

# From Petty Corruption to Petrodollars: Examining the Middle East's Development Dilemma

Undergraduate Honors Thesis

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*“There is no more dangerous menace to civilization than a government of incompetent, corrupt, or vile men.”*

*-Ludwig Von Mises, Omnipotent Government*

# Table of Contents

<b>Abstract</b> .....	3
<b>Introduction</b> .....	4
<b>Background</b> .....	8
<b>Literature Review</b> .....	11
<b>Methodology</b> .....	20
<b>Introduction to Empirical Chapters</b> .....	25
<b>Chapter 1</b> .....	30
<b>Chapter 2</b> .....	39
<b>Robustness Check</b> .....	55
<b>Conclusion</b> .....	57
<b>Appendix</b> .....	61
<b>Works Cited</b> .....	64

## ***Abstract***

This thesis analyzes the relationship between corruption, oil rents, and Gross Domestic Product (GDP) per capita within the Middle East and North Africa (MENA) region. The study utilizes three simple Ordinary Least Squares (OLS) linear regressions to answer the questions: *Is corruption associated with poor economic performance in the MENA region? Is oil dependency in MENA associated with poor economic performance? And lastly, Is oil dependency associated with higher levels of corruption in the MENA region?* The first regression evaluates the relationship between GDP per capita and corruption, the second regression assesses the relationship between oil rents and GDP per capita, and the third regression assesses the relationship between corruption and oil rents. Additionally, a robustness check using a multiple regression model is conducted allowing for a simultaneous examination of these factors' relationship with GDP per capita. This regression allows us to determine if the results from the simple regressions still apply when using a different model.

This study utilizes GDP per capita data from the World Bank for the year 2021, with the exception of Syria, Yemen, and Kuwait. For these countries, the most recent available data is from 2018, 2020, and 2020 respectively. Corruption data is also from 2021 and is sourced from Transparency International's Corruption Perceptions Index which offers a reliable gauge of corruption levels. World Bank data on oil rents as a percentage of GDP provides insight into one of the region's pivotal revenue sources.

Overall, this study finds a strong positive relationship between GDP per capita and CPI meaning that corruption is associated with poor economic performance in the region. Furthermore, the study finds no statistically significant correlation between either GDP per capita and oil rents or corruption and oil rents. Instead, the study finds that the relationship

between oil rents, GDP per capita, and corruption can be primarily attributed to institutional quality and how oil profits are managed.

## ***Introduction***

Corruption has persisted as a pervasive issue across human history, extending its influence from the dynasties of ancient Egypt to the contemporary global political stage (Biwas and Tortajada 2018). The impetus for this paper stems from recent corruption scandals that have surfaced. These include bribes supporting extensive infrastructure projects in the Odebrecht case and elaborate networks embezzling millions through offshore bank accounts, as exposed in the Panama Papers (Rickett 2021). The significant involvement of Middle Eastern leaders in the Panama Papers scandal (ICIJ 2017) heightened my interest in the potential impact of corruption on the development trajectories of countries within the Middle East and North Africa. Understanding the intricate relationship between corruption and economic development is crucial, as development in this region can have ripple effects on the global geopolitical and economic landscape, influencing energy prices, international trade, and investment opportunities. This inquiry has led to the central questions guiding this study: *Are higher levels of corruption associated with poor economic performance in the Middle East and North Africa? Is oil dependence associated with low economic performance in the Middle East and North Africa? And lastly, Is oil dependence associated with high levels of corruption in the Middle East and North Africa?*

Corruption is broadly defined as the abuse of entrusted power for personal gain (Transparency International n.d.). While the measurement of corruption often proves difficult due to its clandestine nature –Transparency International– a global non-governmental

organization, created the Corruption Perceptions Index (CPI) to rank 180 countries based on their levels of perceived corruption. The Corruption Perceptions Index assigns a CPI value to each country based on its level of perceived corruption. The values range from 0 to 100, with 0 indicating high corruption and 100 indicating no corruption. The CPI is the measurement used in determining the corruption level of a country in my analysis.

Beyond the involvement of several Middle Eastern leaders in corruption scandals, the Middle East and North Africa consistently secures a place among the world's most corrupt regions. Reflecting this trend, the region has an average CPI of 37. This pervasive issue not only raises concerns about regional governance but also highlights the potential ramifications for economic development, regional stability, and global geopolitical dynamics. Understanding corruption within this context becomes imperative for policymakers, businesses, and international stakeholders seeking to navigate and address these challenges in the Middle East and North Africa region.

My measure of economic development is gross domestic product per capita (GDP per capita). GDP per capita is an economic indicator that measures the average output per person in a country. It is found by calculating the total production of a given country and dividing it by that country's population. GDP per capita is the primary dependent variable in my analysis. This thesis utilizes 2021 World Bank data for 21 countries in the MENA region, with the exception of Syria, Yemen, and Kuwait which only had data available from 2020, 2018, and 2020 respectively.

Additionally, given the significant impact of oil rents on the economies of the MENA region, it is imperative to investigate their association with corruption and the resulting implications for economic development. Regions like the Arabian Gulf heavily rely on oil

revenue, potentially motivating leaders to engage in corrupt practices to sustain high oil revenues. While this may initially contribute to positive economic progress, it can also foster a dangerous dependence on this single natural resource, a phenomenon commonly referred to as the resource curse.

The resource curse hypothesis suggests that countries endowed with abundant natural resources, including oil, are more susceptible to corruption and governance issues which hinder economic development. This would mean that oil-dependent countries would likely face lower levels of economic development due to their dependency on this natural resource. The region's substantial oil wealth introduces a unique characteristic of the region to this study. As a result, I have included a variable for oil rents as a percentage of GDP from the World Bank to better understand the relationship that oil dependence may have with corruption and economic development in this region.

Three simple regressions will be conducted to understand this relationship. The first regression will use GDP per capita as the dependent variable and the Corruption Perceptions Index score (CPI) as the independent variable. This regression will be used to determine the relationship between GDP per capita and corruption. The second regression will use GDP per capita as the dependent variable and oil rents (as a percentage of GDP) as the independent variable. This regression will be used to determine the relationship between GDP per capita and oil dependence. The final simple regression will use CPI as the dependent variable and oil rents as the independent variable. This regression will be used to determine the relationship between corruption and oil dependence. These simple regressions will then be followed by a multiple regression using GDP per capita as the dependent variable and CPI and oil rents as the independent variable which will serve as a robustness check.

The primary objective of my first empirical chapter is to examine the correlation between GDP per capita and CPI in the MENA region. This analysis aims to determine whether this relationship aligns with either the "grease the wheels" hypothesis, suggesting that corruption aids economic growth, or the "sand the wheels" hypothesis, proposing that corruption impedes economic growth. Furthermore, this chapter will delve deeper into potential explanations for this relationship.

The primary objective of my second empirical chapter is to investigate the relationship between GDP per capita and oil rents, as well as between corruption and oil rents. This will address the resource curse hypothesis which posits that oil dependence will be associated with lower levels of economic development and higher levels of corruption. This chapter aims to explain the relationship of this natural resource with corruption and, consequently, on overall economic development.

This thesis seeks to thoroughly analyze the relationship between corruption and development outcomes in the Middle East and North Africa region. To reiterate, the central questions guiding this study are: *Are higher levels of corruption associated with poor economic performance in the Middle East and North Africa? Is oil dependence associated with low economic performance in the Middle East and North Africa? And lastly, Is oil dependence associated with high levels of corruption in the Middle East and North Africa?* To address these questions, four regressions have been undertaken to analyze the relationships between GDP per capita and CPI, GDP per capita and oil rents, and CPI and oil rents.

The findings from this study highlight the considerable impediment that corruption poses to economic development in the MENA region. The first regression demonstrates a positive, statistically significant correlation between CPI and GDP per capita. This indicates that lower



levels of corruption are associated with higher levels of economic development in the MENA region, supporting the “sand the wheels” hypothesis. The second regression and third regressions show no statistically significant correlations between GDP per capita and oil rents or between CPI and oil rents. These results indicate that oil dependence is not associated with low GDP per capita or high levels of corruption, contradicting the resource curse hypothesis.

These insights shed light on the relationship between corruption, natural resource dependence, and economic development within the MENA region. Furthermore, given the region’s increasing importance in the geopolitical and economic arena, this thesis aims to provide crucial information for policymakers, academics, and those in the business community who want to gain a deeper understanding of the factors hindering economic development in this region.

## ***Background***

The Middle East and North Africa region, spanning from Morocco to Iran, is characterized by a variety of cultures, languages, and histories. While the region boasts immense economic potential, fueled largely by its substantial oil reserves, this region faces persistent challenges that have hindered the realization of its full developmental promise. High levels of perceived and real corruption have been identified as a pervasive issue across many MENA countries, influencing governance structures, impeding foreign investment, and obstructing sustainable economic development.

Corruption takes various forms within the MENA context. From bureaucratic and grand corruption at the highest echelons of power to petty corruption on the streets, the region has witnessed various corrupt practices that undermine institutional integrity and erode public trust. This study delves into the relationships between corruption, oil dependence, and economic

development within the MENA region to identify some of the key factors hindering the development of the region.

The rationale for exploring the relationship between corruption and economic development in the MENA region is grounded in the recognition that corruption may be a significant impediment to sustainable economic growth and equitable development. The consequences of corruption can reverberate across society, hindering effective governance, distorting market dynamics, and exacerbating socioeconomic inequalities (Mauro 1995). Understanding the relationship between corruption and developmental outcomes becomes crucial as nations seek to navigate the complex terrain of economic development.

This thesis holds significance on multiple fronts. Firstly, it contributes to the academic discourse on corruption and economic development by focusing on the distinct context of the MENA region which currently remains understudied in development literature.

Secondly, the findings of this research carry practical implications for policymakers and international organizations involved in formulating development and anti-corruption strategies within the MENA region. Insights into the specific drivers of economic development and the role of corruption can inform policy decisions to foster sustainable and equitable growth.

Thirdly, the research contributes to the ongoing discourse surrounding the influence of natural resources, particularly oil, on shaping economic outcomes. Examining the resource curse hypothesis within the MENA context introduces a layer of intricacy to our comprehension of the relationship between corruption, economic development, and resource dependence.

Given the increasing geopolitical and economic importance of the region, the economic performance of MENA countries can have far-reaching effects on the global geopolitical and economic landscape. Recognizing this connection is crucial, as it can empower businesses and

investors to make well-informed decisions and formulate effective strategies for managing investment risks.

In essence, this research aims to explain the relationships between corruption, oil dependence, and economic development in the MENA region, offering a comprehensive analysis to gain a deeper understanding of the factors influencing development in this region.

