business, government effectiveness, and regulatory quality displays to increase economic growth by 0.42%, 0.004$%, and 0.04% respectively. Based on these outcomes we deduce that in the long-run factors such as taxes imposed on business, the effectiveness of the government as well the quality of institutional systems plays a favorable role in promoting the economic growth of Djibouti.

Table 4. Unit Root Test

Variables	**Augmented dickey fuller test**				**Decision**
	At level		At first difference		
	Constant	**Note**	**Constant**	**Note**	
GDP	0.047	Not stationary	-4.078***	Stationary	I (1)
TP	-1.131	Not stationary	-4.434***	Stationary	I (0)
B	-3.550**	Stationary	-3.979***	Stationary	I (1)
GE	-1.549	Not stationary	-4.159***	Stationary	I (1)
RQ	-1.364	Not stationary	-4.056***	Stationary	I (1)
Variables	**Phillip perron test**				**Decision**
	At level		At first difference		
	Constant	**Note**	**Constant**	**Note**	
GDP	0.033	Not stationary	-4.078***	Stationary	I (1)
TP	-1.132	Not stationary	-4.438***	Stationary	I (0)
B	-2.311	Not stationary	-3.979***	Stationary	I (0)
GE	-1.642	Not stationary	-4.204***	Stationary	I (1)
RQ	-1.364	Not stationary	-4.054***	Stationary	I (1)

Note: *, ** and*** denotes 1%, 5%, and 10% level of significance.

Table 5. Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-147.47	NA	2.8817	15.247	15.496	15.295
1	-54.362	130.35*	0.0034	8.4362*	9.929*	8.7278
2	-20.500	30.475	0.0025*	7.5500	10.288	8.0845*

Note: * indicates the lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level). FPE: final prediction error. AIC: Akaike information criterion. SC: Schwarz information criterion. HQ: Hannan–Quinn information criterion.

Table 6. Cointegration test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.929660	101.9448	69.81889	0.0000
At most 1 *	0.657381	48.85656	47.85613	0.0401
At most 2	0.579301	27.43384	29.79707	0.0915
At most 3	0.389995	10.11708	15.49471	0.2718
At most 4	0.011499	0.231314	3.841465	0.6305

Note: * Denotes rejection of the hypothesis at the 0.05 level

The Granger causality test uncovers a sequence of associations among factors, resulting in long-term economic remedies. The Granger causality estimates in Table 9 reveal one-way causality between GDP and GE, as well as between GDP and RQ. This suggests government effectiveness and regulatory quality have a prominent association with the economic growth of Djibouti. Nevertheless, the test uncovered that tax policies have no causality with the GDP.

Table 10 displays the impulse responses and variance decomposition function estimate. According to the findings, in the event of an impulsive response, the degree of economic development would most likely drop as a result of business taxes and the effectiveness of government. This suggests that the tax rates imposed on businesses in Djibouti will have a detrimental impact on economic growth. Djibouti presently does not encourage small company and entrepreneurship initiatives and does not create a sufficient environment to foster entrepreneurial ventures; thus, if the country continues at this rate, economic advancement would be severely hampered. On the other hand, it looks like labor tax contributions and regulation quality will boost economic growth during the next 10 years. As a result, these sectors demand more attention and investment. Furthermore, the findings of the variance decomposition model show that the labor tax,

Table 7. Short-run estimates

VARIABLES	D_LGDP	D_TP	D_B	D_GE	D_RQ
CointEq1	0.0836	17.034**	-0.1319	15.664*	-19.104***
	(0.099)	(6.947)	(0.425)	(8.685)	(5.477)
	[0.922]	[2.451]	[-0.310]	[1.803]	[-3.487]
DGDP (-1)	-0.1867	-52.529	0.3462	11.943	45.723*
	(0.433)	(33.46)	(2.047)	(41.83)	(26.38)
	[-0.427]	[-1.569]	[0.169]	[0.285]	[1.733]
DTP (-1)	0.0020	0.5267	-0.0056	0.0364	-0.1020
	(0.004)	(0.328)	(0.020)	(0.411)	(0.259)
	[0.478]	[1.602]	[-0.286]	[0.088]	[-0.393]
DB (-1)	-0.0849	-10.358	0.2753	11.327	4.5105
	(0.117)	(9.023)	(0.552)	(11.28)	(7.113)
	[-0.721]	[-1.148]	[0.498]	[1.004]	[0.634]
DGE (-1)	-0.0036	-0.0715	0.0051	0.0115	0.1021
	(0.002)	(0.206)	(0.012)	(0.257)	(0.162)
	[-1.354]	[-0.346]	[0.407]	[0.044]	[0.628]
DRQ (-1)	0.0021	-0.2080	-0.0146	-0.5155	0.6255***
	(0.003)	(0.293)	(0.017)	(0.366)	(0.231)
	[0.571]	[-0.708]	[-0.816]	[-1.405]	[2.703]
Constant	0.0468**	2.3714	-0.0053	-0.9712	-2.0246
	(0.018)	(1.401)	(0.085)	(1.751)	(1.104)
	[2.562]	[1.692]	[-0.061]	[-0.554]	[-1.832]
Observations	22	22	22	22	22
R-squared	0.2701	0.3806	0.1380	0.2792	0.5892
Adj. R-squared	-0.0666	0.0947	-0.2598	-0.0533	0.3996
F-statistics	0.0171	100.83	0.3775	157.59	62.670
Mean Dependent	0.8020	1.3314	0.3469	0.8394	3.1076
chi2	28.1320	8.917	2.150	5.19	19.20
P>chi2	0.0002	0.2587	0.9511	0.6359	0.0076

