



RESEARCH ARTICLE

The Impact of Governance Quality on Economic Growth: Case of Libya Period before and During the War

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024 Accepted: Jul 16, 2024	This study investigates Libya's economic growth determinants, emphasizing government quality, economic openness, and domestic saving from 1996 to 2021. Results reveal the significance of political stability, effective governance, and rule of law in influencing economic growth. Positive links are found between governance quality and domestic saving, exports, FDI, and growth. Surprisingly, no significant relationship is observed between domestic saving, FDI, and economic growth, challenging conventional expectations. The study provides valuable insights for policymakers, highlighting the crucial role of effective governance in fostering economic development, with recommendations for further research and tailored policy interventions.
Keywords Government quality Export FDI Domestic saving Economic growth	
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INTRODUCTION

Libya is a developing country in North Africa, which places south of the Mediterranean Sea east of Algeria and Tunisia, and west of Egypt and Sudan. Libya has been a subject of scholarly interest due to its unique geopolitical position, vast oil reserves, and complex socio-economic dynamics (Uchendu, 2015). However, the country has faced significant challenges in recent decades, including political instability, armed conflicts, and economic disruptions. Understanding the intricacies of Libya's economy is crucial for researchers, policymakers, and stakeholders seeking to contribute to its post-conflict reconstruction and long-term development (Elmighrabi et al., 2023; Maalim, 2023).

The historical context of Libya's economy provides valuable insights into its present challenges and opportunities. Since gaining independence in 1951, Libya has witnessed fluctuations in economic policies and development models. The nationalization of oil resources in the 1970s, under the leadership of Muammar Gaddafi, significantly influenced the country's economic structure. Moreover, Libya's political and economic relations with international actors have played a significant role in shaping its economic landscape (Elkoni & Razzaque, 2013; International Monetary Fund, 2023). This country plays an important role and significant contributor of oil among Organization of Petroleum Exporting Countries (OPEC) producing countries. Libya has a total recoverable reserve of approximately 46 billion barrels of oil, or about 3.4 percent of total international reserves and the

ninth largest reserves in the world. Libya has the largest oil reserves in Africa. Libya is a major member of OPEC which economics heavily depends on oil and gas production, Economic condition of the Libyan economy worsened in the 1990s as a result of international sanctions (Ycharts, 2016; International Monetary Fund, 2023).

As an oil-producing country, Libya relies heavily on oil exports as a primary source of revenue. The conflict disrupted oil production and exports, which caused a significant decline in the country's oil output and exports (Shang & Hamori, 2022). The disruption of oil exports also had a ripple effect on the economy, leading to a decline in government revenue, FDI, and government expenditure and affecting the country's ability to finance its public expenditures (Zhang et al., 2018). The decrease in government revenue also limited the government's ability to invest in key sectors and infrastructure, which negatively affected the domestic investment climate. FDI also suffered during the war in Libya (Dimitrov, 2011; Latief & Lefen, 2018). Libya generally led to a contraction in the economic growth, trade balance, large current account deficits, a loss of foreign reserves and decreasing in oil exports. However, the magnitude of the changes in the macroeconomic variables varied. Given the long duration of the war in Libya, real GDP fluctuated significantly according to the intensity of the conflict, with some years showing positive growth (The World Bank, 2023). Economic growth is one of the most important research topics in modern economics. Such as many developing countries, the essential focus of policies in Libya is to have a high growth rate, and for this to happen makers need to understand the determinants of growth as well as how polices affect growth. However, over the last three decades, the performance of Libya has been disappointing compared with other MENA countries.

The existing growth models fail to provide a complete explanation for the cross-country growth differences. Although human capital accumulation, physical capital accumulation and technological progress are important determinants of economic growth in the major growth models (Romer, 2001; Acemoglu, 2009), the importance of social infrastructure and government policies in economic growth. The concept of governance and its importance to economic growth was raised in the early 1990s. Governance is a broad concept with great complexity to its major pillars. Kaufmann et al., (2010) define governance as a set of traditions and institutions that can be used to exercise the power of authority. Six basic dimensions of the governance are included political stability and absence of violence/terrorism, voice and accountability, government effectiveness, regulatory quality, control of corruption and the rule of law (Tharanga, 2018; Farooque et al., 2022). These governance characteristics may influence several critical institutions that are essential for economic growth. These key institutions include well-defined property rights, unbiased contract enforcement, reduced information gap and stable macroeconomic conditions (Saleh & Shil, 2023). The governance indicators influence on these and eventually decide the country's economic growth in two ways. First, better governance creates a set of essential institutions that increases in the productivity of human and physical capital, and attract investment for developing human and physical capital (Tharanga, 2018; Khouya & Benabdelhadi, 2020). Farahani & Hossein (2012) study's findings showed that foreign direct investment has a beneficial effect on economic growth in emerging nations when continual investments are made in this area. Additionally, communications and IT have a positive impact on economic growth. Elbeydi et al. (2010) findings indicate that the income, exports and relative prices are cointegrated. The long run bidirectional causality between the exports and income growth has been also proved. The study result indicates that the export promotion policy contributes to the economic growth in Libya. Shafi (2014) also stated that there is positive relationship between FDI and economic growth. Meanwhile Ahmouda (2014) stated that Oil industry has an imperatively significant role in Libya. The relationship between exports and GDP in the constant prices, however allowing for improvements in the terms of trade, suggests that the export coefficient is highly significant in all periods. Conversely, the lagged GDP variable was not significant in any period which

may suggest a lack of investment opportunities in all periods. It is obvious that there is significant relationship between oil export and economic growth. Sethi & Sucharita (2010) also stated that Although FDI is positively correlated with Bangladesh's economic growth, it has not yet been proven to be a significant determinant of economic growth, according to the regression result. However, the results show that FDI is negatively correlated with India's economic growth and has not yet been proven to be a significant determinant of economic growth.

Based on the previous study above (Ahmouda, 2014; Sethi & Sucharita, 2010; Shafi, 2014; Elbeydi et al., 2010; Farahani & Hossein, 2012), important gaps remain in the understanding of the factors that determination of economic growth in Libya including government quality, economic openness (Export and FDI), domestic saving. Drawing on prior research in the field, it has been suggested that there is a lack of studies focusing on the impact of government quality on economic openness, economic growth and domestic saving, also impact of economic openness, domestic saving on economic growth in the MENA region, particularly in times of war. Consequently, this research presents an intriguing opportunity to investigate this gap and contribute original insights to the existing body of knowledge.

This study aimed to examine the factors that determination of economic growth in Libya including government quality, economic openness (Export and FDI), domestic saving and used a time series data set collected between the years of 1996 until 2021. The research contributes in examine the nature of economic growth in Libya and the factors that influence it. The research contributes not only adds to economic theory by elaborating on the connection between Libya's economic growth and particular variables, but it also provides government officials with useful advice and suggestions and acts as a resource for further study in this important subject.

The novelty of the study based on our result is to look into the Governance index impact on domestic saving, foreign direct investment, export and economic growth during the years 1996-2021 (before and during war in Libya), to the best of my knowledge, no published works that have an emphasize of government index in Libya. So, this study will fill the gap. This study offers novel insights institutional and classical theory can explain factor of economic growth before and during war in Libya. So in this research will focus on factors that determine economic growth in Libya before and during war, especially government quality and this will be the originality (novelty) of this research. Since there is research gap is notable absence of examining the role of the governance quality in Libya.

RELATED LITERATURE

1. Concept of governance

According to Weiss (2000), governance is the use of political authority to run a community's affairs. The quality of this power exercise and management, which may include its results in terms of the quality of public goods and services received by citizens, is understood to be the quality of governance, which is sometimes treated as being equivalent to government performance (Bratton, 2013). Government theory is a theory theory explores the enduring elements of social structure, examining how rules and norms become authoritative guides for behavior. Governance theory delves into how societies manage resource distribution, power, and decision-making, emphasizing the interactions of individuals and organizations within political systems. Good governance, marked by transparency and inclusivity, fosters economic progress, while poor governance, often linked to corruption and human rights violations, can lead to social unrest. Weak governance can also result in dissatisfaction across various societal groups due to its inability to address complaints and provide essential services. Government index monitors the performance of government assets, typically government bonds, issued by the government of a given nation (Badia

et al., 2019). The World Bank (2020) published six indicators of good governance and assigned nations a ranking based on their performance. Governance index is the government effectiveness control of corruption, regulatory quality, accountability, political stability, transparency and also civil liberties. Governance index can influence GDP because the higher government index it means the control of corruption better, regulatory quality higher, accountability and political stability higher it will impact on higher GDP also (Dizon et al., 2021; Taylor et al., 2022). When evaluating the risk of investments, these have a significant impact on how economic players and stakeholders behave. The diverse incentives that individuals, politicians, and businesses have received through their institutions help explain why different countries have varying amounts of wealth (Li et al., 2023). They contend that technological innovation and development may accelerate economic growth. But in order for technology to be used and developed, nations need to be able to rely on strong political and economic structures (Mohamed et al., 2021; Lu et al., 2019).

2. Domestic saving

The process of accumulating capital within a nation's economy via investments in its people and physical resources is known as domestic saving. While infrastructure, machinery, and equipment are considered physical capital, education, training, and the development of skills are considered human capital (Ding et al., 2020). As it enables higher productivity and efficiency in the production of goods and services, capital accumulation is crucial for fostering economic growth and development. Domestic saving is sometimes seen as a crucial element of a nation's long-term economic growth plan since it is generally accomplished through a mix of government policies and private sector investment (Ishfaq et al., 2022; Sijabat, 2022).

3. Foreign direct investment (FDI)

According to Krugman (1988) what is meant by FDI is international capital flows where companies from one country establish or expand their companies in other countries. Foreign Direct Investment (FDI) is a form of economic activity in which investors from one country invest long-term capital, both in the form of finance and management, into business entities located in other countries (Organization for Economic Cooperation and Development, 2008). Foreign direct investment is an investment that involves investors directly in the business operations carried out so that business dynamics related to the company's policies that are set, the goals to be achieved, cannot be separated from interested parties (foreign investors) (Nguyen et al., 2022; Ling et al., 2019).

4. Export

According to government rules, exporting entails selling goods to other countries or foreign countries while anticipating payment in foreign currencies and communicating in a foreign language. According to the Hecksher-Ohlin theory, exports have a significant impact on a nation's economic development. The country will benefit from this activity since it will boost national income and hasten the process of growth and development (Isaiah Zayone et al., 2019). Export is one of the aspects sustaining a region's economy, and actions are carried out to increase regional revenue. Exports are therefore crucial in the choice of economic growth plans, and any changes in the volume of exports will have an impact on domestic products. Growing export capacity would boost domestic output (Dizaji & Ketabforoush, 2014; Luo & Qu, 2023).

5. Determinants of economic growth

Economic growth is defined as the development of activities in the economy that causes goods and services produced in society to increase and the prosperity of society to increase. Economic growth is a significant increase in national income (with an increase in per capita income) in a certain calculation period (Surya et al., 2021). According to Economic growth is an effort to increase

production capacity to achieve additional 42 outputs, which is measured using Gross Domestic Product (GDP) and Gross Regional Domestic Product (GRDP) in a region. The process of boosting an economy's output capacity is known as economic growth which is manifested in the form of an increase in national income (Constantine et al., 2017; Derunova et al., 2016).

6. Review of economic growth theories

Neoclassical growth theory

The neoclassical theory is the extensive version of the classical theory that includes behavioral science in business management. In this theory, the organization is the social system, and its performance is affected by human efforts (Membiela-Pollán et al., 2019). One of the key early assumptions of neoclassical economics is that utility to consumers, not the cost of production, is the most important factor in determining the value of a product or service. This approach was developed in the late 19th century based on books by William Stanley Jevons, Carl Menger, and Léon Walras. Neoclassical economics theories underlie modern-day economics, along with the tenets of Keynesian economics. Although the neoclassical approach is the most widely taught theory of economics, it has its detractors (Petri, 2015; Soukup et al., 2014).