## *Literature Review*

Corruption has persisted as a pervasive issue throughout human history. While a subset of scholars argue that corruption might facilitate economic growth by enabling market participants to navigate bureaucratic inefficiencies, the predominant consensus is that corruption poses a substantial challenge to economic development. This literature review aims to delve into the extensive research on this subject, beginning with the central "grease the wheels vs. sand the wheels" debate. It will then explore the channels through which corruption can impact growth, such as through its effects on foreign direct investment. The review will then examine research specific to the Middle East and North Africa region and conclude by addressing the literature surrounding the relationship between oil, corruption, and economic growth. The goal is to provide a comprehensive review of the literature on corruption, ultimately addressing the questions: *Are higher levels of corruption associated with poor economic performance in the Middle East and North Africa? Is oil dependence associated with low economic performance in the Middle East and North Africa? And, Is oil dependence associated with high levels of corruption in the Middle East and North Africa?*

### *Corruption and Economic Development*

Corruption has been the subject of extensive scholarly investigation in economics and international relations due to its implications for economic growth and development. Some scholars argue that corruption is beneficial due to its ability to grease the wheels of the economy. Nathaniel Leff's seminal work from 1964, "Economic Development Through Bureaucratic Corruption," explores the intriguing notion that corruption can serve as a catalyst for economic development under certain circumstances. Leff argues that bureaucratic corruption can facilitate

economic growth by providing businesses with a predictable environment and reducing red tape. Furthermore, he argues that corruption can safeguard businesses from losses resulting from bad policy. According to Leff, corruption allows for increased investment as it may allow investors to circumvent hostile business environments created by extensive government regulation in underdeveloped economies. Leff's argument gains support from historical case studies, notably his comparative analysis of Chile and Brazil. In the case of Chile, government intervention through price manipulation distorted market dynamics, leading to increased inflation and hindered economic growth. In contrast, Leff contends that Brazil experienced a mitigation of bureaucratic inefficiencies through corruption. By subverting price controls implemented by the Brazilian government, corruption allowed food prices to rise, subsequently boosting food production and curbing inflation. Leff's analysis underscores the potential benefits of limited corruption, challenging conventional views on its detrimental effects.

In contrast, scholars such as Paolo Mauro argue that corruption has the opposite effect. In his 1995 paper, "Why Worry About Corruption," Mauro underscores the significance of addressing corruption in economic and developmental contexts. Mauro delves into how corruption can detrimentally impact a nation's economic growth, public finances, and overall stability. Through his regression analysis, he finds a negative relationship between corruption and investment, arguing that this results from investors interpreting the corruption as a tax, thus reducing their incentive to invest. Furthermore, Mauro examines the diverse factors that may lead to corruption, including trade restrictions, government subsidies, inadequate civil service wages, and the presence of natural resources.

Similarly, Méon and Sekkat find in their 2003 study, "Does corruption grease or sand the wheels of growth?", that corruption adversely affects both economic growth and investment. The

authors argue that the effect on growth happens independently from the impact of corruption on investment. This means that even if a country achieves a high level of investment, despite its corruption, corruption still negatively impacts the growth of that economy. This indicates that corruption poses a significant hurdle to economic growth irrespective of that country's level of investment, highlighting that the mechanisms through which corruption affects growth are not limited to corruption's effects on investment. Further, the authors contend that corruption is ineffective in bypassing poor governance, arguing that instead of serving as a means to circumvent inadequate governance, corruption merely amplifies the costs associated with governance deficiencies. This directly conflicts with Nathaniel Leff's findings, supporting the claim that corruption sands the wheels of economic growth.

### **Foreign Direct Investment**

In determining the relationship between economic development and corruption, it is essential to look at how this effect takes place. Shang-Jin Wei, in his 1999 paper titled, "Corruption in Economic Development: Beneficial Grease, Minor Annoyance, or Major Obstacle?", investigated whether corruption can be perceived as a potentially advantageous "grease" that facilitates economic activity, a minor impediment, or a significant barrier to economic growth. Wei's findings reveal that corruption tends to discourage foreign investment, divert resources towards private investment at the expense of public investment, distort the allocation of public expenditures away from critical sectors like health and education due to their reduced susceptibility to corrupt practices, and lower the overall productivity of public investment and a nation's infrastructure. This supports Mauro's findings which indicate a relationship between bad governance and corruption. Moreover, Wei finds that despite the high

levels of FDI in Asian countries, these countries could have attracted greater levels of foreign direct investment without the need for tax incentives if they had managed to control domestic corruption.

These findings align with the observations made by Meon and Sekkat, emphasizing the adverse effects of corruption on investment. Additionally, Wei's research suggests that these negative impacts extend beyond foreign direct investment. This implies that countries could potentially attract significant investment despite high levels of corruption, supporting the idea that the effects of corruption on economic growth and foreign direct investment are largely independent of each other.

Similarly, in Nabamita Dutta, Saibal Kar, and Shrabani Saha's paper "Human Capital and FDI: How Does Corruption Affect this Relationship?" The authors aim to determine how corruption affects the relationship between foreign direct investment and human capital. The authors find that the benefits of human capital on foreign direct investment can be amplified if countries decrease their corruption levels. This means that a country with low corruption will benefit more from the same increase in human capital as a country with high levels of corruption. This indicates that the mechanism through which corruption affects FDI is through its effects on the development of human capital. They conclude that similar impacts exist in relation to FDI; they argue, however, that the effects on FDI may be indirect as they can primarily be attributed to the benefits to human capital that result from a reduction in corruption. The authors find that in the event of a direct effect between corruption and FDI, corruption may increase both transaction costs for investors and the need for investment in political capital before undertaking any foreign direct investment, thereby diverting resources into unproductive investments. These results align with Wei's research which highlights that corruption redirects resources away from the public

sector. This diversion suggests reduced funding for public education and thus lower educational attainment in corrupt countries. This negatively impacts the development of human capital and, consequently, diminishes foreign direct investment.

These studies indicate that corruption harms economic growth and foreign direct investment. While the relationships are largely independent of each other, they suggest a common thread: corruption diverts public funds, impeding the development of human capital. These insights are crucial for my thesis, offering valuable indications of the channels through which corruption adversely influences growth.

### **Middle East and North Africa**

While the aforementioned studies indicate a negative relationship between corruption and economic growth, none specifically address the nuanced effects of this relationship concerning the Middle East and North Africa. This subsection delves into the literature specific to the region to understand how the relationship unfolds within this unique context.

The Middle East and North Africa region plays a crucial role in the international economy due to its substantial oil reserves. While many MENA countries remain largely underdeveloped, economic growth in this region can have ripple effects on the global economic landscape through the region's impact on energy prices, international trade, and investment opportunities. In Abdelaziz Hakimi and Helmi Hamdi's paper, "Does Corruption Limit FDI and Economic Growth? Evidence from MENA Countries", the authors aim to determine the effects of corruption on foreign direct investment (FDI) and gross domestic product (GDP). The authors find that corruption emerges as a significant impediment to both FDI inflows and broader economic development across the MENA region. This revelation carries particular weight



considering that the authors find that the MENA region's FDI inflows have historically lagged behind all other developing regions, with the exception of South Asia.

Furthermore, the study identifies that countries undertaking structural adjustment and institutional reform initiatives, such as Morocco, Algeria, and Tunisia, experienced a continuous increase in FDI over several years. However, this increase in FDI was unevenly distributed within these economies. In essence, this research offers crucial empirical evidence, establishing a causal relationship between high corruption levels and low foreign direct investment levels.

Similarly, a study conducted by Mounir Belloumi' and Atef Saad Alshehry' titled "The Causal Relationships Between Corruption, Investment, and Economic Growth in GCC Countries" looked at the relationship between corruption, GDP, and FDI for Gulf Cooperation Council Countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) from 2003 to 2016. The authors found that high levels of corruption (low CPI) are correlated with low levels of economic growth. The authors attribute this relationship to increases in the cost of production, misallocation of resources, and distortion of markets. However, the authors also find that corruption has no statistically significant impact on foreign direct investment in GCC countries and may even positively impact domestic investment. Ultimately, these results indicate that, at least for GCC countries, corruption can serve as a tool to bolster domestic investment. This phenomenon can be explained by the notion that bribery often enables businesses to bypass inefficient administrative bureaucracy and regulations, thereby expediting domestic investment in countries abundant with valuable natural resources (oil and gas) where opportunities for corrupt transactions are prevalent. These results coincide with the investigation conducted by Nathaniel Leff which points to corruption being used as a tool to circumvent inefficient bureaucratic regulation.

## **Oil and Corruption**

Belloumi and Alshery's research indicating that corruption can bolster domestic investment in resource-rich countries begs the question: How does corruption manifest itself in oil-abundant countries? Moreover, does corruption in oil-rich countries have the same effect as in non oil-rich countries?

Gian Marco Moisé analyzed the first of these questions in his 2020 paper titled "Corruption in the Oil Sector: A Systematic Review and Critique of the Literature". In this paper, Moisé found that the price volatility associated with oil markets can incentivize corrupt practices by market participants. The fact that the oil market is largely unstable yet can result in immense profits means that market participants are always looking for an edge against their competitors, thus incentivizing corruption among market participants. Further, this problem exists even when countries employ policies (such as nationalization) to reduce corruption in this industry. Moisé attributes this to the fact that authoritarian governments often mismanage oil profits and increase their country's dependence on the resource effectively creating a vicious cycle where anti-corruption policies are used as a way for the government to extract profits from oil through corrupt practices.

Regarding the second question: Does corruption in oil-rich countries have the same impacts as in non oil-rich countries? A paper by P.A. Donwa, C.O. Mgbame, and O.M. Julius, looking at the effects of corruption in the oil sector on economic growth in Nigeria, found that the corruption present in the Nigerian oil industry presents a significant obstacle to the country's economic growth. The authors argue that corruption within the oil industry extends its impact beyond the sector itself, generating spillover effects that reverberate throughout the broader

economy. Further, the authors argue that given the size of the Nigerian oil industry and thus its importance to the general Nigerian economy (main source of revenue for Nigeria at the time of the study), corruption in this sector allows participants in the oil market to extract rents effectively skimming profits from this industry for personal gain rather than reinvesting them into programs that would facilitate economic growth in Nigeria. These findings coincide with those of Wei and Dutta et al. regarding the diversion of public resources into the private sector, underscoring a broader pattern where corruption has systemic consequences across various economic domains.

Overall, the volatility within the oil market incentivizes corrupt behavior as a way to increase the rents extracted from this sector. Furthermore, oil corruption is not confined to the oil sector; it seeps into other areas of society, creating inefficiencies that lead to poorer development outcomes.

## **Summary**

This literature review's examination of the relationship between corruption and economic development highlights the complex relationship that exists between corruption and economic development. It is evident that corruption poses substantial challenges to economic development, as it amplifies poor governance (Meon and Sekkat 2003), diverts public resources into the private sector (Wei 1999; Donwa et. al. 2015), hinders the development of human capital (Dutta et al. 2017), and reduces foreign investment (Hakimi and Hamdi 2017; Mauro 1995; Belloumi and Alshery 2021). These works emphasize the detrimental effects of corruption on investment, governance, and economic growth generally.

However, this analysis of the existing literature has revealed some significant gaps in the literature concerning corruption and economic development. One glaring gap is the limited comparative analysis of how corruption affects oil-rich and oil-poor countries. Given the unique economic dynamics, governance challenges, and corruption risks associated with oil resources, a deeper understanding of these distinctions is imperative for effective policy formulation and future research. Gian-Marco Moise's analysis touches upon this subject, highlighting the incentives for corrupt behavior in oil markets, but underscores the need for more comprehensive investigations.

