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Article

Is natural resource wealth a boon or a bane? The impact of oil rents and foreign direct investment on economic growth in Kazakhstan

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Abstract: The nexus between foreign direct investment, natural resource endowment, and their impact on sustained economic growth, is contentious. This study investigates the resource curse hypothesis and the effects of FDI on economic growth in Kazakhstan. The study covers the period from 1990 to 2022 and employs the Autoregressive Distributed Lag (ARDL) model and Toda-Yamamoto causality methods. The Bounds cointegration results reveal the existence of long-term equilibria between per capita GDP and the predictors. The findings reveal a significant impact of oil rents on economic growth, contradicting the resource curse hypothesis and suggesting a resource boon instead. In stark contrast, the impact of FDI on Kazakhstan's economic growth is found to be insignificant, despite the presence of a causal nexus. Furthermore, economic freedom and export diversification have a positive significant impact on economic growth, while inflation exhibits a negative but significant impact. Although governance has a direct impact on GDP per capita, it is deemed insignificant, as the negative average governance index implies poor governance. Expectedly, the result establishes a causal effect between export diversification, economic freedom, governance, oil rents, and economic growth. This underscores the fundamental role played by the interplay of diversification, economic freedom, governance, and oil rents in fostering sustainable economic growth. In addition, economic freedom stimulates gross fixed capital formation, indicating that it enhances domestic investment. Notably, the findings refute the crowding-out effect of FDI on domestic investment in Kazakhstan. Consequently, to escape the resource curse and the Dutch disease syndrome, the study advocates for enhancing good governance capabilities in Kazakhstan. Thus, we recommend that good governance could reconcile the twin goals of economic diversification and deriving benefits from oil resources, ultimately transforming oil wealth into a boon in Kazakhstan.

Keywords: natural resource curse; oil rents; foreign direct investment; Kazakhstan
JEL codes: C01; E00; F16

1. Introduction

In the face of economic crises and the pursuit of long-term sustainable economic growth, both developed and developing nations are actively striving to overcome declines in their economic trajectories. Emerging nations possess abundant resources that can potentially accelerate their economic expansion (Cavalcanti et al., 2011; Philippot, 2010; Shahbaz et al., 2019). Natural resources, such as oil, have been found to play a crucial role in the economic development of countries like Azerbaijan, Kazakhstan, Turkmenistan, and Russia (Bildirici and Kayikci, 2013). However, the Dutch disease models suggest that countries with abundant natural resources tend to experience slower growth rates compared to those with fewer resources, as resources often flow in and out of non-traded sectors, negatively impacting the economy (Guan et al., 2020; Sachs and Warner, 1997). The overreliance on resources and the absence

of efficient and sustainable policies to effectively coordinate and utilize these resources for promoting economic growth exacerbate this situation (Khan et al., 2020; Satti et al., 2014). Nevertheless, a few economies, such as Norway and Botswana, have managed to defy the Dutch disease syndrome by implementing sustainable resource and growth policies that enable efficient utilization of natural resource rents and elevate their growth levels, thereby avoiding the natural resource curse (Apergis and Payne, 2014; Guan et al., 2020; Omri and Kahouli, 2014).

The literature on the impact of natural resources on the long-term growth of resource-rich countries is characterized by differing viewpoints. On one hand, having abundant natural resources can provide wealth and purchasing power to a nation (Holden, 2013). On the other hand, the resource curse phenomenon challenges this notion, as it reveals that resource-rich states often struggle to achieve sustainable economic growth and poverty reduction (Costa and Santos, 2013; Elbra, 2013). Moreover, resource curse effects are typically accompanied by corruption, insecure property rights, high unemployment, and income inequality (Colgan, 2014). The presence of resource rents often diverts economic agents towards rent-seeking activities, hampering the growth of manufacturing sectors in resource-rich countries compared to their resource-poor counterparts (Sachs and Warner, 1999). However, Norway and Botswana offer examples of resource-rich nations that have effectively managed their natural resource windfalls to achieve strong growth rates, providing valuable lessons for other resource-rich countries (Holden, 2013; Larsen, 2005). Norway, for instance, has established transparent frameworks to separate oil rents from political motives and direct them towards productive investments (Tsani, 2013). Relatedly, Acemoglu et al. (2002) emphasized that Botswana's successful management of natural resource rents is attributed to strong governance practices and high-quality institutions, particularly in terms of property rights, influenced by pre-colonial institutions. This highlights the importance of prioritizing institutional reforms and good governance as crucial factors in escaping the resource curse.

Natural resource rents represent the surplus obtained by deducting all costs and returns associated with natural resources, serving as a measure of their excess returns and their impact on economic growth (Shahbaz et al., 2019; Yuxiang and Chen, 2011). Foreign direct investment involves the international flow of capital, where a firm from one country establishes or expands a subsidiary in another country, involving both resource transfer and control acquisition (Har et al., 2008). FDI plays a beneficial role in leveraging natural resource rents to enhance the growth of developing countries (Koitsiwe and Adachi, 2015). Insufficient funds for investment, especially in capital-intensive activities like natural resource extraction, often drive countries to seek FDI (Solarin and Shahbaz, 2015). Many underdeveloped and transitional economies lack the capacity for such investments and, therefore, rely on foreign direct investment to leverage natural resource rents for development. For instance, in the case of Malaysia, FDI has positive effects such as human capital formation, technology spillovers, integration into international trade, enterprise development, and a competitive business environment. However, associated costs include negative impacts on the balance of payments through profit repatriation, environmental consequences, social disruptions, and potential loss of sovereignty (Solarin and Shahbaz, 2015; OECD, 2002).

Oil, a significant global energy resource, plays a crucial role in capital markets (Erdoğan, 2011; Ulusoy, 2017). The decline in oil prices from 2014 onwards presented economic challenges for oil-producing nations heavily dependent on oil revenues (Baffes et al., 2018). Venezuela's unsuccessful attempt to reduce production raised concerns about compensating for budgetary losses caused by fluctuating global oil markets and finding alternative revenue sources for development programs (Naím, 2013). In the same line, countries such as Kazakhstan, Angola, and Brazil implemented tax reforms aimed at increasing tax revenues, but their success varied (Baffes et al., 2018). Fundamentally, reliance on natural resource rents negatively affected the institutional framework and long-term growth of resource-rich countries (Alexeev and Conrad, 2011). Thus, effective management of oil derivative prices within these nations is crucial for controlling inflation and mitigating adverse consequences (Erdoğan and Ilter, 2004; Erdogan and Dinç, 2009).