Solow theory

According to Solow (1956), the process of domestic saving is explained by the fact that at any one time, both the labor supply and the capital stock are accessible also a datum. We may use the production function (1) to determine the present rate of output since the real return on factors will change to achieve full employment of labor and capital. In order to show various growth patterns, Solow investigates whether there is always a domestic saving route consistent with any rate of labor force increase. War has an impact on the productivity level and growth rate in the Solow model. If conflict results in less endogenous growth, the long-term productivity is decreased. Civil war's occurrence is a sign of a state's failure to arbitrate and settle problems in a peaceful manner. Particularly, factors that may contribute to the likelihood of civil war include a reliance on primary exports, a low human capital stock, slow economic growth and a weak and ineffectual central government as a result of bad fiscal conditions (Gyimah-Brempong and Corley, 2005).

Endogenous theory

Endogenous theory is an economic theory that explains long-run economic growth as driven by internal factors such as investments. While endogenous theory may have implications for financial markets and institutions, it is not typically considered a financial theory, as it is more broadly concerned with the drivers of economic growth and development. However, there are some areas of overlap between endogenous theory and finance, particularly in the context of analyzing the role of financial intermediaries in promoting growth and innovation (Howitt, 2010).

Keynes theory

Keynesian economics is a macroeconomic theory that was developed by the British economist John Maynard Keynes in the 1930s. This theory focuses on the role of government intervention in the economy, particularly during times of economic downturns. Keynesian economics suggests that government policies, such as fiscal and monetary measures, can be used to stabilize the economy and promote full employment (Nguyen & Nguyen, 2023; Sadeh et al., 2020). It contrasts with classical economics, which emphasizes a laissez-faire approach with minimal government involvement. One of the key principles of Keynesian economics is the idea that in times of recession or depression, there is a deficiency in aggregate demand. In other words, people and businesses are not spending enough money to keep the economy functioning at its full potential. This concept is often referred to as the "liquidity trap," and Keynes argued that during such periods, traditional

monetary policy might be ineffective. Instead, he advocated for fiscal policies, such as government spending on infrastructure projects or tax cuts, to boost demand and stimulate economic activity (Keynes, 1936; Aganbegyan, 2022).

Keynes suggested in *The General Theory* that the short-term spending intentions of individuals, corporations, and the government determine a major portion of an economy's overall revenue. Businesses may sell more goods and services when consumers are willing to spend more money. Businesses will create more product and recruit more people if they can sell more. Keynes thought that insufficient expenditure is the issue that arises during recessions and depressions. A decreased marginal propensity to spend on domestic products results in lesser second- and third-round impacts and, consequently, a smaller multiplier, as the Keynesian cross illustrates. National multipliers may thus be greater than regional multipliers. The Keynesian cross is helpful because it illustrates how government, business, and consumer spending intentions affect the amount of money in the economy. Keynesian premise holds that prices are fixed. Output may vary from its natural level depending on monetary policy, fiscal policy, and the other factors influencing aggregate demand (Mankiw, 2019).

7. Previous research

Louzi & Abadi (2011) examined the variables FDI, domestic investment, trade liberalization. The study focused on the notion of FDI growth in Jordan, based on time series data from 1990 to 2009. The methods used was VAR. The result showed that more needs to be done to enhance the investment climate in the nation, including putting up a suitable regulatory environment and tariff structure, increasing labor market flexibility, and increasing trade policy clarity. The government must implement the right balance of policies if its ultimate goal is to attract FDI for development. They concluded that FDI has a significant effect on economic development because FDI supplies developing nations with much-needed resources including finance, technology, management abilities, and market access in Jordan.

Etelawi et al. (2017) examined the variables Economic Growth and oil prices (export) used OLS. A log linear model was estimated using annual data for the period 1980 to 2012. The signs associated with the variables were consistent with economic theory. The result stated that elasticities were positive and strongly inelastic, indicating that large changes in each of the variables would be required to dramatically increase GDP. They conclude there is positive relationship between oil prices (export) and economic growth in the period 1980 to 2012. Boutaba and Rajhi (2016) showed that Export has a positive and significant effect on economic growth. Istaitieh and Ismail, (2015) examine the causal relationship between exports and economic growth using cointegration and vector error correction paradigms on quarterly data from 2003 to 2013. The empirical case of Jordan. They conclude that that exports have a positive and significant impact on economic growth in Jordan on 2003 to 2013.

Fargani (2013) examined the variables Economic Growth, oil-exporting, GDP used OLS. The time series data is used to attempt to incorporate the major characteristics of the Libyan economy for the period 1962 to 2009 into a macroeconomic model. The result stated that the growth of population and of the labour force, and fluctuations in oil prices, have impacted on GDP growth over the last two decades. The ratios of Libyan population and labour have increased substantially, and the education level of Libyans for both genders has significantly improved, and the ratio of employees in various jobs has witnessed moderate changes. They conclude that oil-exporting effect Economic Growth in some MENA countries. Additionally, in contrast to the scenario in the non-oil exporting countries, certain MENA countries with oil exports are experiencing capital growth that is quicker than the labor supply. Efhialelbum and Flatau's (2013) intends to investigate the effects

of FDI on the Libyan economy throughout the country's transition from 1990 to 2010. Additionally, the paper contrasts the performance of FDI in Libya with other transitioning nations. The study showed that FDI had little effect on the Libyan economy during the transition. Additionally, the comparison of Libya's FDI performance to that of a few other transitioning nations reveals differences in the FDI performance index. They concluded that in Libya, the impact of FDI on Libyan economy was weak in transition period. Also, the comparison between Libyan FDI performance and some countries in transition shows dissimilarity in terms of FDI performance index.

Collier (1999), examined a model of the post-war and civil war era's economic impacts is created. The modification of the capital stock due to capital flight is a crucial component. This flight after the war may be stopped or resumed, depending in part on how much the capital stock has changed due to the conflict. On data from all civil wars since 1960, the model is tested. In contrast to brief conflicts, the economy quickly bounces back following protracted civil wars. The increase of economic activity is then taken into account, with a focus on activities that are both war-safe and vulnerable. Evidence for Uganda demonstrates the importance of these compositional impacts. They conclude that civil war can effect economic growth by lower national income (GDP) in four major ways: destroying, disrupting, diverting, and depleting national resources. These negative economic effects of civil wars can be contagious.

Another study was conducted by Aisen and Veiga (2011) study aims to scientifically identify how political instability affects economic expansion, utilizing a sample of up to 169 nations and the system GMM estimator for linear dynamic panel data models. According to the study, lower GDP per capita growth rates are correlated with political instability at higher levels. Regarding the routes of transmission. They concluded that political instability has a negative impact on economic growth in these nations. According to the eclectic paradigm hypothesis put forward by Dunning (1988), a foreign investor's decision to invest in a host nation is influenced by its management and administrative systems, the cost of labor and transportation, governmental policies, as well as its institutions and political stability. When entering international markets, foreign investors could be more concerned with risk and return (Fedderke and Romm 2006). Because of the disparities in their institutional structures, North and South Korea, for example, have the same economic characteristics but different economic results (South Korea, for instance, has a greater per capita GDP than North Korea does) (Acemoglu et al. 2006). Indeed, the conduct of economic players and stakeholders is shaped by economic institutions, which makes them significant (Sabir and Zahid 2012). People are encouraged to make local and international investments that stimulate economic growth in nations with safe, well-protected property rights. Otherwise, growth and investment are behind.

The results differ according to the method of analysis that researchers employ and selected sample countries for the analysis. Due to the mixed results, the focus has shifted to other possible determinants such as the impact of government quality on economic growth and FDI, as a result of the inconsistent results. While another section of the literature looks at other institutional indicators, that focused on evaluating the impact of one particular institutional characteristic, such as corruption or political stability on FDI, export, domestic saving, and economic growth.

DATA, DEFINITIONS AND METHODS

1. Data

The time series utilized for the data in this study ran from 1996 to 2020. A set of observations made over a specific time period make up this time series data. Time series models use past data to make predictions about the future. Data gathered, noted, or seen consecutively across time is referred to as a time series (Liapis et al., 2021). The observational period can last for a year, a quarter, a month,

a week, or even in some cases just a few hours. In order to forecast future values and aid in operations management and planning, time series are investigated to uncover historical patterns of change. In order to analyze a time series, historical data must be broken down into its component parts and then projected into the future. It is known that there are four factors that determine a pattern of past and current data that tends to repeat itself in the future, which is why time series analysis is researched (Ao & Fayek, 2022; Kim et al., 2022).

2. Variables definitions

Dependent variables

The dependent variable in this study is Economic Growth. In this study measured by economic growth of Libya.

Independent variables

1. Government quality

A government Quality refers to an index that tracks the performance or changes in value of government securities, specifically government bonds issued by a particular country's government. Government Quality in this study will measure by index of Libyan Government index, that consists of 6 proxies that are: Political Stability, Voice and Accountability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. So, it will used Principal Component Analysis (PCA). PCA is an analytical technique used in statistics as well as data science. By leveraging this analysis technique, so it can summarize the information contained in larger data to a smaller summary data (Đuriš et al., 2020; Zhang et al., 2018). The following is the PCA model used:

$$PC_1 = a_{11}X_1 + a_{21}X_2 + \dots + a_{p1}X_p$$

2. Domestic saving

Domestic saving refers to the process of building up capital within a country's economy through investment in physical and human capital. Domestic saving in this study will measure by savings (Ameer et al., 2019)

3. Economic openness

Economic openness, which includes export and foreign direct investment (FDI), is a key driver of economic expansion. The measurement used in this research are Foreign direct investment (FDI). Economic openness in this study will measure by export and FDI (Bazán Navarro & Josué, 2022).

3. Vector auto regression (VAR)

To analyze the impacts of the identified contributory variables for economic growth of Libya, time series regression analysis used to examine how a dependent variable and one or more independent variables interact over time. The analysis involves modeling the dependent variable as a function of one or more independent variables, where the values of the independent variables are observed at different points in time (Ariefianto, 2012; Juanda & Junaidi, 2012).

RESULTS

1. Descriptive statistics

Table 1: Component of governance index

Variable	Mean		Maximum		Minimum		Std. Dev	
	Before	During	Before	During	Before	During	Before	During
Total Governance Index	-6.43	-10.04	-7.34	-11.39	-5.15	-7.67	0.12	0.23
1. Control of corruption	-0.97	-1.49	-0.85	-1.23	-1.26	-1.57	0.13	0.11

2. Government effectiveness	-1.02	-1.54	-0.86	-1.05	-1.23	-1.84	0.10	0.24
3. Political stability	-0.01	-2.16	0.83	-1.29	-0.99	-2.57	0.61	0.41
4. Regulatory quality	-1.52	-2.01	-1.09	-1.43	-1.89	-2.28	0.27	0.28
5. Rule of law	-1.02	-1.51	-0.82	-0.98	-1.18	-1.86	0.10	0.30
6. Voice and accountability	-1.79	-1.51	-1.50	-0.98	-1.98	-1.86	0.14	0.30

*) this is index from 0 to 2.5 meaning the best Governance index and from -2.5 to 0 meaning the lower Governance index (Ojeka et al., 2019; The World Bank)

The descriptive statistics found in table 5.1 indicates that Economic Growth ranges from 20.482 billion US\$ to 92.541 billion US\$, with a mean of 51.699 billion US\$ suggest for the emerging Libya that studied in this research.