Another notable gap is the scarcity of literature focusing specifically on the Middle East and North Africa (MENA) region. While a handful of sources, such as Saha and Ben Ali's "Corruption and Economic Development: New Evidence from the Middle Eastern and North African Countries", Belloumi' and Alshehry's, "The Causal Relationships Between Corruption, Investment, and Economic Growth in GCC Countries" and Hakimi and Hamdi's "Does corruption limit FDI and economic growth? Evidence from MENA countries." provide valuable insights, there remains a significant deficiency of research that delves into the unique challenges posed by corruption in the MENA context. Given the region's rich natural resources, complex geopolitical significance, and diverse socio-economic conditions, further investigations into the corruption-economic development nexus in MENA are essential.

In conclusion, corruption is primarily a formidable barrier to progress, but it may also, under certain circumstances, paradoxically facilitate economic growth. The identified gaps in the literature— particularly the need for more comprehensive research in the MENA region and comparative studies focusing on oil-rich countries— offer fertile ground for investigation.

Addressing these gaps will contribute to a more nuanced understanding of the challenges that corruption presents for economic development in the Middle East and North Africa.

### ***Methodology***

This thesis employs a quantitative approach, utilizing three simple Ordinary Least Squares (OLS) regressions as the primary analytical tool, complemented with a multiple regression which serves as a robustness check to examine the correlations between corruption, oil rents, and economic development in the Middle East and North Africa (MENA) region. Data is drawn from 21 MENA countries, focusing on three variables: GDP per capita, corruption level (measured by Transparency International's Corruption Perceptions Index), and oil rents (as a percentage of GDP).

The primary investigations center on the correlations between GDP per capita and corruption, GDP per capita and oil rents, and corruption and oil rents utilizing three simple linear regression analyses. These regressions yield valuable information about the relationships between corruption, economic development, and oil dependence.

Gross Domestic Product (GDP) per capita serves as the principal metric for gauging economic development and functions as a dependent variable in this study. The data for this variable is collected from the World Bank, ensuring consistency and comparability across countries. This study largely uses 2021 GDP per capita, with the exception of Syria, Yemen, and Kuwait. For these countries, the most recent available data is from 2018, 2020, and 2020.

Two independent variables are employed in the analysis. The primary independent variable is the level of corruption, assessed using Transparency International's Corruption Perceptions Index (CPI). Transparency International's Corruption Perceptions Index (CPI) is

used as a reliable and widely accepted measure of corruption. The CPI ranks countries based on their perceived levels of corruption, with 0 indicating complete corruption and 100 indicating no corruption. This provides a standardized assessment to accurately measure corruption levels within a given country. The second independent variable is oil rents (as a percentage of GDP). Given the significance of oil in many MENA economies, oil rents as a percentage of GDP serves as a key independent variable in the analysis. Data on oil rents as a percentage of GDP are sourced from the World Bank.

### *Analytical Techniques*

#### **Relationship between GDP per capita and Corruption:**

$$GDP\ per\ capita\ _i = \beta_0 + \beta_1 CPI\ _i + \varepsilon_i$$

**Alternative Hypothesis (HA):** There is a strong positive correlation between GDP per capita and CPI.

This equation represents the first simple regression model in my analysis. Here, GDP per capita serves as the dependent variable while CPI serves as the independent variable.  $\beta_0$  represents the constant term and the value at which the regression line meets the Y-intercept.  $\beta_1$  represents the coefficient for CPI or the change in GDP per capita associated with a unit increase in CPI. Lastly,  $\varepsilon_i$  represents the error term or the difference between the observed values of GDP per capita and the values predicted by the model. For this model, I hypothesize that GDP per capita will have a strong positive correlation CPI. This would support the “sand the wheels” hypothesis which posits that corruption negatively impacts economic development.

**Relationship between GDP per capita and Oil Dependence:**

$$GDP\ per\ capita_i = \beta_0 + \beta_1 OilRents_i + \varepsilon_i$$

**Alternative Hypothesis (HA):** There is a strong negative correlation between GDP per capita and oil rents.

This equation represents the second simple regression model in my analysis. Here, GDP per capita serves as the dependent variable while oil rents serve as the independent variable.  $\beta_0$  represents the constant term and the value at which the regression line meets the Y-intercept.  $\beta_1$  represents the coefficient for oil rents or the change in GDP per capita associated with a one percent increase in oil rents.  $\varepsilon_i$  represents the error term or the difference between the observed values of GDP per capita and the values predicted by the model. I hypothesize that GDP per capita will have a strong negative correlation CPI. This would support the “resource curse” hypothesis which posits that oil dependence negatively impacts economic development.

### **Relationship between Corruption and Oil Dependence:**

$$CPI_i = \beta_0 + \beta_1 OilRents_i + \varepsilon_i$$

**Alternative Hypothesis (HA):** There is a strong negative correlation between oil rents and CPI.

This equation represents the third simple regression model in my analysis. Here, CPI serves as the dependent variable while oil rents serve as the independent variable.  $\beta_0$  represents the constant term and the value at which the regression line meets the Y-intercept.  $\beta_1$  represents the coefficient for oil rents or the change in CPI with a one percent increase in oil rents.  $\varepsilon_i$  represents the error term or the difference between the observed values of CPI and the values predicted by the model. For this model, I hypothesize that CPI will have a strong negative correlation with oil rents. This would support the “resource curse” hypothesis which posits that oil dependency is associated with higher levels of corruption.

### **Multiple OLS Regression:**

The robustness check employed in this study is the multiple regression using Ordinary Least Squares estimation (OLS). The model is structured as follows:

$$GDP\ per\ Capita_i = \beta_0 + \beta_1 CPI_i + \beta_2 OilRents_i + \varepsilon_i$$



**Alternative Hypothesis (HA):** There is a strong positive relationship between CPI and GDP per capita in the MENA region and there is a strong negative correlation between oil rents and GDP per capita.

In this equation, the relationships between CPI and GDP per capita and oil rents and GDP per capita are explored simultaneously. Here, GDP per capita serves as the dependent variable while CPI and oil rents serve as the independent variables. Similar to the previous models,  $\beta_0$  represents the constant term and the value at which the regression line meets the Y-intercept.  $\beta_1$  represents the coefficient for CPI or the change in GDP per capita associated with a unit increase in CPI.  $\beta_2$  represents the coefficient for oil rents or the change in GDP per capita associated with a one percent increase in oil rents.  $\varepsilon_i$  represents the error term or the difference between the observed values of GDP per capita and the values predicted by the model.

This thesis utilizes a quantitative approach to examine the correlations between corruption, oil rents and economic development in the MENA region. Through the use of three simple OLS regressions, supplemented by a multiple regression for robustness, the study seeks to provide contributions to the existing literature surrounding the relationship between corruption, oil dependence, and economic development. Additionally, it aims to offer valuable insights to policymakers and researchers by shedding light on the factors influencing economic outcomes in the MENA region.

## ***Introduction to Empirical Chapters***

Stretching across 22 countries from Morocco to Iran, the MENA region is abundant in richness. Its treasures include ancient cultures, breathtaking landscapes, and extensive natural resources. The countries within this region showcase striking diversity across various dimensions, including their natural resource endowments, governmental structures, and economic performance. However, despite its wealth, the region grapples with numerous challenges with respect to its economic development. Industrial underdevelopment, limited human capital accumulation, low foreign direct investment (FDI), high youth unemployment, and, in certain nations, a heavy reliance on oil characterize the economic landscape of the MENA region (Cammett 2017). Nevertheless, one common thread binds these variables together: corruption.

The Middle East and North Africa consistently ranks among the world's most corrupt regions. With an average CPI score of 37, this region faces this grim reality due to various factors. Firstly, many MENA countries have long operated under a "system of state patronage," where the public sector accounts for a significant portion of employment (Azour 2018, P.1). Consequently, this results in disproportionately large governments coupled with underdeveloped private sectors, potentially fostering an environment conducive to corruption. The poor quality of institutions in the region exacerbates this issue, as most MENA countries suffer from bad institutions. This results in authoritarianism, economic stagnation, state weakness, and other systemic challenges (Karam & Zaki 2019).

Another contributing factor to the high levels of corruption in the region is its low level of trade openness. Excluding oil, MENA exports account for less than half of the global average (Karam & Zaki 2019). Instead, the majority of trade in the MENA region centers around oil

exports, making up over half of total exports, while non-oil exports only reach about one-third of their anticipated level (Karam & Zaki 2019). Consequently, the MENA region faces significant challenges in exporting non-oil products, leading to a reduced overall volume of trade. This indicates that MENA exports are insufficient, highly centralized, and lack diversification (Karam & Zaki 2019). While this might benefit domestic firms by shielding them from international competition due to protectionist trade policies, it also opens avenues for corruption. This is because such protectionist policies enable government officials to exert greater control over domestic firms, facilitating the extraction of rents.

These bloated public sectors and low trade openness not only exacerbate corruption but also act as impediments to the region's economic progress. This is particularly significant given that economic factors have a more pronounced effect on reducing perceived corruption levels compared to non-economic factors (Ben Ali and Saha 2017). Consequently, by tackling the issues hindering the region's development, there exists the potential to decrease corruption levels, initiating a virtuous cycle. Low levels of corruption are correlated with higher levels of economic development (Mauro 1995; Olken & Pande 2012; Hakimi & Hamdi 2017), highlighting the importance of addressing these economic determinants to foster sustainable growth and integrity within the region.

Oil is another factor influencing development outcomes in the region. Because the MENA region holds over 51 percent of the world's estimated oil reserves (BP Energy Outlook 2019), this region possesses significant influence over international energy prices. Such power places the Middle East in a crucial position in the contemporary geopolitical area. These large deposits of oil within the region underscore the importance of oil in shaping Middle Eastern development, a significance magnified by research indicating that oil dependence tends to

impede growth in developing and high-middle income countries with weak political institutions (Antonakakis et. al. 2017). Compounding this challenge is the prevalent issue of weak institutional quality across many MENA countries (Boukhatem & Moussa 2021) particularly in labor-abundant countries who, because of their weak institutions, experience low economic performance (Al-Shammari et. al. 2021).

Faced with the high volatility of oil markets, leaders in the region are incentivized to engage in corrupt practices to maintain the profitability of their oil exports. This is achieved through policies such as nationalization which limit international competition and enhance the government's ability to extract rents from domestic producers (Moise 2020). Thus, it is crucial to consider oil as one of the primary variables influencing economic development in the region given the size of the oil endowments in the region and their potential effects on corruption and GDP growth more broadly.

This serves as the impetus for my thesis which aims to answer the question: *Is corruption associated with poor economic performance in the MENA region?* Additionally, this thesis delves into the relationships between oil rents, corruption, and economic development to answer the questions: *Is oil dependency associated with poor economic performance? And is oil dependency associated with higher levels of corruption?*

For these questions I have three hypotheses. I hypothesize that GDP per capita will have a strong positive relationship with CPI. This would mean that high GDP per capita is associated with lower levels of corruption. To test my hypothesis, I conducted a simple regression which uses GDP per capita as the dependent variable and corruption (CPI) as the independent variable. This regression allows us to determine if corruption is associated with higher or lower economic performance in the region.