This study examines the case of Kazakhstan, a resource-rich transitional Asian economy (Teal et al., 2011) attracting significant FDI due to its abundant oil and natural gas reserves. Notably, various regions in Asia, including Southeast Asia, South Asia, Central Asia, the Middle East, and Western Asia, possess substantial natural resources. For instance, East Asia and Southeast Asia hold about 25% of Asia's coal assets (World Energy Council, 2016), while Central Asia is rich in oil, gas, coal, and uranium resources (United States Geological Survey, 2016). South Asia also boasts natural resources like oil, gas, fertile lands, trees, and minerals (World Development Indicators, 2016). Despite the resource abundance in Asian countries, many have not achieved steady-state levels of growth, highlighting the need for efficient utilization of these resources for sustainable development. The presence of natural resources and fossil fuel energy has the potential to drive economic growth, depending on effective planning and policies by policymakers (Khan et al., 2020). Developing countries have increasingly focused on harnessing their sustainable resources for growth while considering environmental concerns. However, in the context of developing Asian countries, challenges remain regarding the productive allocation of natural resources, fossil fuel consumption, and effective foreign investment for stimulating economic growth.

While extensive literature exists on the relationship between the natural resource curse and foreign direct investment (Baffes et al., 2018; Hao et al., 2019; Huang, 2020; Olayungbo, 2019; Perez and Claveria, 2020; Redmond and Nasir, 2020; Soejoto et al., 2017; Yazdanian, 2014), there is a research gap pertaining to former Soviet Union economies. This study aims to fill this gap by examining the resource curse hypothesis and FDI in Kazakhstan, considering factors such as governance, economic freedom, and export diversification. The research stands out in threefold: Firstly, it tests the natural resource curse hypothesis by analyzing the impact of oil rents on Kazakhstan's economic growth. Secondly, it contributes to understanding how FDI enhances the economic growth of this resource-rich nation. The study employs the auto-regressive distributed lag (ARDL) Bounds Cointegration approach to assess both short-term and long-term effects. Thirdly, the study employs the Toda-Yamamoto causality approach to address the ambiguity in the literature regarding the causal relationship between oil rents, FDI, and economic growth. In addition, control variables such as export diversification, economic freedom, and governance indicators are included to provide

insights into escaping the resource curse in countries like Kazakhstan. The research aims to address the following research questions:

i Do oil rents attract foreign direct investment in Kazakhstan? What are the causality implications between oil rents and foreign direct investments in countries abundant in natural resources?

ii Is there evidence of the natural resource boon or bane in Kazakhstan? What are the possible remedial measures to escape the resource curse phenomenon and the Dutch disease syndrome?

iii What is the impact of oil rents and FDI on economic growth in Kazakhstan? What is the implication of export diversification, economic freedom, and governance on oil rents for sustained economic growth?

The paper is structured as follows. Section 2 provides a review of the literature; Country setting-Kazakhstan; theoretical foundations; empirical studies. Section 3 discusses datasets and the methodology employed. Section 4 presents the findings and discussions. Finally, in Section 5, we draw conclusions, and policy implications based on our research results.

2. Literature review

In this section, we provide a literature review covering several aspects. Firstly, we examine the country context of Kazakhstan, focusing on its status as a resource-rich nation with abundant reserves of oil and gas, as well as the role of FDI in natural resource extraction. Secondly, we delve into the theoretical foundations that underpin our analysis, including the natural resource curse hypothesis and the FDI internationalization theory. Lastly, we provide a comprehensive overview of empirical studies that have explored the relationships between natural resource endowments, FDI, and economic growth.

2.1. Country-setting: Kazakhstan

Kazakhstan, situated in central Asia, boasts significant reserves of oil and minerals, which make it an appealing destination for foreign direct investment. The country's natural resource wealth, particularly its oil and natural gas reserves, have contributed to its energy sector's economic independence (Teal et al., 2011). As per the British Petroleum World Energy report (2020), Kazakhstan possesses substantial proven reserves, including approximately 2.7 trillion cubic meters of natural gas and 3.9 billion tons of oil, accounting for 1.7% and 1.3% of global totals, respectively. Moreover, as of January 2018, Kazakhstan held proven crude oil reserves of 30 billion barrels, ranking it as the second largest in Eurasia and the twelfth largest worldwide, just behind the United States (Oil and Gas Journal [OGJ], 2018).

Within the Caspian Sea region, Kazakhstan boasts the largest proven oil reserves. The country heavily relies on revenue from oil exports and stands as the second-largest oil producer among former Soviet colonies, following Russia (Kazakhstan Oil and Gas tax guide report, 2021). In 2019, Kazakhstan produced 91.4 million tons of oil and gas condensate, with crude and condensate output reaching 1.8 million barrels per day in 2021, 1.842 million barrels per day in 2020, and 1.965 million barrels per day in 2019 (Kazakhstan Oil and Gas tax guide report, 2021). Approximately one-third of the gas

produced is reinjected to enhance liquids output. Notably, three international projects initiated in the 1990s dominate both oil and gas production in Kazakhstan, as reported by the International Trade Organization (ITA, 2021). The oil and gas sector plays a critical role in Kazakhstan's economy, contributing nearly 44% of the state budget's revenues. In terms of global oil production, Kazakhstan ranked 18th out of 127 countries in 2022 (Worldometer, 2022). From 2015 to 2020, oil production in the country increased by 6.84%, reaching 1.811 million barrels per day in 2020 compared to 1.695 million barrels per day in 2015. This rise in production can be attributed to increased government investment in domestic oil projects (Kazakhstan Oil and Gas tax guide report, 2021).

Kazakhstan possesses substantial natural gas reserves, with proven reserves totaling 3 trillion cubic meters and projected reserves estimated at 5 trillion cubic meters. The country also expects to extract a significant amount of gas associated with oil production, with an estimated 1000 cubic meters of gas for every new ton of oil extracted. This means that producing 100 million tons of new oil could result in 100 billion cubic meters of gas. The natural gas produced in Kazakhstan serves various purposes, including well re-injection, exports, and meeting domestic consumption needs through liquefaction and the development of internal gas pipeline infrastructure. While a considerable portion of Kazakhstan's gas output is oil-associated gas, the country's overall gas production is expected to continue increasing (ITA, 2021). According to the International Trade Organization (ITA, 2021), gas production is projected to reach 29.6 billion cubic meters by 2027. It is important to note, however, that Kazakhstan has limited technical expertise in offshore production and operations. In western Kazakhstan's Atyrau Region, the Tengizchevroil (TCO) consortium operates the Tengiz and Korolyov oil and gas fields. TCO is a joint venture consisting of Chevron (50% share), ExxonMobil (25% share), KazMunayGas (20% share), and Lukoil's LukArco (5% share). The national oil and gas company, KazMunaiGas (KMG), plays a significant role in organizing licensing tenders for oil and gas blocks and is involved in nearly all contracts with foreign oil and gas companies (ITA, 2021).