Table 2: Descriptive statistic

Variable	Mean		Maximum		Minimum		Std. Dev	
	Before	During	Before	During	Before	During	Before	During
Domestic Saving (DS)	43.52	20.97	66.99	51.06	10.45	-2.164	18.69	21.39
Economic growth (EG)	10.30	-0.67	42.91	92.12	-3.99	-3.61	23.82	37.01
Export	48.77	39.29	74.12	72.85	19.37	14.58	21.03	19.95
Foreign Direct Investment (FDI)	1.52	0.22	6.89	1.54	-0.47	0.00	2.16	0.52

Before the war, the mean domestic saving was substantially higher compared to during the war. The maximum value also decreased, indicating a significant impact on economic activities. The minimum value during the war went negative, suggesting a potential contraction. The standard deviation decreased, indicating less variability in domestic saving during the war. Economic growth experienced a notable shift from a positive mean before the war to a negative mean during the war. The maximum economic growth post-war surged dramatically, possibly due to reconstruction efforts. However, the minimum growth plunged further into negative territory, signifying economic challenges. The standard deviation during the war increased substantially, indicating greater variability in economic performance.

Mean export levels dropped from before the war to during the war. The decrease in the maximum value suggests a decline in the capacity to export. The minimum value remained positive, but the standard deviation decreased, pointing to a more consistent but reduced export performance post-war. The mean FDI decreased from before the war to during the war. The maximum value saw a substantial reduction, and the minimum value became non-zero post-war. The standard deviation declined, indicating a more stable but diminished FDI environment after the conflict.

The governance index, capturing overall government performance, exhibited a decrease in the mean from before the war to during the war. The maximum and minimum values showed increased variability post-war. The standard deviation saw a significant rise, highlighting increased divergence in governance quality during the war.

Before the war, the mean for control of corruption indicating a negative perception of corruption. During the war, this perception worsened, as reflected in the lower mean. The decrease in the mean suggests a heightened level of corruption, while the increased standard deviation indicates greater variability in perceptions of corruption after the conflict. The mean government effectiveness decreased from before the war to during the war. This drop signifies a decline in the perceived effectiveness of the government in post-war conditions. The increased standard deviation suggests greater variability in opinions regarding government effectiveness after the conflict.

Before the war, the political stability variable had a mean indicating a relatively stable political environment. However, during the war, the mean dropped, reflecting a substantial deterioration in political stability. The increased standard deviation post-war suggests heightened uncertainty and variability in perceptions of political stability.

Regulatory quality exhibited a decline in mean from before the war to during the war. This decrease indicates a perceived weakening in the quality of regulations post-conflict. The increased standard deviation during the war suggests greater diversity in opinions about regulatory quality. The mean for the rule of law decreased from before the war to during the war. This decline suggests a perceived erosion of the rule of law post-war. The increased standard deviation indicates a more diverse range of opinions regarding the rule of law after the conflict.

Before the war, the mean for voice and accountability reflecting a negative perception. During the war, this perception persisted. The standard deviation remained relatively stable, indicating a consistent but negative perception of voice and accountability post-conflict.

In summary, the governance-related variables collectively depict a significant deterioration in perceived governance quality during the war. The declines in means across these variables suggest challenges in controlling corruption, maintaining government effectiveness, ensuring political stability, regulating effectively, upholding the rule of law, and promoting voice and accountability in the post-war period. The increased standard deviations underscore the varied and uncertain nature of these governance perceptions in the aftermath of the conflict.

Table 3: Score of governance index

	Before War	During War
Mean	-6.432	-10.0345
Maximum	-7.340	-11.390
Minimum	-5.150	-7.670
Std. Dev.	0.7177	1.400

The table presents the mean Governance Index score, the result is -10.0345, which indicates that Government Index throughout the conflict had a far worse total score. This significant decline implies that GI score during the war is suffered greatly throughout the conflict. With a mean score of -6.432, Government Index before the War had higher average score. This substantial in the mean points to a general better condition in GI before the wartime study variables.

Government Index significantly declined throughout the conflict. A general drop in GI across many scenarios is indicated by the significant decline in the maximum and lowest scores, as well as the total and mean scores. A more persistently negative effect on GI is suggested by the bigger standard deviation during the conflict, which may be an indication of a broader tendency of instability during times of war.

2.2. Multicollinearity test

Table 4: Multicollinearity test before war

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	0.036088	1.484395	NA
D(DOMESTICSAVING)	0.000646	3.610257	3.453442
ECONOMICGROWTH	0.000124	3.445565	2.895028
D(EXPORT)	0.000778	2.151073	1.919947
D(FDI)	0.016927	1.408787	1.381529

Based on the results, the VIF of all the variables are between the values 1 – 10 which indicates there is no multicollinearity problem.

Table 5: Multicollinearity test during war

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	2.21E-32	2.200427	NA
D(DOMESTICSAVING)	2.76E-34	25.61725	25.38044
ECONOMICGROWTH	2.04E-35	2.522575	2.505816
D(EXPORT)	5.27E-34	32.16189	31.52945
FDI	1.04E-31	3.345601	2.714945

Based on the results, the VIF of all the variables are between the values 1 – 10 which indicates there is no multicollierity problem.

2.3. Heteroscedasticity test

Table 6: Heteroscedasticity test before war

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.251280	0.098568	2.549299	0.0312
D(DOMESTICSAVING)	-0.006059	0.013188	-0.459422	0.6568
ECONOMICGROWTH	0.008260	0.005780	1.429096	0.1868
D(EXPORT)	0.010271	0.014474	0.709631	0.4959
D(FDI)	0.025480	0.067508	0.377443	0.7146

Based on the results, the value of the p-value ≥ 0.05 then H_0 is accepted, which means that there is no heteroscedasticity problem.

Table 7: Heteroscedasticity test during war

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.56E-16	6.53E-17	2.390200	0.0752
D(DOMESTICSAVING)	4.96E-18	7.30E-18	0.679544	0.5341
ECONOMICGROWTH	-2.21E-18	1.99E-18	-1.115158	0.3273
D(EXPORT)	-8.34E-18	1.01E-17	-0.826428	0.4550
FDI	1.09E-16	1.42E-16	0.769024	0.4848

Based on the results, the value of the p-value ≥ 0.05 then H_0 is accepted, which means that there is no heteroscedasticity problem

2.4. Autocorrelation test

Table 8: Autocorrelation test before war

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.156849	0.124788	1.256924	0.2404
D(DOMESTICSAVING)	-0.001463	0.016696	-0.087616	0.9321
ECONOMICGROWTH	0.005192	0.007317	0.709549	0.4960
D(EXPORT)	0.002285	0.018324	0.124690	0.9035
D(FDI)	0.027517	0.085465	0.321973	0.7548

Based on the result, the prob. value > 0.05 then no autocorrelation symptoms occur is a test used to test the presence or absence of serial correlation in the regression model or to find out whether in the model used there is autocorrelation between the observed variables.

Table 9: Autocorrelation test during war

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.74E-32	2.87E-32	1.301368	0.2630
D(DOMESTICSAVING)	2.87E-33	3.21E-33	0.891719	0.4229
ECONOMICGROWTH	-6.65E-34	8.74E-34	-0.761087	0.4890
D(EXPORT)	-4.48E-33	4.44E-33	-1.009593	0.3698
FDI	3.52E-32	6.23E-32	0.565493	0.6020

Based on the result, the prob value > 0.05 then no autocorrelation symptoms occur is a test used to test the presence or absence of serial correlation in the regression model or to find out whether in the model used there is autocorrelation between the observed variables.

4. VAR analysis

4.1. Stationary test

Table 10: Principal component analysis stationarity test before war

Variable	Augmented Dickey-Fuller test statistic	
	t-Statistic	Prob.*
Government Index Quality	-1.451294	0.5275
Export	-0.755320	0.8005
FDI	-1.356235	0.5723
Gross Domestic Savings	-1.451294	0.5275
Economic Growth	-3.464448	0.0263

Based on the data above, the Prob value of Governance quality, Export, FDI, Gross Domestic Savings and Economic Growth are > 0.05 , then the data contains a unit root, which means the data is not stationary, which means data differentiation must be carried out first. Meanwhile the Prob Economic Growth are < 0.05 means the data is stationary.

Table 11: Principal component analysis stationarity test during war

Variable	Augmented Dickey-Fuller test statistic	
	t-Statistic	Prob.*
Government Index Quality	-1.953096	0.2988
Export	-2.053231	0.2634
FDI	-8.470903	0.0001
Gross Domestic Savings	-2.904178	0.0792
Economic Growth	-3.735726	0.0229

Based on the data above, the Prob value of Governance quality, Export, , Gross Domestic Savings are > 0.05 , then the data contains a unit root, which means the data is not stationary, which means data differentiation must be carried out first.

Table 12: Principal component analysis stationarity test after data differentiation before war

Variable	Augmented Dickey-Fuller test statistic	
	t-Statistic	Prob.*
FDI	-3.119991	0.0500
Export	-3.181218	0.0451
Government Index Quality	-1.153839	0.6426
Gross Domestic Savings	-4.352255	0.0061

Based on the data above, after differentiating the data, the Prob value is < 0.05 , then the data does not contain a unit root, which means the data is stationary.

Table 13: Principal component analysis stationarity test after data differentiation during war

Variable	Augmented Dickey-Fuller test statistic	
	t-Statistic	Prob.*
Government Index Quality	-3.852295	0.0250
Export	-2.871167	0.0866
Gross Domestic Savings	-3.375575	0.0424

Based on the data above, after differentiating the data, the Prob value is < 0.05 , then the data then the data does not contain a unit root, which means the data is stationary.

4.3. Stability test

Table 14: VAR stability before war

Root	Modulus
0.376858 - 1.013969i	1.081737
0.376858 + 1.013969i	1.081737
0.046655 - 1.072984i	1.073998
0.046655 + 1.072984i	1.073998
-0.608916 - 0.802876i	1.007665
-0.608916 + 0.802876i	1.007665
-0.960815 - 0.223071i	0.986370
-0.960815 + 0.223071i	0.986370
0.786345 - 0.386469i	0.876183
0.786345 + 0.386469i	0.876183

Based on the result, the VAR model is declared stable if the root has a modulus value of less than 1 (one) that mean data stable. The analysis results show that there are root values that have a modulus of less than 1 and more than 1, but with values close to 1 which shows that the data is moderately stable.

Inverse Roots of AR Characteristic Polynomial

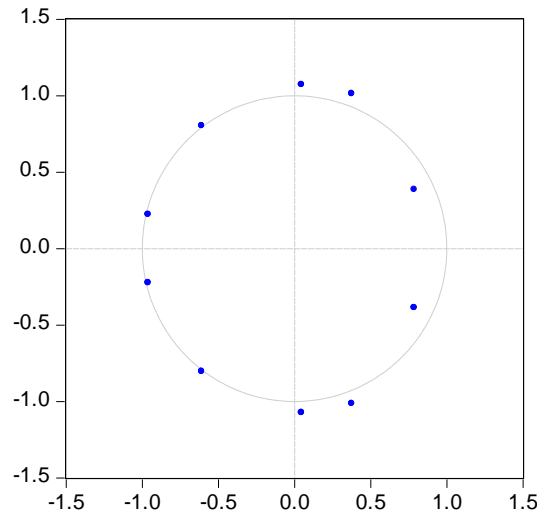


Figure 1: VAR stability graph before war

Table 15: VAR stability during war

Root	Modulus
1.085.474	1.085.474
-0.809489	0.809489
0.804781	0.804781
-0.161211 - 0.603790i	0.624941
-0.161211 + 0.603790i	0.624941

Based on the result, the VAR model is declared stable if the root has a modulus value of less than 1 (one) that mean data stable. The analysis results show that there are root values that have a modulus of less than 1 and 1 root have modulus value more than 1, but with values close to 1 which shows that the data is moderately stable.