My second hypothesis states that GDP per capita has a negative association with oil rents. This means that high levels of GDP per capita are associated with low levels of oil dependence. This hypothesis is tested with the second regression which scrutinizes the relationship between GDP per capita and oil rents. This regression will tell us if oil dependency is associated with higher or lower economic performance. In this regression, I use GDP per capita as the dependent variable and oil rents as the independent variable.

My third hypothesis states that CPI has a negative correlation with oil rents. This means that low levels of corruption would be associated with higher oil dependence, indicating that oil-dependent countries are more corrupt than their non oil-dependent counterparts. To test this hypothesis I conducted a simple regression using CPI as the dependent variable and oil rents as the independent variable. This regression aims to describe whether oil dependency is associated with higher levels of corruption in the region.

Lastly, I will conduct a multiple regression analysis as a robustness check for the first and second regressions. This regression will use GDP per capita as the dependent variable and oil rents and CPI as independent variables. This regression will allow us to see if the results from the simple regressions stay consistent with the use of a different model.

This thesis explores the relationships between oil, corruption, and GDP, utilizing three simple regression models. The initial chapter will examine the association between corruption and GDP per capita. Given the vast literature surrounding the harmful impacts of corruption on economic growth, I expect there to be a positive association between GDP per capita and CPI. Conducting a regression analysis will help determine whether corruption is associated with poor economic development in the MENA region. Additionally, this chapter will explore some of the potential channels through which corruption can affect economic development.

The second chapter will explore the relationships between oil, corruption, and GDP, shedding light on the role of this lucrative natural resource in the corruption dynamics of the region. Here, I expect there to be a negative relationship between GDP per capita and oil rents, due to the region's propensity to the resource curse. I also expect there to be a negative relationship between CPI and oil rents because the volatility of these markets may incentivize market participants to engage in corrupt behavior to increase their profits.

Overall, this thesis aims to add to the literature surrounding corruption and economic development, with a specific emphasis on the understudied MENA region. Additionally, it aims to provide crucial information surrounding some of the impediments to economic development for policymakers and researchers, as gaining an understanding of corruption in MENA is crucial for comprehensively addressing the development challenges faced by those in the region.

## ***Chapter 1: Corruption and GDP per capita***

Corruption runs rampant in the MENA region. The region's average CPI of 37 (*Table 1*) reflects this issue. This coupled with the various corruption scandals involving Middle Eastern countries, such as the Saudi Defense Ministry's involvement in utilizing offshore companies for purchasing weapons or Lebanese banker and former government minister Marwan Kheireddine's use of offshore companies in the British Virgin Islands (Rickett 2021), highlight the persistence of corruption in the region.

However, is corruption in the Middle East and North Africa associated with poor economic performance? To answer this question I conducted a simple linear regression model using GDP per capita as the dependent variable and the corruption perceptions index (CPI) as the independent variable. This regression uses GDP per capita collected from the World Bank for the 2021 fiscal year, though exceptions were made for Yemen, Syria and Kuwait who only had available data from 2018, 2020, and 2020 respectively.. This regression also uses 2021 CPI data collected from Transparency International. The CPI ranks countries based on their levels of perceived corruption with 0 indicating complete corruption and 100 indicating no corruption. This regression, analyzing the corruption scores and GDP per capita of 21 countries within the region, will allow us to determine whether corruption is associated with poor economic performance in the region.

## Results

### Summary Statistics

Table 1: Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Median	Max
GDP Per Capita	21	14721.55	18822.32	533.4	4136.1	66838.4
CPI	21	37	16.22	13	33	69
Oil Rents (%GDP)	21	12.62	15.4	0	4.5	56.4

The summary statistics of the complete data set are presented in *Table 1*. These summary statistics give us key information about the characteristics of the MENA region with regard to the specified variables. For example, the median GDP per capita in the region (4136.10), tells us that half of the countries have a GDP per capita above or below \$4136.10. When comparing this to the mean (14,721.55), we can see that the median is significantly below the mean, indicating the presence of outliers in the data for GDP per capita. Additionally, the standard deviation for GDP per capita (18,822.32) tells us that there is considerable variation in the GDP per capita data from the observed countries, suggesting that the MENA region suffers from large economic disparities.

When looking at the summary statistics for CPI, the mean (37), tells us that the region suffers from high levels of corruption. When looking at the standard deviation (16.22), we can see that the variation in corruption scores is lower than the variation in GDP per capita, indicating similar corruption scores among the countries in observation. However, the standard deviation is nearly half of the mean, suggesting the presence of some outliers in the data. This is supported by the fact that CPI values range from 13 to 69. This wide range suggests substantial variability in corruption scores among MENA countries.



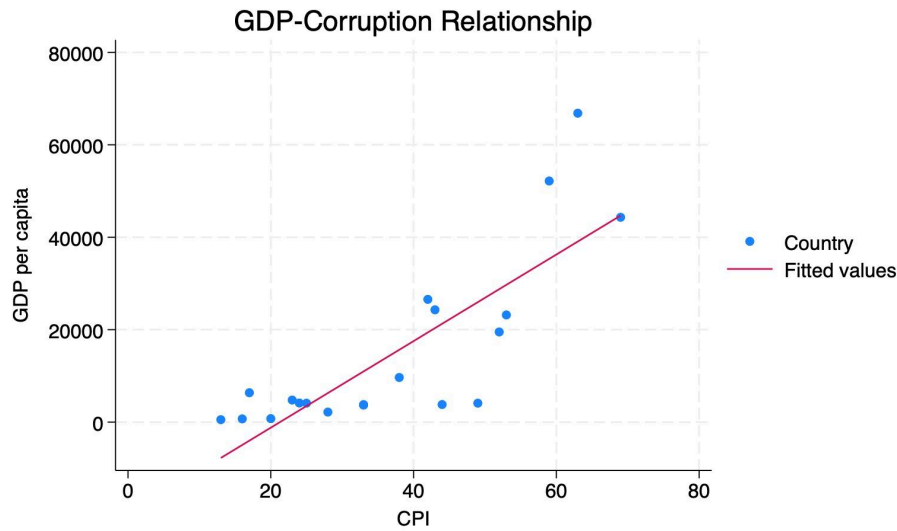
Finally, when looking at the summary statistics for oil rents we can see that the observed countries vary significantly in their oil dependence. This is highlighted by the fact that the standard deviation (15.4) is larger than the mean (12.62). Additionally, the values for oil rents range from 0 to 56.4 indicating a significant variation in oil dependence in the region. This is not surprising given that some countries in the region, such as Lebanon and Morocco have little to no oil reserves while others such as those in the Arabian Gulf have substantial reserves. This is emphasized by the median (4.5) being significantly lower than the mean (12.62), suggesting that the mean is being pulled up by the outlier countries with high levels of oil rents.

#### *Simple Regression Equation*

$$GDP \text{ per capita} = \beta_0 + \beta_1 CPI + \varepsilon_i$$

This equation represents the first simple regression conducted in this thesis. In this model, GDP per capita is the dependent variable,  $\beta_0$  is a constant term and the value at which the regression line crosses the Y-axis,  $\beta_1$  represents the coefficient term or the change in GDP per capita associated with a unit increase in the corruption perceptions index (CPI),  $\varepsilon_i$  represents the error term or the difference between the observed value of GDP per capita and the value predicted by the model.

Figure 1:



This figure displays the relationship between GDP per capita and CPI. Looking at the regression line, we can see a clear positive correlation between low-levels of corruption and a high GDP per capita. This figure also displays a concentration of MENA countries below a CPI score of 40 and below a GDP per capita of \$20,000. This means that most countries in the region suffer from low levels of economic development coupled with high levels of corruption.

Table 2: Regression 1 Results

VARIABLES	(1) GDPPerCapita
CPI	936.554*** (157.098)
Constant	-19,930.964*** (6,322.409)
Observations	21
R-squared	0.652

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

To gain a better understanding of the relationship between economic development and corruption in the MENA region, I conducted a simple regression model using GDP per capita as the dependent variable and CPI as the independent variable. I hypothesized that there would be a strong positive correlation between GDP per capita and CPI, supporting the “sand the wheels” hypothesis. The results of this regression show that for every one unit increase in CPI (i.e. for every unit decrease in corruption), we can expect GDP per capita to increase by approximately \$936.55 (*Table 2*). This means that marginal improvements in perceived corruption are associated with large increases in GDP per capita for MENA countries. This result is statistically significant at the 5% level as the p-value (0.00) is less than 0.05. According to these results, CPI is statistically significantly related to GDP per capita therefore we can accept the alternative “sand the wheels” hypothesis and reject the null hypothesis. Additionally, considering that the median GDP per capita in the region stands at \$4136.10, a \$936.55 rise in GDP per capita would notably enhance the well-being of individuals within the region, given that it would increase the median GDP per capita by approximately 22%.

### ***Analysis***

Overall, the regression outcome presents two key findings. First, there exists a strong positive correlation between GDP per capita and CPI, meaning that higher CPI scores (lower perceived corruption) correspond with a higher GDP per capita. Second, these findings hold statistical significance and practical relevance, as a \$936.55 increase in GDP per capita would notably improve the welfare of individuals within the region. This is because a higher GDP per capita would mean that there would be more money in the economy which can be invested into sectors such as health and education. With this correlation between corruption and GDP per

capita established, it becomes imperative to delve deeper into the underlying reasons for this relationship.

### *GDP per Capita and CPI*

The strong positive correlation observed between GDP per capita and the Corruption Perceptions Index (CPI) aligns with the “sand the wheels” hypothesis, which suggests that corruption undermines rather than facilitates economic development. These results coincide with most of the literature surrounding the corruption-growth nexus. While the regression model employed in this chapter does not attempt to address why the relationship exists, this relationship can be attributed to several factors. Compelling explanations center on the adverse effects of corruption on the accumulation and on the benefits of human capital, foreign direct investment, and its discouragement of entrepreneurial initiatives and innovation. These effects culminate in decreased efficiency and productivity across the board, reinforcing the observed association between higher GDP per capita and reduced levels of perceived corruption.

Foreign direct investment (FDI) is a private investment undertaken by multinational corporations, in which corporations establish physical assets, such as a factory, in a foreign country. FDI the largest source of external financing for the developing world (Saurav et. al. 2020). Research consistently demonstrates the positive impacts of FDI on economic growth (Okwu et. al. 2020; Loungani & Razin 2001; Majumder and Roy 2023; Saurav et al. 2020). This occurs due to FDI’s ability to facilitate the transfer of technologies between countries, stimulate job creation, and develop human capital due to workforce training for the newly created jobs (Loungani & Razin 2001). Nevertheless, corruption tends to dampen the total influx of FDI (OECD 2013), ultimately negating the positive effects of this investment. This occurs for several

reasons. For example, bribes and other forms of corruption increase business operating costs, ultimately diminishing the profitability of any investment (Mauro 1995). As a result, multinational corporations are inclined to steer their investment away from corrupt countries.