The oil and gas sector plays a vital role in Kazakhstan's economy, driving its growth and development. The recovery of oil prices has provided a boost to the sector (ITA, 2021). Most of the Kazakhstan's oil production, about 80%, is exported, with Russia serving as a key transit route through the CPC pipeline to the port of Novorossiysk (ITA, 2021). However, Kazakhstan lacks expertise in offshore production and operations, creating opportunities for foreign direct investment, especially from U.S. companies. These companies can contribute to rig work, support infrastructure, and environmentally sensitive technologies. Partnerships with the national oil company, KazMunaiGaz (KMG), and major international consortia enable U.S. companies to engage in various sectors of the oil and gas industry in Kazakhstan (Kazakhstan Oil and Gas tax guide report, 2021). The hydrocarbons sector remains a significant focus for both the Kazakh government and foreign investors. It historically attracts a substantial portion of foreign direct investment, accounting for around 60% since 1991 and contributing approximately 53% of the country's export revenue (Kazakhstan Oil and Gas tax guide report, 2021).

Kazakhstan has implemented measures to liberalize its economy and attract foreign capital since gaining independence. However, recent sanctions against Russia

and limited growth prospects have led to decreased interest from foreign investors in the region (Kazakhstan Oil and Gas tax guide report, 2021). In 2019, the country received $3.1 billion in foreign direct investment, slightly lower than the previous year's $3.8 billion (UNCTAD World Investment Report, 2020). Nonetheless, Kazakhstan remains the second-largest recipient of foreign direct investment in the region, following Russia, with a total FDI stock of $150 billion USD in 2019 (Kazakhstan Oil and Gas tax guide report, 2021). The primary industries attracting foreign direct investment include metallurgy and the oil and gas sector, which significantly contribute to the country's GDP.

2.2. Theoretical foundations

2.2.1. Natural resource curse

Theoretical perspectives on the role of natural resources in an economy can be divided into optimistic and pessimistic viewpoints. The optimistic perspective, advocated by Adam Smith and David Ricardo, suggests that natural resources contribute positively to economic development (Rostow, 1961; Viner, 1952). According to Rostow (1961), countries with abundant natural resource endowments, such as Australia, the United States, and Britain, can transition from underdevelopment to industrial advancement. This viewpoint emphasized the potential of natural resources to foster industrial development, create markets, and attract investment. Although there were dissenting opinions (Nankani, 1979), the optimistic view prevailed until the emergence of the Dutch disease concept in the early 1980s (Cordon and Neary, 1982; Corden, 1984; Neary and Wijnbergen, 1986).

The Dutch disease, named after the decline of Dutch manufacturing following the discovery of natural gas in Groningen, marked a shift towards a more pessimistic perspective (Cordon and Neary, 1982; Corden, 1984; Neary and Wijnbergen, 1986). Auty (1993) introduced the Resource Curse hypothesis, which initially focused on the lack of growth and development in resource-rich countries. Over time, the concept has evolved, representing a syndrome characterized by an inverse relationship between natural resource dependence and economic growth. Specifically, an "oil curse" has been identified in countries heavily reliant on oil production. Humphreys et al. (2007) highlighted the distinctions between resource wealth and other forms of wealth to understand this proposed curse. Firstly, unlike other resources, natural resources like oil, gas, and minerals require extraction rather than production. This means that the generation of natural resource wealth can occur independently of other economic processes and does not necessarily contribute significantly to employment creation. Industries such as oil and gas are capital-intensive and offer fewer job opportunities per unit of capital invested. Furthermore, the required skills in these sectors may not align with the profiles of a country's unemployed population (Karl, 2007). Secondly, a crucial characteristic of natural resource wealth, particularly oil and gas, is its non-renewable nature (Humphreys et al., 2007).

Natural resources have the potential to bring significant advantages to underdeveloped economies. Firstly, income generated from resource extraction can improve living standards by enabling higher levels of public and private consumption. Secondly, resource extraction can support increased investment, both directly from

resource income and indirectly through borrowing facilitated by that income. Additionally, resource income flowing into the public sector can address the lack of fiscal resources needed to finance essential public goods like infrastructure (Sachs, 2007). However, it has been observed for several decades that the mere possession of natural resources is not enough to guarantee economic success. Many resource-rich countries in Africa and the Middle East, such as Angola, Congo, Nigeria, Venezuela, and certain Middle Eastern countries, continue to experience low per capita income and a low quality of life (Sachs, 2007).

Indicators of the resource curse phenomenon include an excessive dependence on natural resources, the adverse impact of real exchange rate appreciation on other economic sectors, short-term inflationary pressures, a decline in consumption due to high commodity prices, ineffective control over public spending, and widespread corruption (Costa and Santos, 2013). While natural resource rents are often used to fund government expenditure on infrastructure, telecommunications, healthcare, and education, their positive impact diminishes beyond a certain threshold, particularly in the presence of institutional deficiencies (Mehrara, 2009; Papyrakis and Gerlagh, 2004). Economists widely agree that resource rents can divert entrepreneurial interests towards rent-seeking activities, hampering economic growth (Bjorvatn et al., 2012). Moreover, natural resource abundance can lead to structural distortions that harm growth, such as higher real wages, real exchange rate appreciation, and a negative impact on competitiveness and production in non-resource sectors. It may also contribute to low levels of human development, high poverty and inequality, as governments deviate from welfare-enhancing policies (Al-Kasim et al., 2013). Furthermore, overreliance on natural resources can weaken institutional frameworks and contribute to market failures, further hindering economic growth potential (Boyce and Emery, 2011).

According to Bjorvatn et al. (2012), the excessive pursuit of rents associated with abundant natural resources can lead to sluggish economic growth and prolonged political turmoil. Kolstad and Wiig (2009) emphasized that resource wealth often encourages dysfunctional behavior, particularly within weak institutional frameworks. When self-interested elites exploit natural resources without considering the public interest, it can result in uncertainty, political unrest, and economic downturns. Additionally, resource-rich countries may utilize resource rents to suppress potential internal conflicts and maintain peace. However, it is important to note that abundant resources can sustain oppressive political regimes and hinder the transition to democracy (Stevens and Dietsche, 2008). Countries with both resource abundance and well-designed institutions for conflict prevention and stability maintenance are less susceptible to such circumstances. These factors not only worsen the resource curse but also create political and economic vulnerabilities that can erupt unexpectedly (James and Aadland, 2011).

2.2.2. FDI Internationalization theory

The concept of foreign direct investment originated from classical theories of international trade and economics. Initially, the explanation of FDI drew upon Ricardo's theory of comparative advantage and the Heckscher-Ohlin theory, which considered differences in resource endowments between countries (Heckscher and

Ohlin, 1933). These theories predicted trade patterns based on a region's factor endowments, with countries exporting products that used their abundant and inexpensive factors of production and importing products that relied on their scarce factors. However, these theories did not fully account for FDI, as they were limited to two countries, two products, and perfect factor mobility at the local level.