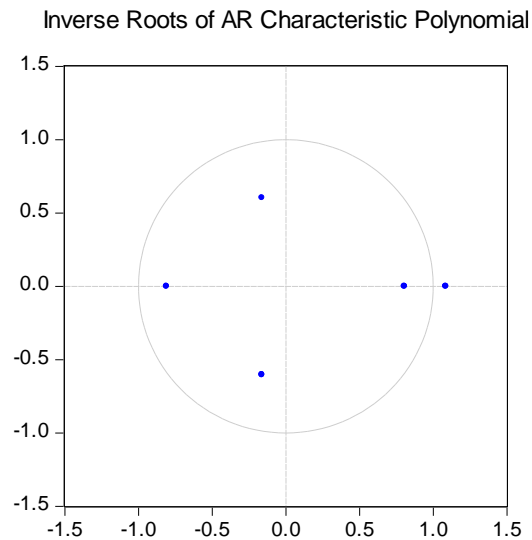


Figure 2: VAR stability graph during war

Based on the result, all points are inside the circle which means that the VAR model is stable. Stability refers to the model's capacity to produce projections over time that are within a controllable range rather than explosive or inconsistent. Based on the analysis results, it shows that there are root values that are inside the circle and there are some that are outside the circle. This shows that some of the data is stable and a small part is not, so it can be said that the data is moderately stable.

4.4. Cointegration test

Table 16: Cointegration test before war

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.882671	73.20592	69.81889	0.0262
At most 1	0.828185	43.20705	47.85613	0.1276
At most 2	0.500174	18.54831	29.79707	0.5258
At most 3	0.380663	8.839384	15.49471	0.3804
At most 4	0.141251	2.131907	3.841466	0.1443

Based on the result, the probability value is > 0.05 , it means there is a cointegration equation, which means it has a long-term balance and in the next section we will analysis used VAR analysis.

Table 17: Cointegration test during war

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	-2.418549	0.8567	-7.920888	0.8811
At most 1	-3.381795	0.5214	-11.18129	0.4678
At most 2	-1.743968	0.9743	-5.717860	0.9774
At most 3	-3.020962	0.6582	-9.428006	0.7311
At most 4	-4.185157	0.2704	-9.036300	0.7917

Based on the result, the probability value is > 0.05 , it means there is a cointegration equation, which means it has a long-term balance and in the next section we will analysis used VAR analysis.

4.6. Result analysis

The results of the VAR analysis model are presented in table 5.23. The data analysis method used in this research is using the VAR model. VAR is a model that is able to analyze the interdependent relationship of time series variables (Ariefianto, 2012).

Table 18: VAR analysis result before and during war

Hypothesis	BEFORE			DURING			t-test difference	
	β_1	S.E. (std.error)	N	β_2	S.E (std.error)	N	t-statistic	Sig. (p-value)
GI → DS	0.230430**	0.516701	15	0.1412521**	0.625378	11	-0.703382	0.4886
GI → FDI	0.515591***	0.709547	15	0.345309	3.56124	11	2.542634	0.0179
GI → Export	0.218453**	0.459028	15	0.239262**	0.824406	11	0.783749	0.4409
GI → EG	0.582340***	0.585394	15	0.362948**	0.503329	11	1.066443	0.2968
DS → EG	0.327802***	1.10635	15	0.535692	1.61039	11	2.065576	0.0498
FDI → EG	0.094416	0.08617	15	0.879443	0.17754	11	0.485176	0.6320
Export → EG	0.770672**	1.11265	15	0.710855**	1.11140	11	-0.068455	0.9460
R-squared	0.704123			0.707192				
Adj. R-squared	0.519200			0.341183				
F-statistic	3.807651			1.932170				

Note:

*** indicates that the effect indicated by the t-statistic value has a significant level at 1%.

** indicates that the effect indicated by the t-statistic value has a significant level at 5%.

* indicates that the effect indicated by the t-statistic value has a significant level at 10%

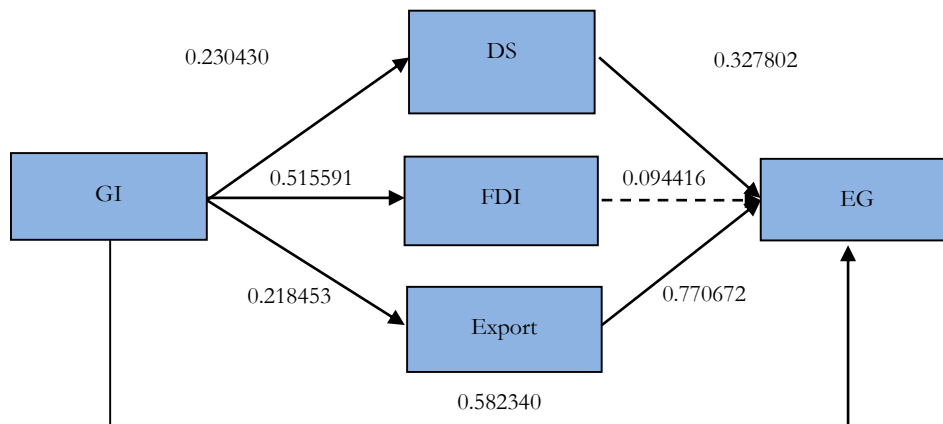


Figure 3: Before war

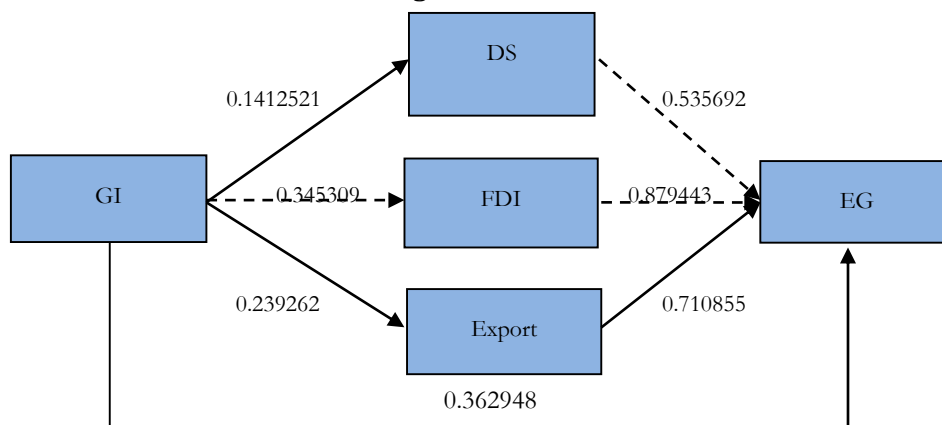


Figure 4: During war

Note:

→ indicates that is significant

- - - indicates that not significant

Before the war, the coefficient of 0.230430 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.230430 unit increase in domestic saving. The t-statistic of 2.44522 indicates that this relationship is statistically significant at the 5% level, meaning Governance quality can affect domestic saving before the war. During the war, the coefficient of 0.1412521 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.1412521 unit increase in domestic saving. The t-statistic of 2.25867 indicates that this relationship is statistically significant at the 5% level, meaning Governance quality can affect domestic saving during the war. There is a decrease in the coefficient value during the war, indicating a weaker relationship between Governance Index and Domestic Saving compared to before the war. This consistency implies that the factors influencing Governance quality and domestic saving were not significantly altered by the war. The stability of this relationship before and during the war underscores the enduring influence of Governance quality on domestic saving. This contributed to high exports before the war, and high international price of oil during the war, and moreover, a small population, and not more of government spending in private sector which made GI could increase domestic saving by increasing exports.

Before the war, the coefficient of 0.515591 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.515591 unit increase in FDI. The t-statistic of 2.62863 indicates that this relationship is statistically significant at the 1% level, meaning Governance quality can affect FDI before the war, this attributed to the removal of international economic sanctions, Libya applied several reforms to integrate its economy with the global economy, so these reforms contributed to increase FDI before the war. During the war, the coefficient of 0.345309 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.345309 unit increase in increase in FDI. The t-statistic of 0.09696 indicates that this relationship is not statistically significant, meaning Governance quality can not affect FDI during the war. The strength of the relationship between Governance Index and Foreign Direct Investment weakens during the war, and becomes insignificant. The difference in the results before and during the war, reflect the impact of the war and ongoing security concerns, including the risk of political instability and lack of unified government. So, these factors collectively contributed to less attractive investment for investors.

Before the war, the coefficient of 0.218453 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.218453 unit increase in export. The t-statistic of 2.46151 indicates that this relationship is statistically significant at the 5% level, meaning Governance quality can affect Export before the war. During the war, the coefficient of 0.239262 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.239262 unit increase export. The t-statistic of 1.90322 indicates that this relationship is statistically significant at the 5% level, meaning Governance quality can affect Export during the war. There is an increase in the coefficient value during the war, suggesting a slightly stronger relationship between Governance Index and Export compared to before the war. The same results before and during the war may not reflect the impact of the war on the economy, trade policies, and institutional quality. Governance index has control on export before the war, this attributed to the political stability after lifting the sanctions, so, Libya announced many reforms with international community which made attentions for foreign international investors to invest in Libya especially in oil field, which contributed to increase the value of its oil exports. However, even during the war still governance index has control on exports, this is not necessary to indicate to the quality of the government during the war, But in reality, what was achieved through the existence of a relationship between governance index and export was not according to a plan or program to develop the Libyan economy, but rather because of external interference in state affairs after the overthrow of Gaddafi regime, and their threat to armed groups not to approach the oil ports, due to the fighting was surround the oil fields between the armed groups which damaged and suspension oil production, this is what contributed to continue this relationship during the war. Because without external interference, none of the successive governments can control the export of oil.

Before the war, the coefficient of 0.582340 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.582340 unit increase in Economic Growth. The t-statistic of 2.61030 indicates that this relationship is statistically significant at the 1% level, meaning Governance quality can affect Economic Growth before the war. During the war, the coefficient of 0.362948 suggests that, on average, a one-unit increase in Governance quality is associated with a 0.362948 unit increase in Economic Growth. The t-statistic of 1.91506 indicates that this relationship is statistically significant at the 5% level, meaning Governance quality can affect Economic Growth during the war. There is a decrease in the coefficient value during the war, indicating a weaker relationship between Governance Index and Economic Growth compared to before the war. The result is same because governments may adapt their policies and strategies in response to the challenges posed by

war. The observed change in the coefficient could reflect a shift in how governance quality influences economic growth in the during war period.

Before the war, the coefficient of 0.327802 suggests that, on average, a one-unit increase in domestic saving is associated with a 0.327802 unit increase in Economic Growth. The t-statistic of 2.62017 indicates that this relationship is statistically significant, meaning Domestic saving can affect Economic Growth before the war, this suggests that after lifting the sanctions, the authorities adopted several reforms such as increasing the wage for government sector employees and increase the value of investment spending these helped to increase the rate of economy. During the war, the coefficient of 0.535692 suggests that, on average, a one-unit increase in Domestic saving is associated with a 0.535692 unit increase in Economic Growth. The t-statistic of 0.59361 indicates that this relationship is not statistically significant, meaning Domestic saving can not affect Economic Growth during the war. The strength of the relationship between Domestic saving and Economic Growth weakens during the war and becomes insignificant. The level of domestic saving may not be sufficient to have a significant impact on economic growth. The amount of capital needed for a noticeable effect on growth depends on various factors, including the initial level of capital stock, technology, and the efficiency of capital use, this is due to the low of levels of production and productivity, in addition to the suspension of many industrial and agriculture projects due to the change in surplus saving to the deficit during the war as well as the dominance of the government sector over all revenue and the absence of the private sector, and the government focuses to reduce investment spending during the war which changed the effect of domestic saving on economic growth during the war.