High levels of corruption also adversely affect entrepreneurship and innovation, providing another channel through which corruption can stifle economic growth. Corruption's impact on economic competition encourages the adoption of protectionist trade policies, serving as an additional means through which corruption stunts economic growth. The effects of this are evident as corruption has been found to be higher in countries where domestic firms are protected from international competition (Ades and DiTella 1999). This occurs because bureaucrats in corrupt countries can exert greater control over domestic firms, enabling rent extraction (Ades and DiTella 1999). Rent extraction refers to any gains in wealth that do not result from productive economic activity. This can include anything from gaining wealth from manipulative uses of resources, such as exploiting government positions to bribery. This is problematic when considering the benefits of free trade on economic growth. Market liberalization policies, which largely involve reducing barriers to trade and promoting competition, have a substantial positive effect on economic growth (David and Loewy 1998, Brada and Iwasaki 2024, Majumder and Roy 2023). Corruption thus incentivizes anti-competitive economic practices including elevated tariffs, protracted bureaucratic procedures for acquiring business licenses, and reduced trade openness (Mauro 1995). Such anti-competitive practices stem from the inherent inclination towards rent-seeking within corrupt systems. By erecting high barriers to entry for new firms across various economic sectors, the government can exert greater control over which businesses are allowed to operate within their borders. Consequently, corrupt governments can enhance their rent-seeking abilities by

tightening their regulatory control over businesses resulting in inadequate economic competition (Ades and DiTella 1999). This is significant as robust economic competition and trade openness have been demonstrated as pivotal factors in fostering heightened productivity and incentivizing innovation (OECD 2013).

Corruption also presents a significant obstacle to human capital development by diverting funds away from essential public resources like education. In corrupt countries, public funds are often redirected towards projects that prioritize private sector gains through bribes (Mauro 1995; Wei 1999). This misallocation of resources poses a considerable challenge to the development of human capital, which is heavily reliant on public expenditure in education. Relating the impacts of corruption on human capital accumulation to the previous discussion concerning foreign direct investment, innovation, and entrepreneurship, underscores the significant hindrance that corruption poses to economic development. The role of human capital in attracting FDI becomes a particular concern, as a nation's human capital stock is a key variable correlated with FDI inflows (Dutta et. al. 2017). However, pervasive corruption undermines the effectiveness of human capital by stifling its potential contribution to FDI. In essence, corruption not only depletes crucial resources but also undermines their productive impact on economic growth (Dutta et. al. 2017).

The impacts of corruption on human capital development extends beyond its influence on foreign direct investment. In addition to diminishing FDI and distorting market competition, corruption also incentivizes rent-seeking among those with higher levels of human capital rather than incentivizing economic production (Ades & DiTella 1999) This occurs because the rent-seeking system created by corrupt governments pushes entrepreneurial talent towards

rent-seeking as a means of gaining wealth. This diverts the entrepreneur from genuine and productive value creation in favor of rent-seeking (Mauro 1995; Ades and DiTella 1999).

Additionally, the high barriers to entry for businesses in corrupt countries pushes entrepreneurial talent into the informal economy, leaving the formal economy underdeveloped (Olken and Pande 2012). This trend is evident in the MENA region where the informal economy constitutes a large portion of the overall economy. Estimates suggest that in Egypt, the informal economy accounts for 40 percent of the total economy, while in Morocco, it represents about 30 percent, and in Jordan it comprises approximately 20 percent (Saif 2013). The bloating of the informal economy- due to corruption- is characterized by a lack of full-time employment opportunities, absence of wage enforcement, and negligible worker benefits, contributing to low productivity and economic growth. Additionally, governments also face challenges in taxing revenue earned from informal work, resulting in diminished government revenue, thus hampering the government's capacity to implement programs aimed at fostering development (Olken and Pande 2012).

Overall, the results of the regression model provide support for the “sand the wheels hypothesis”. This suggests that corruption harms rather than facilitates growth in the MENA region. These results are consistent with the literature surrounding corruption and economic growth. While the regression does not give a causal explanation on its own, the effects of corruption on the development of human capital, foreign direct investment, and entrepreneurship offer a compelling explanation for this relationship.

## ***Chapter 2: The Oil Dimension***

### ***Oil in the MENA Region***

Oil stands as arguably the most critical natural resource in the MENA region. Ever since the discovery of oil in the region by British geologist George Bernard Reynolds in 1908 (BP n.d.), the Middle East and North Africa, notably the Arabian Gulf, experienced a significant surge in oil production. Prior to the creation of the Organization of Petroleum Exporting Countries (OPEC), oil production in the region was primarily conducted by large multinational corporations which attempted to guide oil markets to lower prices (Alsayegh 2023). In response, major oil producers formed OPEC to counteract the price influence exerted by the multinationals. This delicate game of oil price manipulation escalated in the 1970's as many Gulf leaders began nationalizing large portions of the oil production process. These expropriation efforts by Middle Eastern leaders, such as the nationalization of the Arabian-American Oil Company by the Saudi government (Anthony 1980) or the nationalization of the Anglo-Persian Oil Company (Majd 1995) significantly altered the dynamics of this resource in recent decades.

Despite the transition from foreign to domestic exploitation of oil in major oil-producing countries like Saudi Arabia and Iran, oil continues to wield immense geopolitical and economic influence both regionally and globally. The shift to domestic oil production raises pertinent questions about the strategies employed by Middle Eastern leaders to ensure the profitability of their oil exports. For instance, policies like nationalization when carried out by authoritarian governments can lead to increased corruption through the mismanagement of oil profits and exacerbate economic inequalities through uneven distribution (Moise 2020). Further research on the topic also suggests that corruption in the oil sector can impact the wider economy. For example, corruption in Nigeria's oil industry was found to present a significant obstacle to that



country's economic growth. This was largely attributed to corruption spillover from the oil industry to the other economic and social sectors (Donwa et. al. 2015). In essence, these authors find that reliance on oil incentivizes corrupt practices to maintain high profitability and that this corruption can spill into the rest of the economy, ultimately hindering economic development.

Thus, in this chapter, I will explore the relationships between oil rents, corruption, and GDP per capita to better comprehend the impact that oil has on development in MENA. This will be done by first looking into the relationship between oil rents and GDP per capita, using a simple regression with GDP per capita as the dependent variable and oil rents as the independent variable. Data for oil rents was collected from the World Bank. This regression will tell us if oil dependency is associated with poor economic performance in the region. I hypothesize that oil dependency will be negatively associated with GDP per capita due to the susceptibility of MENA countries to the resource curse.

Subsequently, I will look more closely at the relationship between corruption and oil rents using a simple regression model with CPI as the dependent variable and oil rents as the independent variable. This inquiry is prompted by the implication of multiple Gulf Cooperation Council government officials in corruption scandals as exposed by the Panama Papers (ICIJ 2017). This regression will tell us if high levels of corruption are associated with oil dependency. Given the high levels of corruption in the region coupled with the implication of GCC officials in corruption scandals, I hypothesize that CPI will be negatively associated with oil rents.

Lastly, I will conduct a robustness check using a multiple regression model. This regression aims to determine whether the results of the simple regression models stay consistent under a different model. This approach aims to provide a thorough investigation into the relationships between oil, corruption, and development of this region.

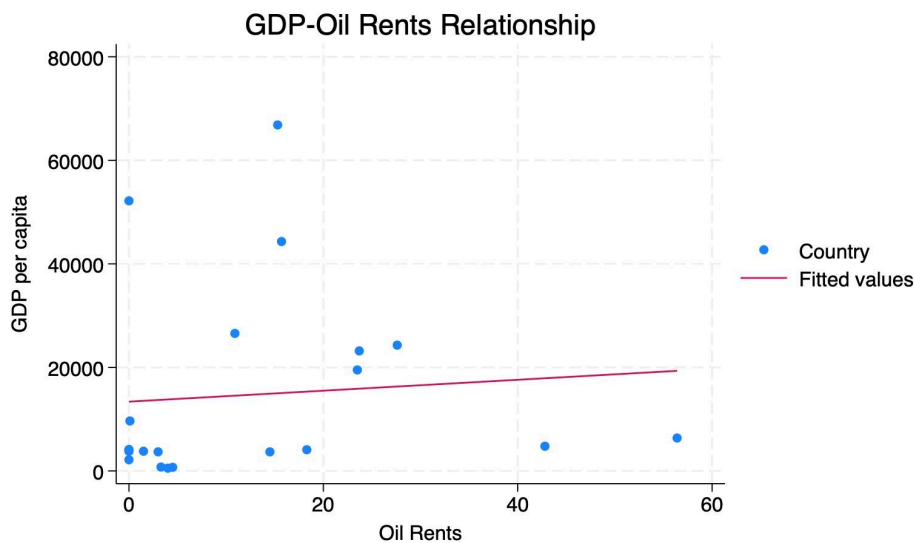
## Results

### Simple Regression Equation

$$GDP \text{ per capita} = \beta_0 + \beta_1 Oil \text{ Rents} + \varepsilon_i$$

This equation represents the second simple regression conducted in this thesis. In this model, GDP per capita is the dependent variable,  $\beta_0$  is a constant term and the value at which the regression line crosses the Y-axis,  $\beta_1$  represents the coefficient term or the change in GDP per capita associated with a unit increase in oil rents, and  $\varepsilon_i$  represents the error term or the difference between the observed value of GDP per capita and the value predicted by the model.

Figure 2:



This figure displays the relationship between oil rents and GDP per capita. Looking at the regression line, we can see a general positive relationship between the two variables. This suggests that higher oil rents are associated with a higher GDP per capita. However, we can also

see the presence of multiple outliers in the data. For example, oil rents make up 0% of Israel's GDP per capita, yet the country has the second highest GDP per capita of the observed countries. Additionally, Libya has a low GDP per capita of \$6357.20, but it is the country with the highest oil rents at 56.4%.