Hymer's (1960) microeconomic theory of international production marked a significant milestone in the study of FDI. According to this theory, companies engage in internationalization due to factors related to their size, ownership of specific assets, and market failures. FDI occurs when the benefits of utilizing firm-specific advantages (FSAs) across borders outweigh the additional costs of operating in foreign markets (Hymer, 1960). The theory suggests that multinational enterprises (MNEs) possess unique advantages that enable them to operate profitably abroad. Aliber (1969) adds that companies become MNEs due to market imperfections and possessing competitive advantages that are not easily accessible to domestic firms in the host country. Further, Caves (1971) highlights the significance of product diversification in FDI, categorizing it into vertical, horizontal, and conglomerate types, with vertical FDI further divided into forward and backward integration.

Vertical FDI refers to the dispersion of a company's production chain across different geographic locations, with lower-wage countries manufacturing labor-intensive intermediate goods for higher-wage countries (Caves, 1971). It is often known as "efficiency-seeking" FDI, aimed at improving the cost-effectiveness of the firm's production process. Backward vertical FDI occurs when a company invests in an industry abroad to obtain inputs for its domestic production process, often observed in extractive industries like oil extraction. Forward vertical FDI involves investing in an industry abroad to sell the outputs of the domestic production process (Caves, 1971).

On the other hand, horizontal FDI involves producing the same product in multiple plants and serving local markets through affiliate production rather than relying on exports from the home country of the multinational enterprise (MNE). It is referred to as "market-seeking" FDI and is driven by the desire to access new and larger markets (Botric and Skulic, 2005). Horizontal investments replicate the entire production process of the home country in a foreign country, and they tend to increase the labor intensity of domestic production in the home country (Mariotti et al., 2003). Multinational enterprises involved in the extraction or utilization of natural resources represent another type of FDI, attracted by the availability of resources like oil, gas, minerals, forests, and waterfalls in many developing countries

2.3. Empirical literature

Huang (2020) conducted a study using data from 25 developing countries in Asia between 1996 and 2016, employing the Pool Mean Group (PMG) regression method to analyze the impact of natural resource utilization and foreign direct investment (FDI) on economic growth. The findings indicated that FDI has a positive effect on economic growth in Asia. However, the study did not find a significant relationship between total natural resources and economic growth. In contrast, there was evidence of a significant association between economic growth and the income generated from forest resources, mineral resources, and oil. It was also highlighted that robust

financial systems play a crucial role in channeling natural resource revenues into productive investments. Similarly, Erdoğan et al. (2020) conducted research on the relationship between natural resource exports, economic growth, and the level of financial deepening using data from Next-11 countries between 1996 and 2016. They employed a nonlinear panel data technique in two regimes. The study found that when the rate of financial deepening was below 45%, an increase in oil exports did not have a significant impact on economic growth in the first regime. However, in the second regime, characterized by a financial deepening level above 45%, economic growth increased by 7%. This suggests that financial deepening is an important factor in the relationship between natural resource exports and economic growth.

Relatedly, Redmond and Nasir (2020) utilized a balanced panel of 30 countries from 1990 to 2016 to examine the effects of natural resource abundance, trade openness, international trade, financial development, and institutional quality on economic growth and human development. The empirical results indicated a positive and significant impact of natural resource abundance on economic growth. However, there was a negative effect on human development, suggesting that an overreliance on natural resources may hinder the development of human capabilities and welfare. Pérez and Claveria (2020) proposed a new approach to visually analyze the relationship between human development, economic growth, and the dependence on mineral resources in ten African countries that are major mineral exporters. The study covered the period from 2007 to 2016. The empirical findings indicated a weak negative relationship between average growth in human development and the corresponding weighted mineral rent. Based on these results, the researchers concluded that the lack of translation of average growth in resource rent into higher economic growth suggests that corruption may be a significant obstacle to economic development. The study also emphasized the importance of improving institutional quality and implementing appropriate mining models to address the challenges faced by mineral-dependent African countries.

Hao et al. (2019) expanded on the concept of the environmental Kuznets curve (EKC) to examine the relationship between water resource use and economic growth using panel data analysis of 29 provinces in China from 1999 to 2014. The study revealed an "N" shaped relationship between per capita water consumption and per capita GDP. Additionally, the study found a positive contribution of industrial water use to economic development. Furthermore, a nonlinear relationship was observed between GDP per capita and total and non-industrial water consumption. Soejoto et al. (2017) conducted an analysis of the factors influencing economic growth in Southeast Asian countries using panel regression techniques. The study aimed to investigate the impact of investment, labor, natural resources, and technology (Solow variable) on economic growth. The findings indicated that the Solow variable affected each country differently. For example, in Indonesia and Brunei, economic growth was significantly influenced by investment, human resources, and labor. In Thailand and the Philippines, economic growth was significantly influenced by investment, natural resources, and labor.

Olayungbo (2019) employed the Bayesian time-varying parameter (TVP) model to examine the relationship between Nigeria's economic growth and oil revenue, with the objective of testing the natural resource curse hypothesis. Using annual time series

data from 1970 to 2015, the study demonstrated a positive and significant effect of exported oil revenue on economic growth during the examined period. However, the study also found that unfavorable trade openness and a low quality of education contributed to slow economic growth in Nigeria, despite the significant oil rent received during the same period. Khayat (2017) conducted a study on the determinants of foreign direct investment (FDI) in MENA countries during the period 1960–2012, focusing on the impact of natural resources. The study found that, except for fuel exports, indicators of natural resources such as oil rents, oil reserves, oil production, and oil production relative to oil reserves had a negative relationship with FDI. The study also examined the interaction between these indicators and the institutional quality proxy represented by the Investment Profile of ICRG. The interaction term between natural resources and investment profiles also had a negative effect on FDI, indicating that natural resources diluted the positive effects of institutions. On the other hand, variables such as trade openness, GDP, inflation, and investment profile had a positive impact on FDI. Infrastructure and human capital did not have a significant impact on FDI inflows.

Yazdanian (2014) investigated the determinants of FDI in 14 oil-producing countries between 1986 and 2007. The study found that GDP, oil production, and trade openness had a significant and positive impact on FDI, while the impact of oil prices, exchange rates, and inflation rates was negative and significant. The study justified the increase in FDI with an increase in oil production, stating that increased production requires more investments and technology transfer to the extraction and processing sector. Conversely, the study attributed the decrease in FDI to an increase in oil prices, which leads to higher revenues for the exporting country, discouraging the inflow of FDI. Eissa and Elgammal (2020) discovered a positive relationship between oil prices and FDI. They argued that higher crude oil prices make marginal investments in the oil and petrochemical industry more profitable, attracting FDI. The study also found a negative relationship between oil reserves and FDI, suggesting that countries with substantial oil reserves have sufficient financial resources for their economic growth and may restrict FDI to protect their resources. The study concluded that Gulf Cooperation Council (GCC) states lack motivation to attract FDI and impose restrictions on foreign ownership of firms to prevent loss of control over their resources.