Before the war, the coefficient of 0.094416 suggests that, on average, a one-unit increase in FDI is associated with a 0.094416 unit increase in Economic Growth. The t-statistic of 0.90546 indicates that this relationship is not statistically significant, meaning FDI can not affect Economic Growth before the war. During the war, the coefficient of 0.879443 suggests that, on average, a one-unit increase in Economic Openness (FDI) is associated with a 0.879443 unit increase in Economic Growth. The t-statistic of 0.16986 indicates that this relationship is not statistically significant, meaning FDI cannot affect Economic Growth during the war. The strength of the relationship between Economic Growth and FDI become stronger during the war, compared before the war and still insignificant. FDI is a way for developing nations to lose wealth, and it may introduce technology that is out of step with the needs of these nations, where unemployment is a major issue. This kind of technology, which depends heavily on capital expenditure, makes unemployment a worse issue (Hamoudi & Aimer, 2017). Basically, Libya before the war was subjected to international sanctions due to the actions of Gaddafi's regime in 1990s, which prevented it to attract international investors, but even after lifting the sanctions, Libyan government focused only on attracting FDI in oil sectors, and neglected to promote FDI in non oil industries, this is the main reason of the lack of influence FDI on economic growth. During the war FDI and economic growth are not statistically significant because of ongoing security concerns, including the risk of political instability and lack of a unified government, in which the Libyan government and state institutions were divided since 2014, create an uncertain business environment in Libya, so these factors collectively contributed to less attractive investment for investors during the war.

Before the war, the coefficient of 0.770672 suggests that, on average, a one-unit increase in Export is associated with a 0.770672 unit increase in Economic Growth. The t-statistic of 2.59139 indicates that this relationship is statistically significant at the 5% level, meaning Export can affect Economic Growth before the war. During the war, the coefficient of 0.710855 suggests that, on average, a one-unit increase in Export is associated with a 0.710855 unit increase in Economic Growth. The t-statistic of 2.43915 indicates that this relationship is statistically significant at the 5% level, meaning Export can affect Economic Growth during the war. The strength of the relationship between Economic Growth and Export become stronger during the war, compared before the war. So, during and before the war export still has impact on economic growth, because oil sector is the major sector contributing the Libyan economy by 96% of the total revenue, the relationship between export and Economic Growth would persist, as long as there is control of government on exports with external intervention during the war, so the economic growth will be increasing as result of increasing oil production, so this means improving export led to increase economic growth.

The findings of the t-test analysis conducted both before and during the conflict provide light on the importance of different economic linkages at both times. T-statistics of $-0.703382 < 2$ and p-value $0.4886 > 0.05$, showed that the relationship between Governance Index (GI) and domestic savings (DS) was not statistically different before or during the war. Similarly, there was no discernible change situation between Governance Index and

export before and during the war, with t-statistics of $0.783749 < 2$ and p value $0.4409 > 0.05$, respectively. It can be say that there was no statistically different before or during the war.

The study also found that there was a substantial rise in the relationship between Governance Index and foreign direct investment (FDI) during the war when compared to before war, as indicated by a t-statistic of $2.542634 > 2$ and p-value of $0.0179 < 0.05$. So it can be concluded that there was statistically different before or during the war.

However, there was no discernible change in the link between Governance Index and economic growth (EG) before and during the war, with t-statistics of $1.066443 < 2$ and p value $0.2968 > 0.05$, so it can be concluded that there was no statistically different before or during the war.

A value t-statistic of $2.065576 < 2$ and p-value of $0.0498 < 0.05$ showed that the relationship between domestic savings and economic growth improved dramatically throughout the war, demonstrating a stronger correlation between these variables than there was before to the conflict. So it can be concluded that there is statistically different before or during the war.

However, with a t-statistic of $-0.068455 < 2$ and p-value of $0.9460 > 0.05$, so it can be say that the relationship between exports and economic growth was not statistically different before or during the war.

The relationship between economic growth and foreign direct investment, on the other hand, did not significantly alter during the war, as indicated by the t-statistic of $0.485176 < 2$ and the p-value of $0.6320 > 0.05$, indicating that there was not statistically different before or during the war.

Generally, a higher coefficient indicates a stronger relationship. Therefore, based on these results, it might conclude that the relationship between Governance quality and Economic Growth was stronger before the war. During the war, the relationship between Governance quality and Domestic saving appears weaker.

While the coefficient suggests a stronger relationship before the war, the loss of statistical significance raises some uncertainty. During the war, the relationship between Governance quality and Economic Openness (FDI) is substantially weaker.

There is statistically significant relationship between Domestic saving and Economic Growth in period before war, but not statistically significant in period during war.

Both before and during the war, the relationship between Export and Economic Growth is significant, with a slightly stronger association before the war. There is no statistically significant relationship between FDI and Economic Growth in both periods.

Table 18: VAR analysis result domestic saving, economic growth, fdi, export with governance index before war and during war

DS		
	Coefficient before war	Coefficient during war
CONTROLOFCORRUPTION	-0.000784	-0.000166
GOVERNMENTEFFECTIVENESS	-0.003780	-0.003081
POLITICALSTABILITY	0.010062**	0.008025**
REGULATORYQUALITY	0.006768*	-0.004387*
RULEOFLAW	-0.001656	0.002975**
VOICEANDACCOUNTABILITY	0.002256*	-0.000529
FDI		
	Coefficient before war	Coefficient during war
CONTROLOFCORRUPTION	-3.669128	0.004577
GOVERNMENTEFFECTIVENESS	1.358016**	-0.193795**
POLITICALSTABILITY	4.908148*	-0.449430**
REGULATORYQUALITY	1.054571*	-0.229499
RULEOFLAW	-8.055290	-0.199765**
VOICEANDACCOUNTABILITY	-1.435406	-0.042015
Export		

	Coefficient before war	Coefficient during war
CONTROL OF CORRUPTION	5.684881*	-0.000641
GOVERNMENT EFFECTIVENESS	4.261913	0.005788**
POLITICAL STABILITY	4.976088**	0.010201*
REGULATORY QUALITY	-1.316938	-0.005609
RULE OF LAW	1.117311**	0.004296**
VOICE AND ACCOUNTABILITY	-2.210439	0.002824
EG		
	Coefficient before war	Coefficient during war
CONTROL OF CORRUPTION	-0.000197	0.000258*
GOVERNMENT EFFECTIVENESS	-0.001781	-0.000214
POLITICAL STABILITY	0.002976**	-0.001406
REGULATORY QUALITY	0.001234*	-0.000576
RULE OF LAW	-0.000517	0.000741**
VOICE AND ACCOUNTABILITY	0.000954*	0.001290**

Before the war, the table presents the results of a VAR analysis for the relationship between Domestic saving, Economic Growth, FDI (Foreign Direct Investment), Export, and various governance indicators before the occurrence of a war. The coefficients, standard errors, and t-statistics for lagged variables are provided. The critical t-value at a 95% confidence level is 2.131.

For Domestic saving, the analysis shows that Governance Index variables significantly impact this economic indicator. Political Stability and Regulatory Quality have positive coefficients (0.010062 and 0.006768, respectively), indicating a positive relationship with Domestic saving. Voice and Accountability also show a positive impact (0.002256), though with a smaller coefficient. Government Effectiveness, on the other hand, exhibits a negative relationship (-0.003780), suggesting that higher Government Effectiveness is associated with lower Domestic saving. The t-statistic values confirm the significance of these relationships, with Political Stability and Regulatory Quality being statistically significant at the 5% level, and Voice and Accountability at the 10% level. Control of corruption, on the other hand, exhibits that there is no significant relationship (-0.25317) with Domestic saving.

In terms of Economic Growth, Political Stability and Regulatory Quality again exhibit positive coefficients (0.002976 and 0.001234, respectively), indicating a positive relationship. Voice and Accountability also show a positive impact (0.000954), though with a smaller coefficient. Government Effectiveness, however, has a negative relationship (-0.001781), suggesting that higher Government Effectiveness is associated with lower Economic Growth. The t-statistic values indicate that Political Stability and Regulatory Quality are statistically significant at the 5% level, while Voice and Accountability is significant at the 10% level. Control of corruption, on the other hand, exhibits that there is no significant relationship (-0.17337) with Economic Growth.

For the Export variable, the analysis reveals interesting patterns. Control of Corruption and Political Stability show positive coefficients (5.684881 and 4.976088, respectively), indicating a positive impact on exports. Rule of Law also has a positive impact (1.117311). However, the t-statistic values reveal that only Political Stability and Rule of Law are statistically significant at the 5% level, suggesting that these two factors play a more crucial role in influencing exports.

In terms of Foreign Direct Investment (FDI), Governance Index variables again exhibit significant effects. Government Effectiveness, Political Stability, and Regulatory Quality all have positive coefficients (1.358016, 4.908148, and 1.054571, respectively), indicating positive relationships with FDI. Rule of Law, however, has a negative coefficient (-8.055290), suggesting an adverse impact on FDI. The t-statistic values confirm the significance of Political Stability and Regulatory Quality at the 5% level, and Government Effectiveness at the 10% level.

These results suggest that specific dimensions of Governance Index, such as Political Stability, Regulatory Quality, and Government Effectiveness, play a significant role in shaping economic variables like Domestic saving, Economic Growth, Export, and FDI before the war.

During the war, the table provides the results of a VAR analysis, focusing on the relationship between Domestic saving, Economic Growth, FDI (Foreign Direct Investment), Export, and various governance indicators after a war. The coefficients, standard errors, and t-statistics for lagged variables are reported, with the critical t-value at a 95% confidence level being 2.201.

The analysis for Domestic saving during the war reveals interesting dynamics. Political Stability and Rule of Law exhibit significant coefficients (0.008025 and 0.002975, respectively), suggesting a substantial negative impact Rule of Law exhibit on Domestic saving and positive impact Political Stability exhibit on Domestic saving. These effects are statistically significant at the 5% level. On the other hand, Regulatory Quality shows a negative but less pronounced impact (-0.004387), statistically significant at the 10% level. Other governance variables, including Control of Corruption and Government Effectiveness, do not show statistically significant effects.

For Economic Growth during the war, Rule of Law and Voice and Accountability emerge as influential factors. Rule of Law has a positive and significant coefficient (0.000741), indicating a positive impact on Economic Growth and is statistically significant at the 5% level. Voice and Accountability also exhibit a positive impact (0.001290) and are statistically significant at the 5% level. Control of Corruption shows a positive impact, but the statistical significance is marginal (1.92440, significant at the 10% level). Other governance variables do not exhibit statistically significant effects on Economic Growth.

The analysis for Export after the war highlights the role of Governance Index variables. Government Effectiveness, Political Stability, and Rule of Law all show significant coefficients (0.005788, 0.010201, and 0.004296, respectively), indicating positive impacts on exports. Political Stability is statistically significant at the 10% level, while Government Effectiveness and Rule of Law are significant at the 5% level.

In terms of Foreign Direct Investment (FDI) during the war, the results suggest that Government Effectiveness, Political Stability, and Rule of Law are crucial factors. Government Effectiveness has a negative impact (-0.193795) on FDI, and both Political Stability and Rule of Law have negative and significant coefficients (-0.449430 and -0.199765, respectively) at the 5% level. These findings imply that a higher level of government effectiveness is associated with lower FDI, while Political Stability and Rule of Law have adverse impacts on FDI. Ineffective government institutions may contribute to bureaucratic hurdles and red tape, making it difficult for foreign companies to navigate and comply with regulations. This can increase the cost of doing business and decrease the attractiveness of a country for FDI.