Table 2: Regression 2 Results

VARIABLES	(1) GDPPerCapita
OilRents	105.538 (279.302)
Constant	13,389.257** (5,482.481)
Observations	21
R-squared	0.007

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

This regression aims to answer the question: *Is oil dependency associated with poor economic performance in the MENA region?* I hypothesized that oil rents would have a negative correlation with GDP per capita, meaning that oil dependence is associated with poor economic performance. The positive coefficient of 105.54 for oil rents indicates that a 1% increase in oil rents is associated with a \$105.54 increase in GDP per capita. However, these results are not statistically significant at the 5% level as the p-value associated with oil rents (0.38) is larger than 0.05. Consequently, we fail to reject the null hypothesis, indicating that oil rents lack a statistically significant relationship with GDP per capita. This means that oil dependency is not inherently related to poor economic performance, as the resource curse hypothesis suggests. It's

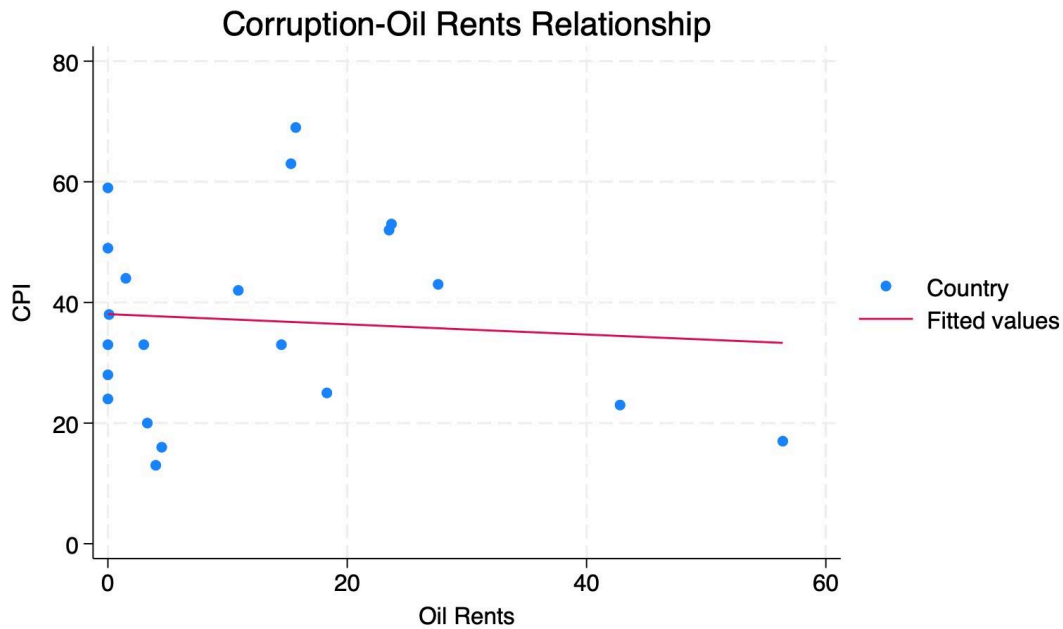
worth noting that the absence of statistical significance may stem from a limitation in statistical power, attributable to the small sample size of 21 observations in this model. Moreover, despite the non-statistically significant result, a \$105.54 increase in GDP per capita from a 1% increase in oil rents is not large enough to infer a strong association between high oil rents and high GDP per capita.

*Simple Regression Equation 3*

$$CPI = \beta_0 + \beta_1 Oil Rents + \varepsilon_i$$

This equation represents the third simple regression conducted in this thesis. In this model, the corruption perceptions index (CPI) is the dependent variable,  $\beta_0$  is a constant term,  $\beta_1$  represents the coefficient term or the change in CPI associated with a unit increase in oil rents, and  $\varepsilon_i$  represents the error term or the difference between the observed value of CPI and the value predicted by the model.

Figure 3:



This figure displays the relationship between CPI and oil rents. Looking at the regression line, we can see a general negative relationship between the two variables. This indicates that low oil rents are associated with low levels of corruption in the region. This figure also displays some outliers in the data. For example, Qatar has a high CPI of 63 (i.e. low corruption) but has a relatively high level of oil rents at 15.3%. Similarly, the UAE has a CPI of 69 with oil rents making up 15.7% of their GDP. Syria and Yemen are also outliers in this analysis as they have relatively low oil rents (4% and 4.5%) alongside high levels of corruption, reflected by their CPI scores (13 and 16).

Table 3: Regression 3 Results

VARIABLES	(1) CPI
OilRents	-0.084 (0.241)
Constant	38.066*** (4.728)
Observations	21
R-squared	0.006

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

This regression explores the relationship between CPI and oil rents. Here, I hypothesized that there would be a negative relationship between these two variables, meaning that low corruption would be associated with low oil-dependence. The coefficient for oil rents indicates that a 1% increase in oil rents is associated with a -0.08 point decrease in CPI. However, this result is not statistically significant at the 5% level as the p-value (0.73) is significantly higher than 0.05. Furthermore, the size of the coefficient for oil rents (-0.08) is not large enough to conclude that oil rents would have a significant impact on corruption regardless of statistical significance in a real-world setting. Nonetheless, the negative coefficient can give some indication of the relationship between the two variables as the lack of statistical significance may simply be the result of a small sample size. Overall, this regression indicates that oil rents have no statistically significant relationship with corruption according to the model, meaning that we must accept the null hypothesis.

## *Analysis*

In summary, the regression outcomes reveal no statistically significant correlation between oil rents and GDP per capita in the MENA region, as well as between oil rents and CPI. These findings challenge the resource curse hypothesis, which posits that high oil dependence would lead to low GDP per capita and my alternative hypothesis which states that oil dependency would be associated with high GDP per capita. However, the positive coefficient observed may suggest a potential direction for the relationship between GDP per capita and oil rents, despite the absence of statistical significance. This lack of significance could be attributed to the limited sample size of 21 observations, making it challenging to uncover such a complex relationship. Nevertheless, the regression results offer some insights into the potential directions of these relationships. The positive coefficient for the GDP per capita and oil rents relationship hints at a potentially positive association between the two variables, while the negative coefficient for the oil rents and CPI relationship may suggest a negative association. However, due to the lack of statistical significance, we fail to reject the null hypothesis for both relationships.

## *Oil and Economic Growth*

The results of this regression model indicate that oil dependence has no relationship with GDP per capita in the MENA region. These results contradict the resource curse hypothesis which states that high dependence on oil would be associated with low GDP per capita. Instead, the positive coefficient indicates a potential positive relationship between GDP per capita and oil rents. However, these results are not statistically significant meaning that we fail to reject the null hypothesis which states that there is no relationship. Nonetheless, these results can be explained

by several reasons. For example, the relationship between high oil rents and GDP may be attributed to the ways governments of resource rich countries manage the volatile oil-price cycles, the ways in which those oil revenues are reinvested, and the overall quality of institutions in the given country. Thus, the resource curse is more of a result of poor management of natural resource revenues, or weak institutions rather than a result purely based on a country's dependence on a given natural resource.

Assessing the impact of oil rents for economic growth hinges significantly on institutional quality. By this, I mean the quality of governmental and societal structures in a given country. For example, countries with inefficient, corrupt, or unstable structures would be considered as countries with weak institutions. While oil rents are positively associated with overall poverty reduction in the MENA region (Ncube et. al. 2013), in resource-rich nations, the role of institutions is paramount due to the potential adverse impact of crude oil. Oil is the natural resource which can most undesirably affect economic growth in countries with weak institutions (Motameni 2021). Despite the potential positive effects of oil on overall poverty reduction and growth, especially during periods of favorable oil shocks, these benefits are contingent upon institutional quality being excluded from the analysis (Antonakakis et al. 2017). However, when institutional quality is factored in, oil is revealed to be non-growth enhancing for countries with weak institutions, predominantly those in the low and middle-income brackets (Antonakakis et al. 2017). Notably, the growth differences among resource-rich countries results from how institutions within a country distribute the resource revenues (Motameni 2021).

This indicates that oil dependence does not inherently guarantee economic prosperity or hardship, something highlighted by the lack of a statistically significant relationship in my regression analysis. Instead, the outcomes of relying on this resource hinge on the management



of natural resource rents. This becomes particularly relevant given the prevalence of high levels of corruption in many natural resource-rich nations.

Oil proves to be the most vital energy resource throughout the industrialized world. As a result, countries in the global north, primarily the United States, place great importance on acquiring oil to support their high energy demand. As a result, the US government has played a crucial role in shaping global energy markets through its partnerships with oil-rich states in the Arabian Gulf. This relationship began after President Franklin Roosevelt and King Abd al-Aziz Ibn Saud met in Egypt on February 14, 1945 (Riedel 2019). In this meeting, Roosevelt and Ibn Saud agreed to work together to maintain the stability of the Middle East. In this partnership, The United States would offer Saudi Arabia generous security guarantees while the Saudis offered access to their oil fields and allowed the United States to use Dhahran air base for their military operations in the Middle East (Riedel 2019). This US-Saudi partnership effectively created the petrodollar, as from this point the relationship between the United States and oil-rich Arab countries was significantly strengthened and eventually led to most oil-rich countries pricing their oil export contracts in US dollars.

This relationship evolved significantly after the end of the gold standard in 1971 and because of the Organization of Petroleum exporting Countries (OPEC) oil embargo on the United States in 1973. These events placed significant pressure on the Nixon administration, which found itself dealing with a rapid collapse in the value of the US Dollar alongside stagnant economic growth, stagflation. As a result, the United States needed to find a way to maintain a high global demand for US dollars to mitigate the effects of the currency debasement (Spiro 1999). Thus in 1974, Nixon met with Saudi officials in an attempt to strengthen the US military and economic relationship with the Kingdom (Kissinger 1974). One of the methods used to

achieve this goal was to allow the Saudi government to purchase US Treasury bonds by bypassing the normal competitive bidding process (Wong 2016). As a result, by 1977, Saudi Arabia had accumulated approximately twenty percent of all US treasuries held abroad (Spiro 1999). Then, in 1979, the United States made another deal with the House of Saud known as The US-Saudi Arabian Joint Commission on Economic Cooperation (JECOR). This agreement aimed at fostering closer political ties between the US and Saudi Arabia through economic cooperation, assisting the Saudi industrialization and petrodollar recycling, and facilitated the flow of American goods and services to Saudi Arabia (Staats 1979). This US-Saudi agreement helped formalize the petrodollar system as Saudi Arabia would price oil contracts in US Dollars, then the revenue from the oil transactions would be reinvested into Saudi development projects through the building of infrastructure and transfer of technology which would be managed almost entirely by US companies (Staats 1979). Thus, with a clear US-Saudi relationship established, Saudi Arabia, as the leading producer in OPEC, pressured other OPEC countries to follow in their footsteps, creating a vast system for petrodollar recycling throughout the oil-rich Middle East (McMaken 2023). The complexity of the impact of oil revenues and development is compounded by petrodollar recycling. This complexity arises from the intricate agreements between the United States and oil-rich countries in the Middle East, primarily the Gulf Cooperation Council (GCC). These agreements facilitate a system of military-industry petrodollar recycling between the United States and major oil producers in the region.

It is important to recognize that the petrodollar system is not necessarily a bad thing for Middle Eastern development. The reliability of US Treasury Bonds and the access to US markets that petrodollars provide can, in theory, be beneficial for development. However, this ultimately depends on how the influx of petrodollars is managed by the governments of these countries.

Thus, to better understand how oil dependency affects Middle Eastern development, it is crucial to analyze the institutional quality and investment decisions of oil-rich MENA governments.

Through this recycling system, substantial amounts of petrodollars are injected into oil-exporting countries, especially during oil price booms, which are then utilized by these resource-rich nations to purchase U.S. weaponry (Jaffe & Ellass 2015). This is particularly evident when looking at arms deals between the United States and GCC countries, such as the \$20 billion arms deal between the United States and GCC countries in the mid-2000s (Jaffe & Ellass 2015). Furthermore, the high military expenditure of GCC countries, particularly Saudi Arabia which spends approximately 8 percent of its GDP on its military and in 2022 became the fifth largest military spender in the world (Smith 2023), indicates that GCC countries spend large portions of their overall budget on defense. While this is not inherently harmful, especially when considering the instability that has characterized this region for decades, this military investment by GCC countries comes with an obvious trade-off: spending on education, health, and other development programs.