Carril-Caccia et al. (2019) supported the existence of the “oil curse” on FDI in oil-abundant countries. The study estimated that a one-percentage-point increase in oil rents led to a decrease in the number of FDI projects by an average of 3%. The relationship varied between oil-abundant countries with poor capital and those with rich capital. In the former, countries tend to attract FDI to process their resources. However, in oil-abundant countries with rich capital, they have sufficient financial resources to sustain their growth, adopt autarkic policies, and exhibit rent-seeking behavior. These countries do not actively pursue FDI and often impose local ownership conditions, which act as potential barriers to FDI inflows. Zallé (2019) conducted a study to examine the conditional impact of natural resource dependence on human capital development and institutional quality on economic growth. The study used an Autoregressive Distributed Lag estimation technique on a sample of 29 countries with an average dependency level of 19.53% between 2000 and 2015. The

findings indicated that the interactions between natural resources and institutional quality, as well as between natural resources and human capital, suggest that leveraging the human capital-corruption relationship is crucial for exploiting natural resources in Africa. Therefore, the study concluded that African countries should prioritize and enhance investments in human capital while intensifying efforts to combat corruption.

Abdulahi et al. (2019) adopted the institutional quality (IQ) as a threshold variable to examine the nonlinear relationship between natural resource rent and economic growth under the resource curse hypothesis. Using a panel sample of 14 natural resource-rich countries in Sub-Saharan Africa, the study confirmed a positive relationship between resource rent and economic growth when a country's institutional quality (IQ) was above the threshold level of −1.28 and within the range of −1.28 to −1.37. However, when the institutional quality (IQ) fell below the threshold level of −1.37, the resource curse began to manifest, hindering economic growth. Ben-Salha et al. (2018) contributed to the literature on the relationship between natural resource rents and economic growth, focusing on the causal relationship between total natural resource rents and economic growth in a sample of resource-abundant countries from 1970 to 2013. They employed the Pooled Mean Group (PMG) estimation technique and found a long-term positive effect of natural resource rent on economic growth, but no evidence of a short-term effect. The study also revealed a positive effect of economic growth on natural resource rent.

Amiri et al. (2019) investigated the effects of natural resource rents and institutional quality on the performance of tradable and non-tradable sectors in resource-rich countries from 2000 to 2016. Using panel analysis of 28 countries, the study found evidence that improving institutional efficiency in natural resource-based countries can enhance the performance of their manufacturing sectors, thereby mitigating the negative effects of the natural resource curse phenomenon. Additionally, the study revealed that the ratio of value added to manufacturing value added increases in natural resource-dependent countries, particularly when the level of institutional quality is high. Horváth and Zeynalov (2016) examined the impact of natural resource exports on the economies of 15 independent countries formerly part of the Soviet Union from 1996 to 2010. The study employed various panel estimation methods to address endogeneity and clustering issues. The findings showed a crowding-out effect of natural resources on manufacturing, except in cases where domestic institutions were of significant high quality.

Henri (2019) utilized the two-stage least squares (2SLS) method to examine the connections between institutional and economic indicators that have a negative impact on natural resource rents in Africa from 1992 to 2016. The study found evidence that corruption, weak rule of law or justice, inadequate public administrations, poor regulation, lack of accountability, and political instability are the main institutional problems associated with natural resource rents. Additionally, natural resource rents led to volatility in GDP per capita, resulting in a low quality of physical and human capital accumulation. Rantao (2019) examined the causal channels of the resource curse in Mozambique by studying multinational corporations' operations in the country's gas fields. Through an exploratory case study and analysis of secondary data, the study identified that multinational corporations prioritize their corporate social

responsibility activities to mask their failure to comply with local content laws. They also take advantage of their parent country government's diplomatic relationships to exert dominance over the host country's sovereignty.

Henry (2019) investigated the natural resource curse phenomenon in sub-Saharan Africa, characterized by high dependence on natural resources, weak institutions, and weak growth. The study introduced a time perspective and differentiated between long-term and short-term effects. The results of the study can be summarized in three main points: (i) natural resource dependence had a negative impact in all categories in the long run, (ii) countries with weak institutions are more susceptible to the resource curse as their path to recovery is also negatively affected by resource dependence, and (iii) the results suggest a potential positive impact of natural resources during the recovery process in a robust institutional environment. Brunnschweiler (2009) investigated the impact of oil revenues on the growth of former Soviet Union and Central and Eastern European transitional countries from 1990 to 2006. The study used panel estimations and demonstrated that oil had significant and substantial growth benefits. The study also found that oil income had a positive impact on growth when considering various oil ownership structures. However, the rate of privatization had a negative impact on economic progression.

Zhang (2001) conducted a study using data from 11 countries in Latin America and East Asia to explore the relationship between FDI and economic growth. The results revealed that in six countries, there was no long-term equilibrium connection between per capita GDP and FDI. However, a significant causal relationship was found in the long run. The study suggests that while FDI is expected to contribute to the growth of host countries, the pace at which it enhances growth depends on the economic conditions specific to each country. Furthermore, the positive impact of FDI on growth is amplified when the host country adopts trade openness and trade liberalization policies. Chowdhury and Mavrotas (2003) analyzed yearly data from 1969 to 2000 and used the Toda-Yamamoto causality approach to examine the relationship between FDI and GDP in Thailand, Malaysia, and Chile. The findings indicated a bi-directional causal link between FDI and GDP in Thailand and Malaysia. However, in the case of Chile, FDI did not directly cause changes in GDP. Similarly, Nair-Reichert and Weinhold (2001) employed panel data from 1971 to 1995 to investigate causality linkages in 24 countries. Despite significant regional variations, their study demonstrated that FDI generally had a substantial impact on economic growth. In a sample of 31 emerging countries spanning the years 1970 to 2000, Hansen and Rand (2004) assessed the causal relationship between FDI and per capita GDP. Their findings revealed a bidirectional causal connection between the FDI/GDP ratio and the level of GDP. The study concluded that FDI promotes economic growth, as it had a long-term effect on per capita GDP. However, no long-term effect was observed on the ratio of foreign direct investment to per capita GDP.

3. Methodology

3.1. Data sources

The study utilizes annual time series data from 1990 to 2022 for Kazakhstan, focusing on the dependent variable of GDP per capita as a measure of economic

growth and overall social welfare (Carril-Caccia et al., 2019; Khayat, 2017). The main independent variables are oil rents and foreign direct investment (FDI), which are essential in assessing the impact of natural resource wealth on the well-being of the population. Control variables include domestic investment, inflation, employment rates, export diversification, economic freedom, and governance indicators, as they have been identified in previous studies as relevant factors influencing economic growth (Abdel-Raman, 2007; Belloumi and Alshehry, 2018; Khayat, 2017; Mahmood and AlKhateeb, 2018; Rogmans and Ebbers, 2013).