Overall, the post-war scenario shows varied impacts of Governance Index variables on economic indicators, with some variables exhibiting significant effects on certain economic parameters, while others do not. The results provide valuable insights into the nuanced relationship between governance and economic outcomes in the aftermath of conflict.

Based on the results obtained, it can be seen that before the war it was still better than during the war. The impact of governance quality on economic activities in Libya before and after the war has been significant. Before the war, Libya faced challenges related to state weakness, but witnessed political stability after 2003, while after 2011 Libya witnessed war economy dependent on violence and political divisions. Generally, a higher coefficient indicates a stronger relationship. After the war, the relationship between Governance quality and Domestic saving appears stronger. While the coefficient suggests a stronger relationship after the war, the loss of statistical significance raises some uncertainty. After the war, the relationship between Governance quality and Economic

Openness (FDI) is substantially stronger. Both before and after the war, the relationship between Economic Openness (Export) and Economic Growth is significant, with a slightly stronger association after the war.

The war economy, facilitated by the fragmentation and dysfunction of state institutions, had a disastrous impact on Libya's formal economy, undermining its institutions and hindering the prospects for the restoration of functioning central governance. Additionally, Libya scored poorly in all measures of governance in 2014, however, the lack of political and economic reforms due to the ambitions of foreign interventions and personal ambitions between the two governments caused the collapse of the quality of governance and its impact on economic activities.

DISCUSSION

1. Governance quality on domestic saving.

Before the war, Governance quality plays a pivotal role in influencing domestic saving in Libya. Domestic saving refers to the process of increasing a country's stock of physical and human capital, which is essential for long-term economic development. A number of government initiatives throughout the early 1990s contributed to a rise in investment spending, which had a favorable effect on growth rates. In most years, there was a significant savings surplus in addition to that high investment spending (Tawiri, 2013). Moreover, according to Abdullah stated that national saving in an economy like Libya is strongly linked to foreign demand for oil and petroleum products.

The stability of this relationship before and during the war underscores the enduring influence of Governance quality on Domestic saving. The capital saving in Libya is just relies on the revenue of the oil, Capital savings in Libya relied solely on oil revenues, and were higher before the war than during the war due to high oil prices and reduced government spending during the war. Libya is a prosperous, but unstable, country that depends largely on the production of gas and oil. Libya boasts one of the highest real GDP per capita rates in Africa because of its enormous deposits of gas and oil. Roughly 95% of government revenue and exports are derived from hydrocarbons (International Monetary Fund. Middle East and Central Asia Dept, 2023).

The findings of Iheonu (2019) further show that all governance factors have a favorable and substantial impact on domestic investment. The effect of government effectiveness on domestic saving is particularly important when considering Libya, a country that has recently undergone political upheaval. Libya's domestic saving is substantially impacted by the quality of the government. An environment that promotes domestic savings, investment, and the expansion of physical and human capital may be produced by a government that places a high priority on political stability, the rule of law, effective public services, human capital development, and investment-friendly laws. These elements are crucial for Libya's long-term economic growth and prosperity. A crucial first step in encouraging domestic saving in the nation is to improve the quality of the government (Barro et al., 2013).

This research also support Véganzonès-Varoudakis et al. (2011) research that stated improvement in government stability and ethnic tension appears to have a slight contribution to domestic saving. In developing countries, good governance institutions are an assurance to guarantee property rights and minimize transaction costs, thus creating an environment conducive to investment and growth (Véganzonès-Varoudakis et al., 2011).

2. Governance quality on FDI

Before war, Governance quality have positive effect on economic openness (FDI). That means the hypothesis 3 in this study is accepted. So, there is positive impact between Governance quality and

economic openness in Libya. During war, Governance quality have no effect on economic openness (FDI). That means the hypothesis 3 in this study is rejected.

Before the war, Libya was attempting to escape its political and economic isolation by making the transition from decades of socialist policies to an open-market economy. Rising oil prices and the removal of US and UN sanctions after Libya's 1988 Pan 103 bombing, together with the country's abandonment of its WMD efforts, have contributed to Libya's economic boom. The Gross Domestic Product grew by 9% in 2003 and a strong 4.5% in 2004. Based on UN estimates, Libya received around \$4 billion in foreign direct investment (FDI) in 2004, more than any other country in Africa (Wahby, 2008).

Libya declared the start of reforms to integrate its economy with the global economy in 2003, after the removal of the international economic sanctions, these reforms were mainly focused on opening the country to FDI in the oil and non-oil sections through issuing economic policies in FDI law and regulations. So, these factors contributed to increase the FDI level before the war. The oil industry in Libya has been growing unbalancedly, at the detriment of other industries (Abushhewa, 2014). Over the medium term, Libya's financial status and economic development are anticipated to improve due to increased oil income predictions, infrastructure upgrades, and sustained interest from international investors. By 2014, oil output is expected to reach about 2.5 million barrels per day due to significant investments and the use of cutting-edge technology by international partners (International Monetary Fund, 2010) this confirmed that The results of the VAR showed that in increasing GI by one unit, an increase of FDI by 0.2310 will be observed. Similarly, if GI increases by one unit, the FDI will increase by 0.2310 million US dollar. Statistics from the United Nations Conference on Trade and Development (UNCTAD) (UNCTADstat 2010) indicate that. Libya, one of the most popular destinations for foreign direct investment (FDI), has seen a notable increase in inward FDI, especially since the sanctions were lifted in 2003 and 2004 (Abushhewa, 2014). Eventually, according to (Barltrop, 2019) two of the largest indicators of relative stability in the industry during the 2000s were increases in investment, exploration, and production by foreign companies, and a moderate increase in Libya's overall output of oil and gas. These increases were made possible in large part by the lifting of UN, and then US and European, sanctions.

Dunning (1988) stated that foreign investor's decision to invest in a host nation is influenced by its management and administrative systems, the cost of labor and transportation, governmental policies, as well as its institutions and political stability. this is what reflect this relationship between the governance index and FDI in Libya, because Libya had adopted several reforms such as the provision of financial and fiscal incentives, such as direct government subsidies and tax benefits for capital goods imported free of customs taxes. This research also support Beschel et al. (2023) that concluded most of the governance indicators are also closely and positively linked with FDI inflow.

During the war, the nation has substantial challenges as a result of the protracted civil war, the work force's low skill level, the amount of bureaucracy, and the lack of economic diversification. Libya's 2020 foreign direct investment (FDI) stock was valued at USD 18.4 billion by UNCTAD's 2022 World Investment Survey, however, the report lacked reliable data about FDI inflows. The main target of foreign investment, which is prone to market swings, is the oil industry. Even while central Tripoli is more vulnerable to damage, other parts of the country appear to be attracting investment (Lloyds Bank, 2023). However, the conflict has impeded the Libyan government's capacity to perform its functions, perhaps leading to a decline in the quality of governance. This decline could have negatively impacted exports. The nation's financial stability was hampered by foreign military intervention and the freeze of foreign assets. Economic instability: As a result of the conflict, which may have deterred foreign investment and reduced exports, Libya's economy is currently unstable.

This instability results from the lack of a cohesive government that can effectively manage the economy and promote investment (Hamoudi & Aimer, 2017). So, civil war can drive away foreign direct investment as it shown in the results of VAR analysis results.

According to (Mateev, 2009), risk, labor costs, and corruption rank as the three most significant FDI factors in transition countries. FDI flows to host nations may rise or fall as a result of these variables. As a result, 90% of Libya's exports were oil, and FDI is impacted by governmental actions. A consistent and open investment legislation serves to draw in investment, which is one of the main reasons that FDI operations are governed by a legal and regulatory framework.

The presence of sufficient protections that shield foreign investors from potential hazards in their host nations, such nationalization and other issues, is a crucial aspect that significantly impacts the investor's choice. The foreign investor's decision is influenced by a number of elements, including an independent legal system that can execute laws and contracts and resolve conflicts between foreign investors and host nations with great efficiency and impartiality. Foreign direct investment can be attracted through the provision of financial and fiscal incentives, such as direct government subsidies and tax benefits for capital goods imported free of customs taxes (Hamoudi & Aimer, 2017).

This study confirms the findings of Mgadmi & Moussa (2018), who claimed that MENA countries are also affected by the attractiveness of foreign direct investment (FDI) due to the quality of governance. The importance of enhancing governance quality is demonstrated by the positive and large influence of government effectiveness on foreign direct investment. The quality of government, which includes political stability, rule of law, voice and accountability, and corruption control, is a major factor in luring foreign direct investment (FDI). The research concluded that transparency, accountability, and the rule of law are examples of good governance measures that can increase FDI inflows (Mgadmi & Moussa, 2018).

3. Governance quality on export

Before war, Governance quality have positive effect on economic openness (Export). That means the hypothesis 2 in this study is accepted. During war, Governance quality have positive effect on economic openness (Export). That means the hypothesis 2 in this study is accepted. This means that improvements in Governance quality may lead to a significant increase in exports in Libya before the war and during the war. Even if there are good governance policies in place, their effective implementation is crucial. While the coefficient suggests a stronger relationship during the war, the loss of statistical significance raises some uncertainty.

Higher Governance quality implies a more stable and predictable policy environment. Before the war, if the government demonstrated effective governance, transparent policies, and a commitment to economic openness, it could instill confidence in exporters. Predictable policies create a favorable climate for businesses engaging in international trade. Meanwhile the period during the war in Libya may bring about substantial challenges, including the need for reconstruction, political instability, and a disrupted economic landscape. Governments in post-war situations often face difficulties in immediately restoring the same level of governance and policy stability that existed before the conflict.

The Libyan government extensively pursued foreign direct investment (FDI) to strengthen its economy before the war. The government has had a role in increasing export, which in turn drives economic growth, by enacting rules that facilitate foreign corporations' investment in the nation.

Before the war, Libya has one of Africa's highest real GDPs per capita due to its vast supplies of gas

and oil. Hydrocarbons provide for around 95% of exports and government revenue (International Monetary Fund. Middle East and Central Asia Dept., 2023). Hydrocarbons have accounted for more than 70% of GDP, over 95% of exports, and over 90% of government income in Libya over a lengthy period of time. Following the 2003 lifting of earlier prohibitions by the United Nations (UN), there was a steady increase in economic activity over the next seven years. Libya's exports are among the least diverse in the world, and the administrative shortcomings and widespread control of the state impede the growth of its meager private sector (International Monetary Fund, 2012).

This leads one to the conclusion that Libya's economic development has been directly correlated with its enormous hydrocarbon reserves, as the country's main sources of export income, government coffers, and GDP are derived mostly from oil and gas. After the UN sanctions were lifted in 2003, the economy grew steadily, but the country's reliance on hydrocarbons persisted, which hampered diversification and presented difficulties for the private sector. The country experienced institutional shortcomings and governance problems that impeded wider economic progress, even if there were modest advances in political stability throughout the Gaddafi era (International Monetary Fund, 2012).

However, the conflict has impeded the Libyan government's capacity to perform its functions, perhaps leading to a decline in the quality of governance. This decline could have negatively impacted exports. The nation's financial stability was hampered by foreign military intervention and the freeze of foreign assets. Although violence caused the first decline in crude oil output, it recovered in the later half of 2011. Economic instability, as a result of the conflict, which may have deterred foreign investment and reduced exports, Libya's economy is currently unstable. This instability results from the lack of a cohesive government that can effectively manage the economy and promote investment (Hamoudi & Aimer, 2017).

This finding corroborates research by Matallah (2022) which found that the average governance index of Canada, Norway, and Malaysia, when substituted for the governance index of MENA oil exporters, improved diversification at a rate of 4.5% in oil-rich Middle East and North African countries as well as three prosperous diversifiers: Canada, Norway, and Malaysia. The study finds that export was impacted by the quality of governance.