Furthermore, the influx of petrodollars discourages other forms of productive, non-commodity investment (Jaffe & Ellass 2015). This hinders the industrialization of oil-rich MENA countries which becomes apparent when looking at industrialization in the Middle East as oil-rich countries in the region exhibit low levels of industrialization (Cammett 2017). The effects of this are low overall economic diversification, as market participants not only find it easier to get rich by extracting rents from oil exports than through economic production (Motameni 2021). Moreover, the low regulatory quality of non-GCC oil-rich countries, such as Algeria or Libya, is extremely poor, allowing the governments in these countries to limit

economic competition by maintaining regulatory burdens, preventing economic diversification (Matallah 2022).

This leaves many oil-rich MENA countries dependent on the oil-price cycle.

When oil prices are high, the influx of petrodollars creates large cash surpluses that governments can use to reinvest in social welfare programs such as education and health. At the same time, when oil prices are low, countries with a high dependence on oil may not have enough revenue to maintain adequate levels of spending to sustain such programs. However, these governments opt to use their petrodollars to buy weapons, leaving them with low levels of industrialization, and resulting in low economic diversity. This system is particularly damaging during oil price busts as oil exporters, facing diminished revenues, may not have the necessary safety net to smooth out the impacts from falling oil prices, exacerbating the adverse effect on development over the long run.

Overall, while oil does not inherently stifle economic growth or prevent development, if managed improperly, it can reduce investment in productive non-commodity industries leading to low levels of industrialization and economic diversification. Furthermore, poor management of oil revenues may leave oil-rich countries dependent on the oil-price cycle. This is problematic as during oil booms, the revenue is not allocated into non-commodity investment such as manufacturing and instead reinvested into arms. Thus when oil prices fall, oil-dependent governments may have little to fall back on, thus worsening development outcomes. The findings from my regression analysis highlight this lack of an inherent relationship between high oil dependence and GDP per capita. While oil dependence can inhibit economic development, if profits are mismanaged and no efforts for economic diversification are made, they do not necessarily sentence a country to low levels of economic development.

## *Oil and Corruption*

The findings of this regression model suggest that oil rents do not exhibit a statistically significant relationship with corruption in the MENA region. These results contradict the alternative hypothesis positing a negative association between oil rents and CPI scores. However, it's plausible that these outcomes stem from the limited sample size under analysis. Additionally, the negative coefficient attributed to oil rents may imply the general direction of the relationship. While the lack of statistical significance compels us to accept the null hypothesis, we cannot entirely dismiss the potential for a negative relationship between high oil dependence and corruption. This is particularly relevant given the volatility of oil markets, which may incentivize corrupt behavior, and the centralization of the industry through state-owned enterprises, which could facilitate such behavior.

The immense profitability of oil markets does not come without risk. These markets are notorious for their volatility and susceptibility to a myriad of shocks including geopolitical and economic disturbances. Occasionally, the volatility in oil prices reaches such heights that it can inflict severe damage on a country's finances, spur rapid economic reform, and abruptly reshape a country's geopolitical priorities (Jaffe & Elash 2015). Consequently, market participants in oil-rich countries may be strongly incentivized to engage in corrupt practices to maximize their rent extraction. Corruption within oil-rich nations stems from various factors. For instance, oil-rich MENA countries often exhibit low levels of transparency and accountability in government, coupled with excessively large public sectors and an oil industry dominated by state-owned enterprises.

The lack of transparency and accountability in oil-rich MENA countries primarily stems from their reliance on oil revenue rather than tax income to manage their budgets (Ali & Saha

2017). Without the need to rely on citizen tax contributions, oil-rich governments can operate with low levels of transparency and accountability, fostering a system conducive to corruption. Furthermore, this problem is closely linked to state involvement in oil production, a characteristic feature of oil production in the region (Arezki & Brückner, 2011). This issue is compounded by the significant decrease in political rights associated with oil rents, particularly during oil-price booms, as the political elite seeks to safeguard their rent income from potential redistribution of oil profits (Arezki & Brückner, 2011). Moreover, during periods of high oil prices, the substantial influx of petrodollars coupled with the lack of transparency and accountability often results in wasteful government spending on large, unproductive infrastructure projects (Jaffe & Ellass, 2015).

The large governments that characterize the MENA region are also associated with corruption (Ades & DiTella 1999). This issue is particularly pronounced in oil rich countries, where bureaucratic structures are often bloated and inefficient (Matallah 2022). These problems tie back to the issues of corruption and its effects on human capital accumulation discussed in chapter one. The issue is perpetuated by the fact that in corrupt countries, those with high levels of human capital are often strongly incentivized to seek government positions that will allow them to extract rents rather than engage in productive economic activity (Ades & DiTella 1999; Mauro 1995). This largely explains the link between oil rents and corruption as there is a significant effect in countries with high levels of state participation in the oil industry (Arezki & Brückner 2011).

This is problematic when considering that the oil industry in MENA is primarily inhabited by state-owned enterprises such as Saudi Aramco or the National Iranian Oil Company. Policies like nationalization are often used by non-democratic governments to gain greater

control over a country's key industries. In the case of oil, policies like expropriation can lead to increased corruption through the mismanagement of oil profits and exacerbate economic inequalities through uneven distribution of these profits (Moise 2020). Thus, oil-rich countries within MENA, with their overly large governments, turn to expropriation to capture the production of oil. This allows these governments to exert greater control over how much is produced, and how those profits are used. Having asserted their control over this industry, governments are essentially free to manage oil revenues at their will, and as we see in the discussion about oil rents and economic growth, these leaders often opt for redirecting oil profits into American weapons and back into the oil industry rather than focusing on productive non-commodity linked investment that would allow for increased economic diversification that would lead to long-term economic development.

Overall, while my regression analysis did not find any statistically significant correlation between either oil rents and GDP per capita or oil rents and corruption, we cannot discount the existence of a relationship between these variables especially given the size of the sample (21 observations). For the relationship between oil rents and GDP per capita, my results differ from the resource curse hypothesis. Taking a closer look, we can see that oil does not exert any inherent negative effects on GDP per capita. Instead, the effect that oil exerts is more likely related to the institutional quality of the country producing the oil and how the profits from oil exports are spent. When looking at the relationship between oil rents and corruption, we can see some similarities to the relationship between oil and GDP per capita. While oil itself does not cause corruption, state participation in the oil industry, particularly through expropriation policies, and large governments with inefficient bureaucracies pave the way for rent-seeking behavior in the oil industry.

### *Robustness Check*

In order to check the consistency and reliability of the results presented in the empirical chapters, I conducted a multiple regression analysis as a robustness check. This model differs from the previous models by conducting a simultaneous analysis of the relationships between oil rents, CPI, and GDP per capita. The objective of this multiple regression is to determine if combining the independent variables into a single model yields different results. This model uses GDP per capita as the dependent variable and CPI and oil rents as the independent variables. In this model,  $\beta_1$  represents the coefficient term for CPI, the change in GDP per capita associated with a unit increase in CPI. Similarly,  $\beta_2$  represents the coefficient term for oil rents, the change in GDP per capita associated with a unit increase in oil rents.

### *Multiple Regression Equation*

$$GDP\ per\ Capita_i = \beta_0 + \beta_1 CPI_i + \beta_2 OilRents_i + \varepsilon_i$$

Table 4: Multiple Regression Results

VARIABLES	(1) GDPPerCapita
CPI	950.705*** (156.492)
OilRents	185.845 (164.831)
Constant	-22,800.588*** (6,774.075)
Observations	21
R-squared	0.675

Standard errors in parentheses\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



As a robustness check for the simple regressions, I conducted a multiple regression using GDP per capita as the dependent variable and CPI and oil rents as the independent variables. Overall, the results of this multiple regression closely mirror those of the simple regressions, with some discrepancies in the coefficients for CPI and oil rents. For instance, the first simple regression revealed a statistically significant relationship between GDP per capita and corruption, suggesting that a 1% decrease in corruption would lead to a \$936.55 increase in GDP per capita, holding oil rents constant. The only notable difference in results between the simple and multiple regressions is observed in the coefficient for CPI, which is approximately 1.5% higher in the multiple regression model compared to the simple regression model.

Similarly, both the multiple regression model and the simple regression for the relationship between oil rents and GDP per capita fail to identify any statistically significant correlation between the two variables. Additionally, both models maintain a positive coefficient for oil rents. However, the coefficient for oil rents is approximately 43% higher in the multiple regression compared to the simple regression. The multiple regression model also demonstrates a lower standard error for the oil rents variable. These results indicate that when CPI is considered in the model, the estimated effect of oil rents on GDP per capita is larger than when oil rents are considered in isolation with the simple regression model.

Overall, these results suggest that the outcomes derived from the simple regressions remain robust and consistent across models. This enhances the credibility of the findings, implying that the observed relationships, or their absence, are likely to be dependable and not merely a product of the analytical approach employed.

## ***Conclusion***

The purpose of this study was to explore the relationship between economic development and corruption in the MENA region. Additionally, this study aimed to provide a greater understanding of the relationships between oil rents, GDP per capita, and corruption. While this thesis does not provide a definitive conclusion on the effects of corruption and oil dependence on economic growth, it does provide valuable insights for policymakers, academics, and business people interested in formulating anti-corruption and development strategies in the region.

The results of this thesis show that corruption poses a significant hurdle to economic development in the Middle East and North Africa region. This can be attributed to multiple explanations including diminishing the volume and effectiveness of foreign direct investment (FDI), reducing the accumulation and efficacy of human capital, and limiting trade openness. Additionally, the study found no statistically significant correlation between GDP per capita and oil rents. This contradicts the resource curse hypothesis which posits a negative relationship between oil dependence and GDP per capita. Furthermore, this study found that while oil dependency may not be correlated with corruption, it can increase the incentives for rent seeking behavior, especially if oil revenues are managed by state-owned enterprises. This results in lower levels of industrialization for oil-dependent countries, less economic diversification, and wasteful government spending.

Therefore, fostering greater economic development within the MENA region hinges on addressing corruption. Although this task poses significant challenges, leaders in the region could make significant progress on this front by implementing structural reforms to their economies. By structural reforms, I refer to measures that fundamentally modify the underlying

structure of the economy, as well as the institutional and regulatory frameworks within which businesses and individuals operate (European Central Bank 2017).

For instance, structural reform policies that reduce the size of bloated governments in the region could curtail opportunities for rent-seeking activities by limiting the number of individuals who have access to public sector corruption. These reform policies may also allow for greater economic diversification as they can augment industrialization by reducing the overreaching regulations implemented by countries seeking to protect the industries through which they can extract rents, making it easier for new industries and new firms to participate in the economy. This is crucial for oil-rich economies of the region, as they lag behind in industrialization significantly compared to their non-oil-rich counterparts (Cammett 2017).