Oil rents, which have been used in prior research (Khayat, 2017; Carril-Caccia et al., 2019), capture the revenue generated from oil resources. The aggregate governance indicator, ranging from −2.5 (bad) to 2.5 (good), and encompassing Voice and Accountability (VA), Political Stability and Absence of Violence (PSAV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC), is employed as a measure of good governance and institutional quality (Rogmans and Ebbers, 2013; Khayat, 2017). Domestic investment, economic freedom (graded from 0 to 100, indicating repression to freedom), and export diversification index (ranging from 0—high degree of diversification to 1—a low degree of diversification, indicating the degree of diversification) are also included in the analysis (Abdel-Raman, 2007; Belloumi and Alshehry, 2018; Heritage Foundation and Wall Street Journal). Furthermore, inflation and employment are considered due to the volatility in oil prices and the potential benefits of FDI to the host country, respectively. **Table 1** below depicts variables, measurement, and data sources.

Table 1. Variables and measurement.

Variable	Measurement	Source
Economic growth	GDP per capita PPP (constant 2017 international $)	World Bank database
Oil rents	Oil rents (% of GDP)	World Bank database
Employment	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	World Development Indicators
Domestic Investment	Gross fixed capital formation (% of GDP)	World Development Indicators
Foreign Direct Investment	Foreign direct investment, net inflows (% of GDP)	World Development Indicators
Inflation Governance Indicator	Inflation, consumer prices (annual %) proxied by overall index of Government effectiveness; political stability; voice and accountability, Corruption, and Rule of law.	World Development Indicators UNESCO database, Worldwide Governance Indicator (WGI)
Export diversification	Export diversification index	UNCTAD database
Economic Freedom	Index of economic freedom	The Heritage Foundation database

Source: Author's construction (2024).

The study acknowledges the limited availability of data for Kazakhstan prior to 1990, specifically regarding variables such as FDI, governance indicators, and the economic freedom index. Due to these data limitations, our sample size was

constrained to 33 observations (years). To meet the minimum requirement of 30 observations for time series analysis, we employed the vector autoregressive (VAR) framework and conducted unit root tests. Based on these frameworks, it was determined that including two lags in the analysis would yield optimal results. Additionally, to address concerns of spuriousness and bias in the findings, we applied first differencing to the series to examine whether they exhibited unit root characteristics. This was accomplished through the utilization of the Phillips-Perron (PP) test, which generates a residual variance that is robust in the presence of autocorrelation, structural breaks, and conditional heteroscedasticity in the stochastic component. This approach helps to account for potential biases in the results.

3.2. Methodology

Based on the literature on the impact of oil rents and FDI on economic growth, our model's functional specification is influenced by the studies conducted by Huang (2020), Aimer (2018), and Har et al. (2008). These studies examine the relationship between economic growth, natural resources, and FDI. The theoretical expectation is that natural resources have a positive impact on economic growth through the rents they generate, while FDI is considered a driver of growth in the modern era. The extended endogenous growth model that incorporates natural resource utilization, net FDI, and economic growth can be represented as follows:

$$Growth = f\ (Natural\ resourses\ rents, FDI, r) \tag{1}$$

In the equation above, economic growth is a function of natural resource rents, FDI and *r* which captures other factors including human capital, technology, capital, etc. By including control variables, the main econometric model in this study can be expressed as a linear equation:

$$GDP_t = \beta_0 + \beta_1 OILR_t + \beta_2 FDI_t + \beta_3 GI_t + \beta_4 INF_t + \beta_5 GFCF_t + \beta_6 EMP_t + \beta_7 XDIV_t + \beta_8 EF_t + \mu_t \tag{2}$$

where: GDP_t represent the Gross domestic product in period *t*; $OILR_t$ is the Oil rents in period *t*; FDI_t is the foreign direct investment in period *t*; INF_t represent the Inflation measuring consumer price index in period t; GI_t is the Governance indicator in period *t*; $GFCF_t$ is the gross fixed capital formation a measure of domestic investment in period *t*; EMP_t represents the employment levels in period *t*. $XDIV_t$ is the export diversification in period *t*, while EF_t represents the economic freedom in period *t*. $\beta_1 - \beta_8$ represents the parameter coefficients of the independent variables, β_0 is the intercept while μ_t is the stochastic term. Based on the theoretical assumptions, all the parameters $\beta_0 - \beta_8$ are positively related with economic growth. For example, a positive coefficient for FDI indicates a positive relationship between FDI and economic growth. An increase in FDI inflows would lead to enhanced economic growth in Kazakhstan. Conversely, if FDI is negatively correlated with economic growth, it would not contribute to GDP growth in the country. The hypothesis is stated as below:

Hypothesis 1:

H_0: $\beta = 0$ Null hypothesis.

H_0: $\beta \neq 1$ Alternative hypothesis.

The null hypothesis (H0: β = 0) suggests that there is no relationship between

FDI and gross domestic product (GDP) per capita, while the alternative hypothesis (H1: $\beta \neq 0$) indicates that there is a significant relationship. If the *t*-statistic value is less than the lower bound critical value (0.1), the null hypothesis is not rejected. On the other hand, if the *t*-statistic value exceeds the 10 percent critical value, the null hypothesis is rejected, and it can be concluded that there is a significant relationship between the independent variable and the dependent variable. It's important to note that we test the significance of each parameter coefficient as a hypothesis ($\beta_1 - \beta_8$).

To determine the integration sequence of the series, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests (Dickey and Fuller, 1981; Phillips and Perron, 1988) are employed to assess the stationarity of the variables. These tests determine whether the series has unit root characteristics at their level (I (0)), first difference (I (1)), or second difference (I (2)). If the series is integrated with the same order of integration (I (d)) other than I (0), the possibility of cointegration is examined. The PP test is used as an alternative to the ADF test since it calculates a residual variance robust to autocorrelation and allows for the presence of unidentified autocorrelation types, structural breaks, and conditional heteroscedasticity in the stochastic element. Based on the AR (1) process introduced by Dickey and Fuller (1979), the stationarity of the variables is evaluated using the following equation:

$$\Delta Y_t = (\varphi - 1)Y_{t-1} + \mu_t \tag{3}$$

where $\varphi - 1 = \gamma$ in this equation, and it turned to Equation (4)

$$\Delta Y_t = \rho Y_{t-1} + \mu_t \tag{4}$$

The Dickey-Fuller models require an adjustment procedure if the error term (μ_t) exhibits autocorrelation. To address this issue, Dickey and Fuller (1981) introduced lagged values of ΔY_t as explanatory variables in the model and developed the ADF unit root test. The ADF model takes the following form:

$$\Delta Y_t = \varphi Y_{t-1} + \textstyle\sum_{n=1}^{k} \alpha_i \Delta Y_{t-n} + \mu_t \qquad No\ intercept\ and\ trend$$

$$\Delta Y_t = \beta_0 + \varphi Y_{t-1} + \sum_{n=1}^{k} \beta_n \Delta Y_{t-n} + \mu_t \qquad intercept\ but\ no\ trend$$

$$\Delta Y_t = \beta_0 + \varphi_1 t + \rho Y_{t-1} + \sum_{n=1}^{k} \beta_n \Delta Y_{t-n} + \mu_t \qquad intercept\ and\ trend$$

where k captures the optimal lag length. The hypothesis for the ADF and PP tests is the presence of unit root traits in the series described as:

Hypothesis 2:

H_0: $\Theta = 0$, series has a unit root (non-stationary).