Note: Standard errors are in parentheses, while T-statistics are in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Long-run estimates

Variables	Coefficient	Std.Dev	T-statistics	P-value
TP	-0.0520***	0.00226	-23.02	0.000
B	0.4296***	0.06669	6.443	0.000
GE	0.0045*	0.00252	1.788	0.074
RQ	0.0468***	0.00277	16.90	0.000
Constant	-9.9274			

Note: *, ** and*** denotes 1%, 5%, and 10% level of significance

which is expected to increase from 0.97 percent in 2022 to 13.06 percent in 2031, would have a higher variance shock on the economic growth of 13.06 percent. The other determinants, business tax, and regulatory quality are not predicted to have a major influence on Djibouti's economic development until 2031, with 5.62% and 3.78% variance shocks, respectively. Government effectiveness, on the other hand, is predicted to marginally reduce economic growth during the next ten years.

After we have completed all of the tests, we will run the diagnostic test to determine the validity of the model employed in the research. To begin with, the residual of autocorrelation reveals that there is no significant autocorrelation among the variables at lag order. The white test for heteroskedasticity produced a prob value of 0.438, indicating that the hypothesis of heteroskedasticity is rejected and the model is independent of heteroskedasticity. Finally, the stability criterion imposes moduli of four units. This indicates that the model is stable.

5. CONCLUSION

Institutions have an impact on the economy by creating an atmosphere conducive to stability and progress. As a country advances toward prosperity, its demands evolve, necessitating the implementation of institutional reforms. Implementation gaps in institutional changes lead to a delayed development cycle with far-reaching macroeconomic repercussions. Institutional reforms are efforts to alter the norms that govern human interactions. It is a framework of activities, methods of implementation, strategic planning, and foundational pillars of interaction with other entities. Nations with excellent economic systems give a favorable atmosphere and advantages to their citizens, allowing them to flourish quicker than counties with extraordinary capabilities.

These institutional improvements include informal prohibitions such punishments, customs, codes of behavior and formal guidelines for conduct, legislation, and land rights. When assessing a country's success, its institutions should be considered. The cornerstones of a community, legislative and administrative structures, create an atmosphere for the formation of public well-being. The institutional environment is defined by the legal and administrative structures within which individuals, corporations, and authority engage to create money and assure economic success. Institutional assistance for the growth of market freedoms, determining the ideal degree of regulation, avoiding corruption, liberating the judiciary from political reliance, and environmental protection are all vital.

Furthermore, tax reform is more complicated since it entails both tax rate decreases and base-widening reforms. Theoretically, such adjustments should increase the total scale of the economy over time, albeit the actual impact and amount of the influence are subject to substantial unpredictability. One issue that sometimes goes unreported is that widening the taxation by decreasing or removing welfare spending

Table 9. Pairwise Granger Causality Test

Variables	F-Statistic	Prob.	Note
TP granger cause GDP	2.729	0.1158	No causality
GDP granger cause TP	1.750	0.2024	
B granger cause GDP	2.090	0.1654	No causality
GDP granger cause B	0.563	0.4625	
GE granger cause GDP	3.039*	0.0983	One way causality
GDP granger cause GE	0.710	0.4105	
RQ granger cause GDP	5.854**	0.0263	One way causality
GDP granger cause RQ	1.207	0.2863	

Note: *, ** and*** denotes 1%, 5%, and 10% level of significance

enhances the effective tax rate that individuals and businesses bear and thus operates in the opposite direction of rate decreases. However, base-broadening has the added advantage of redirecting funds from presently tax-favored industries to sectors with the best economic (pre-tax) return, which should increase the total value of the economy.