The government must work to establish institutions or sound government governance in order to be a "player" in a nation's economy. The execution of policies for economic growth, development, and market expansion are examples of government management concepts that may be used to evaluate government governance (Mira & Hammadache, 2017). If the government is able to exercise its powers and fulfill its obligations effectively and efficiently, governance is considered to be excellent. This is done to enhance community welfare, economic development, and growth, among other things (Demarani, 2018).

This study confirms the findings of Beschel et al. (2023), who found a strong and positive correlation between export diversification and the majority of governance variables. The Middle East and North Africa (MENA) has seen violent civil wars, waves of popular protest, and revolutions. Autocrats have resurfaced after a brief retreat while political changes have stagnated or gone backward. Throughout it all, the rate of GDP growth per person has fluctuated, mostly due to cyclical changes in the world energy markets rather than systemic advancements in export diversification.

4. Governance quality on economic growth

Before war, hypothesis 4 in this study is accepted. So, there is positive impact between Governance quality and economic growth in Libya. During war, hypothesis 4 in this study is accepted. So, there is

impact between Governance quality and economic growth in Libya. Before the war, the relationship between Governance quality and Economic Growth appears stronger. The results show that the effect of governance quality on economic growth before the war is stronger than during the war.

Before the war, following the United Nations Security Council's 1990s-era blockade, which was lifted in 2003 to allow Libya's reintegration and reintroduction into the global system, the country saw both local and global transformations. Libya adopted several reform programs at the level of public administration and governance during this time, which helped it accelerate its rate of economic growth. Openness and international interest in Libya during this time were demonstrated by support from certain nations and international governmental and non-governmental organizations. Statistics from the United Nations Conference on Trade and Development (UNCTAD) (UNCTADstat 2010) indicate that Libya, one of the most popular destinations for foreign direct investment (FDI), has seen a notable increase in inward FDI, especially since the sanctions were lifted in 2003 and 2004 (Abushhewa, 2014). The Libyan economy is heavily dependent on the oil sector, has the second largest proven oil reserves in the world, and is the leading oil producing country in Africa. The oil sector is the main source of income for all sectors of the Libyan economy. However, based on the result of VAR an improvement in government quality may lead to increase the economic growth.

However during the war, The Libyan economy, which has been in recession since 2021, has suffered greatly as a result of the political unrest. Blockaded oil facilities, inadequate security circumstances, and political unrest all continue to limit the economy's supply side. and moreover, given the political divide, the government's incapacity to control the situation (The World Bank in Libya, 2016). The claim made by Khan and Mezran (2013) that the civil conflict caused a significant reduction in oil production the nation's primary export and source of income led to a collapse in the GDP in 2011 and the economy as a whole. The influence of good governance on economic growth is frequently greater before a conflict breaks out than during one, as Libya went through a period of openness and international attention before to the war, which prompted the implementation of reform initiatives in public administration and governance.

When properly carried out, these reforms foster an atmosphere that is favorable to economic expansion. Implementing long-term development plans becomes less important during times of conflict and more focused on managing urgent security and survival issues. The only time the oil industry has an impact on the whole economy is when the government uses the money it receives from the sale of oil. The government can affect almost every aspect of the nation's economy thanks to its dominance over the oil industry. This economic control was used by the Qaddafi government to impede the growth of the private sector. Libya was thus less market-oriented than its neighbors and notably less so than its fellow Gulf Cooperation Council (GCC) oil producers. This is supported by a 2010 Business Monitor International (BMI) evaluation on Libya's and other pertinent nations' market orientation (Khan & Mezran, 2013).

Technological development is considered to be endogenous, and economic growth is determined by the decisions made by economic players to invest in research. Furthermore, because this theory takes into account both human and physical capital, its definition of capital is broader (Wibowo, 2013). Since Libya has experienced significant political upheaval, the impact of government effectiveness on economic growth is especially evident there. However, the impact of war has not been as great because the country's economic recovery has not yet been fully supported by the implementation of optimal governance quality. Libya's economic growth is heavily dependent on how well the government runs the country. A government that prioritizes political stability, the rule of law, efficient public services, infrastructure development, and sound economic policies may foster an atmosphere that is conducive to economic success. These factors are interrelated and can work

together to attract investments, support entrepreneurship, and take other steps to improve Libya's overall economic performance. Enhancing the caliber of the administration is an essential first step toward achieving sustainable economic growth in the country (Rodrik et al., 2004).

The country's political stability and economic progress be compromised by this internal conflict. Libya provide as prime instances of how crucial political stability is to a nation's capacity to prosper economically. The political instability that follows hinder a nation's and the region's overall economic growth. Thus, in order to achieve long-term and sustainable economic growth, it is imperative to maintain a balance between political stability and the management of corruption indicators (Samarasinghe, 2018).

This finding support Absadykov, A. (2020) findings that indicate there is a significant positive relationship between good governance and economic performance of Kazakhstan. Specifically, results show that the Control of Corruption has the strongest impact on GDP per capita.

5. Domestic saving on economic growth

Before war, hypothesis 5 in this study is accepted. So, there is positive impact between Domestic saving and economic growth in Libya. During war, the hypothesis 5 in this study is rejected. So, there is no positive impact between domestic saving and economic growth in Libya.

Before the war, the openness that Libya demonstrated was centered on promoting foreign direct investment while decreasing local investment, potentially ignoring a crucial development component that may be used to boost and sustain economic progress. In his research, Esaudi et al. (2022) discovered that there is a low effectiveness of domestic investment in promoting economic growth in Libya and a favorable correlation between investment and economic growth in the country. This is because to the low levels of productivity and output, as well as the suspension of several public services, industrial, and agricultural initiatives, which has resulted in resource waste. Furthermore, in Libya, like many North African countries there is no Entrepreneurship and SME activity that could be influence the economic growth, have been restricted by the role of large state-owned enterprises. (Esaudi et al., 2022).

However during the war, Libya is remains firmly entrenched in a conflict zone due to the country's ongoing internal civil war. This is supported by the absence of a strong corporate culture brought on by several contextual barriers and difficulties that need to be solved in order to fully realize the potential of entrepreneurship. The study's findings indicate that, in order to chronicle modern entrepreneurial activity, it is critical to comprehend how such volatility might sabotage chances for Libyan SMEs and entrepreneurs (Esaudi et al., 2022). Systemic issues like as political and social instability, pervasive poverty, economic growth disparity, corruption, bureaucracy, inadequate infrastructure, and a dearth of enterprise support systems have hindered individual entrepreneurial endeavors (Esaudi et al., 2022).

Because Libya intends to privatize 360 state-owned businesses and firms as part of liberalization to remove around \$5 billion worth of subsidies, domestic saving has little influence on economic development during the war. Owing to the low levels of productivity and output, as well as the suspension of several public services, industrial, and agricultural projects, which resulted in the waste of resources (Tawiri, 2023). The result support Tawiri (2023) study that relied on a descriptive analytical approach to analyze and describe some important determinants of growth in the Libyan economy, and to analyze the important aspects related to economic growth and the factors affecting these variables. In addition, the study adopted the applied traditional methodology in econometrics for the purpose of testing the extent of significant determinants of growth and its impact. Tawiri

(2023) stated that the domestic saving have no effect in Libya before and during the war. Every facet of the nation's economic life has been impacted by the conflict. It has had a detrimental impact on the macroeconomic components of the economy, causing growth to significantly slow down and increasing volatility. Furthermore, government income, spending, and investment have all dropped precipitously (Reliefweb, 2021).

According to the African Economic Outlook (2012), Libya has traditionally relied on the public sector to create employment, a measure that has proved unsustainable between DC and EG. Furthermore, the country's inefficient private sector has been unable to compensate for the lack of jobs in order to contribute increasing the economic growth, an obstacle that has been aggravated by the economic difficulties created by the civil war. Moreover, resulting there is no statistically significant return on GDP. Henceforth, the economic dynamics of GDP points to the unique economic set up of Libya. Though, income from oil tax is part and portion of GDP, it has no role the domestic saving to play an important role to increase economic growth condition of the country. The case of Libya is different from market oriented economies where private ownership of industries is practiced, thus, the more industries, the more expected people to contribute to economic growth. In Libya, however, the government owns most of the industries, and the big portion of the GDP relies on the export of petroleum products regardless of how many employed and unemployed Libyan nationals. Perhaps, the nature of oil industry of Libya postures with a high dependency with international players.

Moreover, improved infrastructure and technology can lower production costs, while an educated workforce can adapt to new technologies and innovations, making domestic industries more competitive on the international stage. Domestic saving, the process of increasing a nation's stock of human and physical capital, has a highly favourable effect on Libya's economic expansion. Libya, a country bursting with promise in many areas, can use domestic saving as an engine for economic growth. The improvement of roads, ports, energy facilities, and communication networks are just a few of the important infrastructure projects that Libya can invest in thanks to this strategic approach. Such advancements increase economic productivity while also attracting investments from a variety of sources (IMF, 2023).

By fostering a number of important factors, including as infrastructure development, investments in human capital, technological improvement, the promotion of entrepreneurship, and the stimulation of savings and investment, domestic saving plays a crucial role in accelerating economic growth in Libya. The enormous economic potential of Libya highlights the need of smart domestic saving activities. It is essential for Libya to create an environment that fosters domestic saving, supported by wise policies and calculated investments in important sectors, in order to achieve long-term, inclusive economic growth (Hanushek et al., 2008). Domestic saving has a considerable and advantageous impact on the country's economic progress (Mokhtar and Boutahar, 2017).

This result also supported by Omri & Kahouli (2014) research that state the region's overall economic growth and domestic capital have a bidirectional causal relationship. Additionally, they discovered that the MENA region's financial development has an indirect impact on economic growth through its stock of domestic capital; that is, the region's financial development has a major impact on its stock of national capital, which in turn promotes economic growth.

6. FDI on economic growth

Before war, the hypothesis 7 in this study is rejected. So, there is no positive impact between FDI and economic growth in Libya. During war, the hypothesis 7 in this study is rejected. So, there is no positive impact between FDI and economic growth in Libya. There is no statistically significant relationship between FDI and Economic Growth in both periods.

Before war, as a result of the 1990s of Muammar Gaddafi's policies, Libya is facing many international economic sanctions from the US and other Western nations. Even after the sanctions were lifted in 2003, the government continued to prioritize FDI into the oil industry rather than other industries. Oxford (2010) claims that throughout the last few decades, the Libyan government has concentrated only on attracting foreign direct investment (FDI) in the oil sector, neglecting to foster FDI in non-oil industries. For this reason, the oil industry has taken center stage in the Libyan economy. According to a 2009 analysis by the International Monetary Fund (IMF), the government's lax FDI regulations are to blame for Libya's underdeveloped non-oil industries. Due to the restricted amount of foreign investment in the oil industry alone, this is one of the main causes of the lack of influence of foreign investment on economic growth in Libya.

In an effort to overcome the economic challenges facing the Libyan economy such as a lack of technology, rising rates of unemployment and poverty, a deficiency in domestic investment (DI), a commercial downturn, and restricted income the Libyan government has worked to implement economic policies that will increase FDI in non-oil sectors. Libya is still seeing uneven economic progress in terms of diversifying its economy despite these new FDI rules (Shaaeldin & Hammami, 2009).