H_1: $\Theta < 0$, No of unit root (stationary).

When the calculated statistic exceeds the threshold value (or the probability is less than 0.10), the null hypothesis is rejected, indicating that the series is stationary. PP tests are particularly effective for trending series and use a non-parametric approach with Moving Average (MA) methodology. The PP test model is as follows:

$$\Delta Y_t = \beta_0 + \rho Y_{t-1} + \beta_1 (t - \frac{1W}{2}) + \mu_t \tag{5}$$

To identify long-term relationships, a cointegration test is conducted after

establishing the order of integration through the stationarity test. If the series has an integration order of I (1) or I (0), the cointegration tests proposed by Engle and Granger (1987) and Johansen (1988) cannot be used. To evaluate cointegration relationships between series that are stationary at different levels, Pesaran et al. (2001) developed the Bounds testing methodology. The ARDL Bounds test requires the dependent variable to be I(1) and the predictors to be either I(0) or I(1), but not I(2) or higher. The Bounds test examines the presence of cointegration using an unrestricted error correcting model, where the null hypothesis is the absence of cointegration. The Bounds test equation is represented by Equation (6).

Hypothesis 3:

$H_0: \beta_1 = \beta_2 = \beta_3 = 0$. Absence of Co-integration relationship.

$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$. Presence of Co-integration relationship.

$$\begin{aligned}\Delta LNGDP = {} & \alpha_0 + \alpha_1 LNGDP_{t-1} + \alpha_2 LNOILR_{t-1} + \alpha_3 LNFDI_{t-1} + \alpha_4 LNGI_{t-1} + \alpha_5 LNINF_{t-1} + \\ & \alpha_6 LNEMP_{t-1} + \alpha_7 LNGFCF_{t-1} + \alpha_8 LNXDIV_{t-1} + \alpha_9 LNEF_{t-1} + \sum_{n=1}^{k} \beta_{1n} \Delta LNGDP_{t-n} + \\ & \sum_{n=0}^{k} \beta_{2n} \Delta LNOILR_{t-n} + \sum_{n=0}^{k} \beta_{3n} \Delta LNFDI_{2t-n} + \sum_{n=0}^{k} \beta_{4n} \Delta LNGI_{3t-n} + \sum_{n=0}^{k} \beta_{5n} \Delta LNINF_{4t-n} + \\ & \sum_{n=0}^{k} \beta_{6n} \Delta LNGFCF_{6t-n} + \sum_{n=0}^{k} \beta_{7n} \Delta LNEMP_{7t-n} + \sum_{n=0}^{k} \beta_{8n} \Delta LNXDIV_{8t-n} + \sum_{n=0}^{k} \beta_{9n} \Delta LNEF_{9t-n} + \mu_t\end{aligned} \quad (6)$$

where α_0 is the constant term, $\alpha_1 - \alpha_7$ and $\beta_{1n} - \beta_{7n}$ are the coefficients, $\Delta LNGDP$ is the natural logarithm of GDP per capita, $LNOILR$ is the log of oil rents (percentage of GDP), $LNFDI$ is the natural logarithm of foreign direct investment inflows (percentage of GDP), $LNGI$ is the natural logarithm of Governance indicator, $LNINF$ is the natural logarithm of inflation (consumer price index, %), $LNGFCF$ is the natural logarithm of gross fixed capital formation (measure of domestic investment, % GDP) and $LNEMP$ is the natural logarithm of Employment (%), $LNXDIV$ is the natural logaithm of export diversification index, $LNEF$ is the natural logarith of the index of economic freedom, while μ_t is the white noise error term.

For long-term analysis, the Autoregressive Distributed Lags (ARDL) method is employed when the Bounds test is conducted as a cointegration test. To investigate the short- and long-term effects of oil rents, FDI, inflation, gross fixed capital formation, and employment rates on Kazakhstan's GDP per capita, the ARDL model proposed by Pesaran et al. (2001) is utilized. The level values of the series are employed to examine the long-run equilibrium, and the equation is described as follows.

$$\begin{aligned}\Delta LNGDP_t = {} & \alpha_0 + \sum_{n=1}^{k} \beta_{1n} \Delta LNGDP_{t-n} + \sum_{n=1}^{k} \beta_{2n} \Delta LNOILR_{2t-n} + \sum_{n=1}^{k} \beta_{3n} \Delta LNFDI_{3t-n} + \\ & \sum_{n=1}^{k} \beta_{4n} \Delta LNGI_{4t-n} + \sum_{n=1}^{k} \beta_{5n} \Delta LNINF_{5t-n} + \sum_{n=1}^{k} \beta_{6n} \Delta LNGFCF_{6t-n} + \sum_{n=1}^{k} \beta_{7n} \Delta LNEMP_{7t-n} + \\ & \sum_{n=0}^{k} \beta_{8n} \Delta LNXDIV_{8t-n} + \sum_{n=0}^{k} \beta_{9n} \Delta LNEF_{9t-n} + \mu_t\end{aligned} \quad (7)$$

When analyzing economic linkages, lagged values of the variables should also be considered as predictors since past experiences and behaviors influence present economic behavior. The ARDL approach is effective because it incorporates the past values of the series. However, short-term analysis is conducted using the first differences of the series and the error correction term (ECT_{t-1}) from the equation for short-term equilibrium.

$$\Delta LNGDP_t = \alpha_0 + \sum_{n=1}^{k} \beta_{1n} \Delta LNGDP_{t-n} + \sum_{n=1}^{k} \beta_{2n} \Delta LNOiLR_{2t-n} + \sum_{n=1}^{k} \beta_{3n} \Delta LNFDI_{3t-n} + \sum_{n=1}^{k} \beta_{4n} \Delta LNGI_{4t-n} + \sum_{n=1}^{k} \beta_{5n} \Delta LNINF_{5t-n} + \sum_{n=1}^{k} \beta_{6n} \Delta LNGFCF_{6t-n} + \sum_{n=1}^{k} \beta_{7n} \Delta LNEMP_{7t-n} + \sum_{n=0}^{k} \beta_{8n} \Delta LNXDIV_{8t-n} + \sum_{n=0}^{k} \beta_{9n} \Delta LNEF_{9t-n} + \delta ECT_{t-1} + \mu_t \quad (8)$$

where α_0 is the constant term, $\beta_{1n} - \beta_{7n}$ are the coefficients, δECT_{t-1} is the error correction term while μ_t is the stochastic term. The decision is made that the short-term variations between the series vanish, and the series converge to the long-run equilibria once more if the coefficient of ECT_{t-1} (δ) is negative and–significant, further demonstrating the validity of the long-term analysis.