A reasonable analysis would suggest that well-designed taxation possesses the capability to boost economic development, but there are several roadblocks to overcome and no certainty that all tax adjustments would enhance economic efficiency. Due to the distinct networks through which tax reform heavily influences, an economic expansion tax policy would include the following: first, a sizable favorable reward (substitution) effect that encourages work, saving, and investment; second, revenue impacts that are limited and positive or negative, including cautious segmentation of tax reductions toward new investment instead of giving higher returns for the past project; and finally, a decrease in disruptions across economic sectors and macroeconomic sectors.

Within this scope, the present paper examined the impact of tax policy and institutional reforms on the economic growth of Djibouti from the period 2000 to 2021. The paper used the region's GDP as an index of economic growth. Additionally, to carry on with the examination a Vector Error Correction model (VECM) and Granger causality test are performed to capture the long-run and short-run dynamic relationship among

Table 10. Impulse response and variance decomposition

Impulse Response Function					
Period	GDP	TP	B	GE	RQ
1	0.036314	0.000000	0.000000	0.000000	0.000000
2	0.036800	0.005210	-0.002164	-0.004165	0.007619
3	0.046838	0.013664	-0.005039	-0.002809	0.008359
4	0.041850	0.019150	-0.011193	-0.007695	0.007291
5	0.038993	0.017494	-0.014523	-0.005639	0.008890
6	0.040208	0.017917	-0.013370	-0.002584	0.010407
7	0.041104	0.019570	-0.012351	-0.002491	0.010616
8	0.040991	0.020153	-0.012665	-0.003195	0.010434
9	0.040737	0.020053	-0.013117	-0.003293	0.010431
10	0.040691	0.019990	-0.013189	-0.003088	0.010532
Variance decomposition of labor force (LF)					
Period	GDP	TP	B	GE	RQ
1	100.0000	0.000000	0.000000	0.000000	0.000000
2	96.14317	0.976487	0.168406	0.624090	2.087844
3	92.45611	4.062938	0.571310	0.479529	2.430112
4	86.85679	7.619454	2.038920	1.108445	2.376396
5	83.32012	9.076931	3.749796	1.190257	2.662896
6	81.29878	10.06414	4.542201	1.024563	3.070318
7	79.79247	11.08948	4.863399	0.900405	3.354251
8	78.55037	11.95007	5.134728	0.833996	3.530830
9	77.55848	12.58436	5.403469	0.787927	3.665763
10	76.78007	13.06955	5.622843	0.745990	3.781552

Table 11. Diagnostic tests

Tests	Prob	Note
Residual auto-correlation	Lag 1 (0.77) lag 2 (0.89)	No prominent autocorrelation at lag order.
White test for heteroskedasticity	0.4380	No heteroskedasticity
Eigenvalue stability condition	The VECM specification imposes 4-unit moduli	

the variables. As well as to determine the direction of these relationships. According to this, the results demonstrated that during the short-run taxes on business, labor tax contribution, government effectiveness, and regulatory quality have no prominent impact on the economic growth of Djibouti. Contrarily, the model revealed distinctive results in the short run. For instance, in the long-run factors such as taxes imposed on business, the effectiveness of the government as well the quality of the institutional system was revealed to have a favorable role in promoting the economic growth of Djibouti. Whereas, labor tax contribution presented a negative influence on the economic growth of Djibouti. Further, the Granger causality test illustrated one-way causation between GDP and GE, as well as GDP and RQ. This shows that government effectiveness and regulation quality have a strong relationship with Djibouti's economic growth. Nonetheless, the test revealed that tax policies had no causal relationship with GDP.

An adequate analysis of tax policies and institutional reforms in the Djiboutian economy is scarce or even non-existent in the economic literature. The current paper has used Djibouti a country located in Eastern Africa that has a complex institutional structure and taxation policies as a focus nation. The country is also understudied in comparison to other African countries. Accordingly, the results contribute by providing evidence to the region and for the country itself on the way of managing taxation and implementing rigorous institutional regulation in hope of promoting economic growth. The paper is the first one in Djibouti to employ a VECM approach in order to assess the long-run influence that exists between three different phenomena (tax policies, institutional reforms, and economic growth). In terms of recommendation, Djibouti needs to adjust its taxation and reforms to the needs of local and foreign firms. The country also needs to open its market in order to create an adequate environment for competition and business creation because in Djibouti there is the presence of monopolistic regulation. All the important sectors such as (health, telecommunication, and energy) are only controlled by governmental organizations.

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