This result is consistent with the result of the study of Efhialelbum and Flatau (2013) where they observed the impact of FDI on economic growth in Libya. They found out that the impact of FDI on Libyan economy was weak in the transition period 1990-2010. Moreover, the goal of Efhialelbum and Flatau's (2013) study is to look at how foreign direct investment (FDI) affected the Libyan economy throughout the transition from 1990 to 2010. The study also compares Libya's FDI performance to that of other transitional countries. The analysis demonstrated that throughout the transition, FDI had little impact on the Libyan economy. Furthermore, variations in the FDI performance index are evident when contrasting Libya's FDI performance with those of a few other transitional countries. They came to the conclusion that during Libya's transitional phase, FDI had little effect on the country's economy (Efhialelbum & Flatau, 2013).

During the war, the unstable and unfavorable business climate is caused by a lack of openness. The labor market is extremely weak as a result of political unpredictability, state intervention and control, and uncertainty. Despite the nearly zero average tariff rate, political instability, the dominance of state-owned firms, and regulatory interference with trade deter foreign investment (Hamoudi & Aimer, 2017).

This is a result of US sanctions that prevent Libya from exporting goods other than oil, forcing the government to concentrate only on oil exports and disregard other goods that are not in the foreign direct investment (FDI) sector and prevent FDI from having an impact on the national economy (Mityakov et al. 2013). Before basic ecological constraints are reached, income benefits from FDI will not necessarily drive an increase in demand for environmental improvement. When policy decisions on liberalization or investment incentives are made, the amount and distribution of the environmental costs of foreign direct investment are typically not sufficiently taken into consideration. Foreign Direct Investment (FDI) has a lasting impact on Libya's environment and future growth patterns, particularly in resource-dependent industries. FDI in industries that rely on natural resources could not give Libya the anticipated economic gains or move the country toward a balanced industrial economy (Mabey & McNally, 1999).

The lack of a positive relationship between economic openness (FDI) and growth in Libya prior to and following the conflict because the conflict has had a major negative impact on the country's

economy, resulting in low and unstable growth, high unemployment rates, and disruptions in the country's main source of income oil production. Furthermore, the fragility of the nation has had far-reaching effects on the social and economic fronts, with potential income per capita being higher in the absence of conflict. The beneficial effects of foreign direct investment (FDI) on Libya's economic growth have been impeded by these obstacles (The World Bank, 2023).

Developing nations like Libya should rely on their own ability to mobilize national savings in order to supply the funds required for the essential investments. As a result, Libya's economy was subjected to foreign sanctions in the second half of the 1980s, which caused a drop in the country's oil exports. Lower oil income were the consequence of this as well as the low oil prices on international markets. The subsequent sharp decline in the investment rate had a detrimental effect on the growth rates of non-oil production sectors, with negative growth rates seen in 1985 and 1987 (Tawiri, 2013).

An empirical examination of Libya's economic growth showed that the factors influencing total factor productivity (TFP) differ from phase to phase and that open trade and foreign direct investment both contribute to the country's economy's long- and short-term growth. But it's possible that the difficulties and disturbances brought on by the nation's conflict and political unrest masked the effects of these elements (Fargani, 2013).

These findings corroborate with Ebghaei (2023) analyses that examined the impact of foreign direct investment (FDI) on the economic development of a number of Middle Eastern and North African nations, including Egypt, Saudi Arabia, Morocco, Jordan, Tunisia, Iran, Turkey, and Yemen, over the years 1980 to 2020. The findings show that foreign direct investment (FDI) had a favorable and statistically significant effect on economic growth over the research period in Egypt, Saudi Arabia, Morocco, Tunisia, Turkey, and Yemen. FDI was determined to have little effect on economic growth in Iran and Jordan.

This result also supported previous study done by Sethi & Sucharita (2010) that examined the variables FDI, trade openness, economic growth used OLS. The result stated that although FDI is positively correlated with Bangladesh's economic growth, it has not yet been proven to be a significant determinant of economic growth, according to the regression result. They conclude that FDI is negatively correlated with India's economic growth and has not yet been proven to be a significant determinant of economic growth in Bangladesh.

These findings corroborate those of Tawiri (2013), who found that investment and economic growth in Libya were positively correlated but that investment was not very effective in promoting economic growth in Libya. This is because to the low levels of productivity and output, as well as the suspension of several public services, industrial, and agricultural initiatives, which has resulted in resource waste.

Since the Gaddafi administration was overthrown in 2011, Libya has been plagued by ongoing political unrest and violence. An unpredictable and insecure climate has been brought about by ongoing power conflicts, authority disintegration, and civil unrest. Because they are worried about the security and stability of their assets, investors are frequently hesitant to contribute funds in such situations. The environment for business and investment is further complicated by the existence of various authorities and the absence of a single, united government.

7. Export on economic growth

Before war, the hypothesis 6 in this study is accepted. So, there is positive impact between Economic openness (Export) and economic growth in Libya. During war, the hypothesis 6 in this study is accepted. So, there is positive impact between Economic openness (Export) and economic growth in Libya. Both before and during the war, the relationship between export and Economic Growth is

significant, with a slightly stronger association before the war. That because Libya has experienced political instability and conflicts in recent years, leading to uncertainty and disruption in economic activities. These factors can affect export and hinder trade .

Before the war, Libya's economy is traditionally driven on oil. A little over 65% of the nation's GDP, 96% of export earnings, and over 98% of government income come from oil . Because of this heavy reliance, changes in oil prices and output influence the economy. The only time the oil industry has an impact on the whole economy is when the government uses the money it receives from the sale of oil. The government can affect almost every aspect of the nation's economy thanks to its dominance over the oil industry. Libya did better than other MENA oil exporters in terms of inflation, with an average annual inflation rate of about 7%. Libya's export profits more than quadrupled and the government had substantial external current account surpluses from 2000 to 2010 as global oil prices grew slowly over the decade and then sharply in 2007 and the first half of 2008. By the end of 2010, the Central Bank of Libya (CBL) had \$101 billion in foreign reserves, and the government's sovereign wealth fund, the Libyan Investment Authority, had received an extra \$70 billion in foreign assets (Khan & Mezran, 2013).

During the war, Libya had a historic year in 2011. For the first time, the country had the chance to undertake the kinds of social and economic reforms that special interests had previously blocked with the demise of the Gaddafi regime. While there is undoubtedly opportunity in this shift, there are also significant economic ramifications and obstacles stemming from the way the revolution occurred. Most significantly, Libya's primary source of income oil production and export was temporarily suspended, and major challenges were posed by the international community's decision to freeze the nation's assets. This indicates that during a conflict, exports have no bearing on economic development. The fighting essentially shut down the formal sector, which caused the real GDP to fall by 41.8% in 2011. In order to address the previous government's mishandling of the resource and capitalize on the oil industry's capabilities, the interim administration has taken the required steps. In general, the NTC plans to restructure the economy as a component of a holistic strategy for the nation's revival. Subsidies and other wealth transfers are directed toward those who are most impacted by the conflict, placing significant pressure on government spending (africaneconomicoutlook, 2012).

This leads one to the conclusion that prior to the war, the literature on economic development, particularly with regard to oil exporters, recognized the growing significance of institutional economics in the mid-1970s and beyond. It pointed out that economic growth and reform should go beyond focusing solely on privatization and deregulation, which would inevitably result in the creation of institutions as a byproduct of economic growth (AfDB, 2011). Libya is unlikely to achieve the levels of oil output seen over the previous ten years, despite the fact that the swift rebound of oil production and exports played a significant role in the country's economic turnaround in 2012. The reason for this is that Libya's oil resources are getting older, and damage to infrastructure during the nearly total closure in 2011 may prevent production from some wells (africaneconomicoutlook, 2012).

Libya may profit from the skyrocketing global oil prices if it can sustain or increase oil production and exports relative to 2021, or at the very least prevent protracted outages. This would result in robust economic development, increased tax revenues, and an influx of hard money. The trade, current account, and fiscal balances would all benefit from this (The World Bank, 2022). This result support Boutaba and Rajhi (2016) showed that Export has a positive and significant effect on economic growth. Istaiteyeh and Ismail, (2015) also conclude that that exports have a positive and significant impact on economic growth in Jordan on 2003 to 2013.

Libya's GDP performance in the past shows how economic openness, especially through exports, has affected the country's economic growth. Libya's GDP expanded by about 87% during the 2012 oil price spike, indicating a favorable relationship between oil exports and economic expansion. On the other hand, major economic downturns in the years that followed have been caused by armed wars and disruptions in the supply of oil. According to World Bank projections, delays in oil output caused by the conflict would cause Libya's GDP to decline by 1.2% in 2022. This emphasizes how Libya's economy is susceptible to outside shocks and how crucial economic openness and diversification are to reducing such risks (Worldbank, 2023).

Libya's GDP growth in the past, its economy's susceptibility to outside shocks, and its capacity for success in the face of adversity all attest to the benefits of economic openness, especially through exports. Realizing Libya's potential for economic growth requires enhancing economic openness, especially through exports, and establishing stability and security. According to Alhwi et al. (2021), long-run coefficients show that trade openness has a beneficial effect on GDP.

SUMMARY AND CONCLUSION

This study makes two primary contributions. The first contribution is by employing Principal Components Analysis (PCA), this research is able to synthesize the six current governance metrics into a governance index (GI). The outcome showed that Political Stability had the greatest factor value of Government Quality both before and during the conflict.

The second contribution is by researching the factors that can influence governance quality and economic growth. Our results suggest that have shown a positive correlation between governance and domestic saving which includes capital savings extremely high and lower government expenditure during the war, our result shown a positive correlation between governance and domestic saving that have oil profits are Libya's only source of capital savings by an enhancement in element of governance index and in domestic saving before the war.

These results can answer the objective of the study. Forethermore, element of governance index has control on domestic saving in Libya before and during war. This relationship depends on oil revenue, oil prices ,small population, small FDI, and not more government spending in private sector, in the Libya as the source of capital savings can improve by an enhancement in element of governance index. Element of governance index has contribution to FDI in Libya before the war, because after lifting the sanctions, Libyan government announced several reforms contributed to increase the FDI. But during the war, element of governance index has no control to FDI, because of the risk of political instability and lack of unified government contributed to less attractive investment for investors. Moreover, element of governance index has the contribution to export before the war, this returns to political stability with international community wich contributed to increase the export, and during the war, element of governance index has capability to control exoprt, it's not indicated to the quality of the government, it referes to the external intervention during the fithing between the rebels around the oil fields from year to year, which contributed to remain oil to be increased during the war. As well as, our finding suggest that have shown before and during the war, there was a positive impact between element of governance index and economic growth. However, the relationship appeared stronger before the war when Libya undergone significant transformations, adopting reform programs and restoring into the global system compared to during the war when Libya witnessed civil war which affected on economic growth. Moreover, domestic saving influence economic growth in Libya before the war due to some of policies applied by the government and rose of oil prices, following that, the value of investment spending increased. And during the war has no impact due to the change in surplus savings to the deficit, because government sector's dominance over all revenues, and the absence of a private

sector, this made the government focus on reducing investment spending during the war. Our results suggest that have shown a positive correlation between export and economic growth before and during the war, which includes Libya's primary source of income, oil production and exports, the existence of this relationship in both periods indicates the dominance of the oil export sector on economic growth. Moreover, FDI does not have the contribution on economic growth in Libya before and during the war, due to the focus only on attracting FDI in the oil sector and the neglecting to promote FDI in non-oil industries, this is the main reason lack of influence of FDI on economic growth.

Finally, we can conclude that the element of governance index influences economic growth before the war directly, and indirectly by influencing on export and domestic saving to economic growth, while the government quality just influences economic growth directly and indirectly by export during the war which means how export an important factor influencing economic growth. Moreover, we can conclude that export play an important role in influencing economic growth in the two period, even if it is less in coefieciente during the war, this means that any slight improvement in export will increase the economic growth in Libya. While FDI couldn't affect economic growth in both period due to the high dominance of the oil sector.

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