While leaders in the Gulf Cooperation Council (GCC) have made some progress here as reflected by their sustained non-oil growth in 2022 (World Bank 2023), more work needs to be done to incentivize productive non-commodity investment. Additionally, oil-rich countries within the region can consider privatizing their oil industries to reduce the opportunities for rent seeking behavior in the oil sector, though this would likely not be a politically feasible reform.

In addition to structural reforms, leaders in the region should also consider political reforms that enhance transparency and accountability. For example, leaders in the region can consider increasing the punishments for public officials who are caught engaging in corruption to enhance accountability, decreasing the size of their governments to reduce opportunities for rent seeking, and paying higher salaries to public officials to increase the cost of corruption and reduce the incentives for corrupt behavior. To enhance transparency, leaders should consider implementing greater checks and balances and expanding civic rights.

Overall, prioritizing the reduction of corruption is essential for promoting economic development in the region. Although this study failed to identify statistically significant correlations between GDP per capita and oil rents, or between oil rents and the Corruption Perceptions Index (CPI), this could be attributed to limited statistical power resulting from a small sample size. To mitigate this issue, future research ought to utilize panel data spanning multiple years to more accurately assess whether fluctuations in CPI or oil rents impact GDP growth. Furthermore, exploring the correlation between oil and corruption warrants investigation across a larger set of countries, including OPEC+ members outside of the MENA region and comparing their corruption outcomes with non-member nations. Although not directly pertinent to the MENA region, such analysis could offer a deeper insight into the dynamics between corruption and oil production.

In addition to the small sample size of the study, the study faces limitations due to omitted variables. This is because corruption and oil rents are not the only variables influencing economic development in the region. These variables do not capture factors like political instability, conflict, and government policies that can have significant impacts on economic development in the Middle East and North Africa. Thus, future research should include some of these omitted variables to more accurately assess the factors influencing development in the region.

Finally, the study faces a limitation due to the lack of accurate and up-to-date data for territories including Gaza and the West Bank. This can introduce bias in the analysis, particularly if these territories exhibit unique characteristics that differ from the countries included in the study. While Gaza and the West Bank are the only MENA territories excluded from this analysis, making this a small limitation, future research ought to include timely and accurate data for these

two territories. This would provide a more complete picture of the relationships between corruption, oil-dependence, and economic development in the region.

## Appendix

Table 5: Raw Data

Country	GDP Per Capita	Year Reported	CPI	Oil Rents	Region
Algeria	3,690.60	2021	33	14.5	North Africa
Bahrain	26,563.00	2021	42	10.9	Gulf
Egypt	3,698.80	2021	33	3	North Africa
Iran	4,091.20	2021	25	18.3	Gulf
Iraq	4,775.40	2021	23	42.8	Levant
Israel	52,170.70	2021	59	0	Levant
Jordan	4,103.30	2021	49	0	Levant
Kuwait	24,300.30	2020	43	27.6	Gulf
Lebanon	4,136.10	2021	24	0	Levant
Libya	6,357.20	2021	17	56.4	North Africa
Mauritania	2,166.00	2021	28	0	North Africa
Morocco	3,795.40	2021	33	0	North Africa
Oman	19,509.50	2021	52	23.5	Gulf
Qatar	66,838.40	2021	63	15.3	Gulf
Saudi Arabia	23,185.90	2021	53	23.7	Gulf
Sudan	751.8	2021	20	3.3	North Africa
Syria	533.4	2020	13	4	Levant
Tunisia	3,807.10	2021	44	1.5	North Africa
Turkey	9,661.20	2021	38	0.1	Levant
UAE	44,315.60	2021	69	15.7	Gulf
Yemen	701.7	2018	16	4.5	Gulf

Figure 4: Histogram of GDP per capita

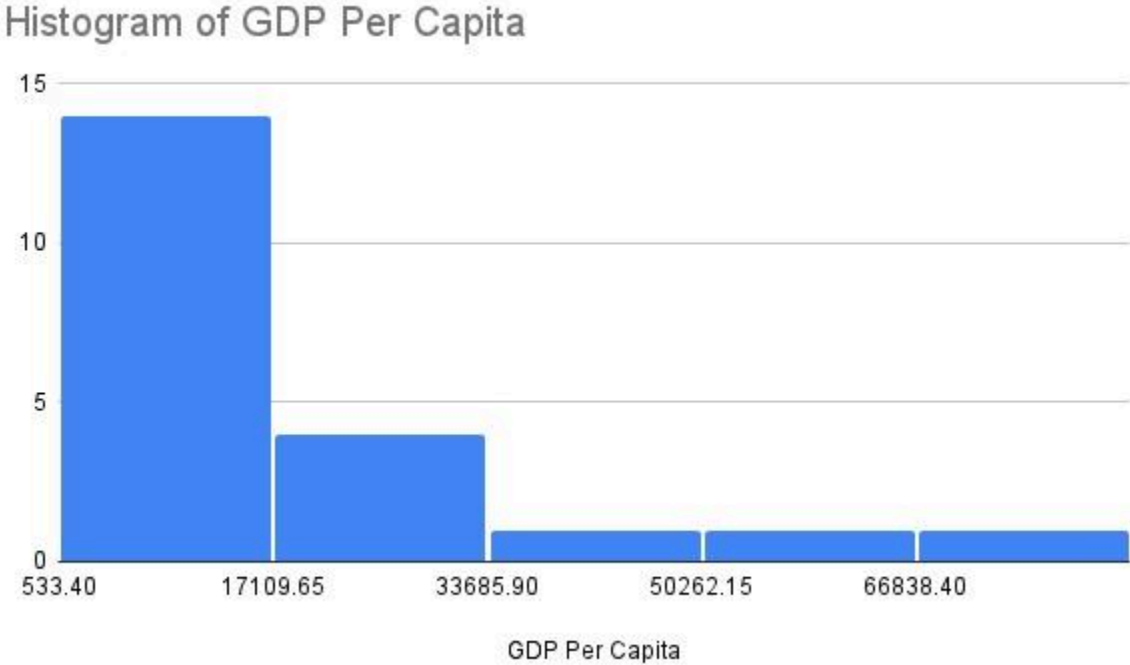


Figure 5: Histogram of CPI

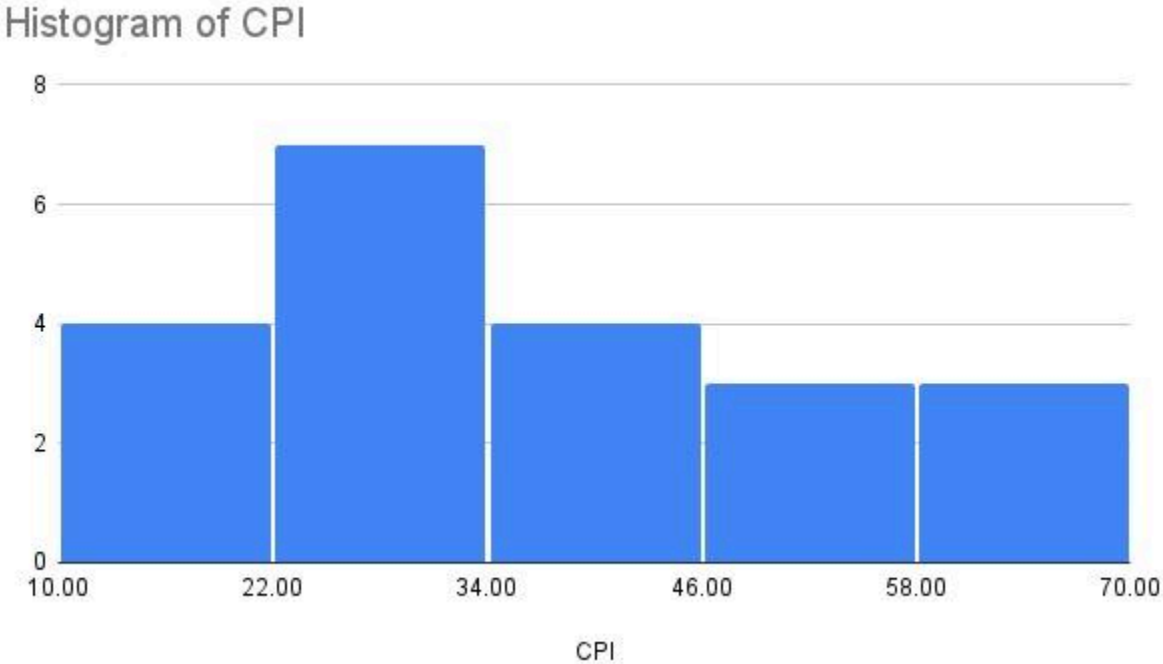
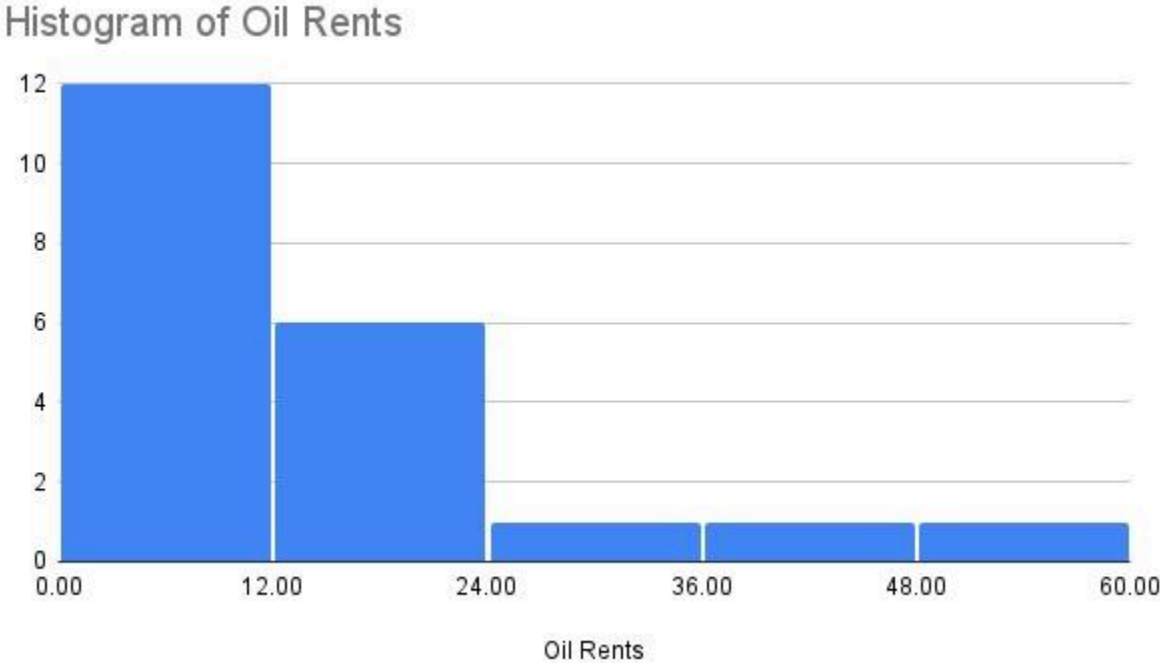


Figure 6: Histogram of Oil Rents





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