Toda and Yamamoto's (1995) causality test determines causal relationships when the series has an integration order of I (1) or I (0). In this test, the level values of the series are used to determine the direction of causation, providing more information than the Granger causality test (when the series is non-stationary at the level). The Toda-Yamamoto causality test is applied when the variables have the same degree of integration and there is evidence of cointegration relationships among the variables. Regardless of whether the series is stationary, stationary around the trend, or cointegrated, the test by Toda and Yamamoto (1995) follows an asymptotic χ^2 distribution. The lag length (p) is determined using the VAR model. By adding the highest integration order of the series (s_{maxium}) to k, the Vector Autoregressive (VAR) model with ($k + s_{maxium}$) lags is estimated. The causal relationship between oil rents, FDI, institutional quality, inflation, employment, domestic investments, and GDP per capita, as described by Toda and Yamamoto (1995), is represented by Equations (9) and (10). The null hypothesis assumes the absence of causal association between X and Y. Constraints are imposed on the coefficients derived from s_{maxium}, and the significance of these restrictions is examined using the modified Wald (MWALD) test.

$$\begin{aligned} Yt = \beta 0 + n = 1k + smaxium\beta 1iYt - i + n \\ = 1k + smaxium\beta 2nXt - n + \mu t \end{aligned} \quad (9)$$

$$X_t = \alpha_0 + \sum_{n=1}^{k+s_{maxium}} \alpha_{1n} X_{t-n} + \sum_{n=1}^{k+s_{maxium}} \alpha_{2n} Y_{t-n} + v_t \quad (10)$$

4. Results and discussions

Table 2 provides descriptive statistics for the data used in the analysis, while **Figure 1** presents visualizations of various indicators, including GDP per capita (constant at 2017 international $), net inflows of FDI (as a percentage of GDP), oil rents, employment, inflation, gross fixed capital formation, export diversification, economic freedom, and institutional quality. The GDP per capita ranged from $8552 to $26,351, with an average of $17,410, indicating that Kazakhstan holds a prominent economic position in Central Asia. Following the recovery from the recession in 1996, Kazakhstan has demonstrated steady growth in real GDP, with an average annual rate of 5.0%, surpassing the OECD average of 2% during the same period (World Bank, 2023). The country has made significant improvements in its business environment and achieved commendable macroeconomic performance over the past two decades (OECD, 2021).

Net inflows of FDI as a percentage of GDP ranged from 0.19% to 13.01%, with

an average of 6.02%. It is evident that FDI net inflows constitute a relatively small portion of Kazakhstan's GDP. In 2019, FDI stocks accounted for 84.0% of GDP, representing a substantial increase of 28.9 percentage points since 2000. However, net inflows of FDI were only 2.1% of GDP in 2019, experiencing a decline from 7.5% over the same period (UNCTAD, 2023; World Bank, 2023). This decline in net inflows can be attributed to the irregular and significant nature of FDI in countries with capital-intensive extractive sectors. Notably, while the volume of both inflows and stocks relative to GDP has grown significantly since 2000, indicating a substantial expansion of inward investment in nominal terms, both measurements have experienced a noticeable decline.

Table 2. Descriptive statistics.

	GDP	OILR	FDI	EMP	EF	XDIV	GFCF	GI	INFL
Mean	17410.87	13.24404	6.020318	65.60033	56.38788	0.761390	23.51632	−0.738621	91.46630
Median	18112.78	13.57533	5.201659	66.29900	59.60000	0.766000	23.05402	−0.790331	8.042321
Maximum	26351.80	24.70221	13.01286	70.04800	71.10000	0.823000	30.43118	−0.318847	1877.372
Minimum	8552.452	2.252188	0.196995	61.62600	41.70000	0.570000	15.71860	−1.031396	5.097915
Std. Dev.	6513.714	6.268186	4.023077	2.329215	8.831682	0.045766	4.002650	0.200733	326.3098
Observations	33	33	33	33	33	33	33	33	33

Source: Author's Computation (2022). GDP—gross domestic product per capita; OILR—Oil rents; FDI—foreign direct investment; EMP—employment; EF—economic freedom; XDIV—export diversification; GFCF—gross fixed capital formation; GI—governance index; INFL—inflation.

Oil rents as a percentage of GDP varied from 2.3% to 24.7%, with an average of 13.2%. This highlights the significant role of oil rents (natural resource rents) in Kazakhstan's economy. The country's economic growth has been closely tied to global oil prices for over two decades. When oil prices increase, Kazakhstan's GDP tends to rise, and vice versa. This correlation can be attributed to the fact that most the country's net exports consist of hydrocarbons, making them a major contributor to annual growth. High oil prices have particularly helped mitigate the impact of extensive public spending during the global pandemic. In 2022, government revenues experienced a 70% growth, largely influenced by international oil prices. From 2021 to 2022, oil revenues saw a significant increase of 177%, compared to a 27% increase in non-oil revenues, despite only a modest rise in export volumes (IMF, 2022).

Further, gross fixed capital formation, which measures domestic investment, ranged from 15.7% to 30.4% of GDP, with an average of 23.5%. This indicates the relative importance of domestic investment in Kazakhstan's economy. The economic freedom index ranged from 41.7% to 71.1%, with an average of 56.4%. This suggests that Kazakhstan enjoys favorable levels of trade freedom, a manageable tax burden, effective judiciary, and an open economy. These factors imply the potential for increased investment, rapid growth, and higher income levels in the long run. Conversely, the governance index (GI) has an average value of -0.738, indicating poor governance and weak institutional quality in the country.

The export diversification index ranged from 0.57 to 0.823, with an average of 0.76. This confirms that Kazakhstan heavily relies on natural resource rents, including oil rents, as the primary driver of its economy and lacks diversification, which hampers

the region's growth. In 2020, fuel exports accounted for half of the total value of Kazakhstan's exports, underscoring their significant contribution to the country's GDP growth (Observatory of Economic Complexity, 2023). If we broaden the definition of the extractive sector to include fuels, material processing, and crude materials, it becomes evident that the extractive sector represented 76% of total exports and 29% of GDP (OECD, 2020). However, Kazakhstan faces the challenge of limited positive and sustainable linkages between the extractive sector and the broader economy in terms of enhancing productivity and competitiveness. In fact, these limited linkages may hinder the growth and innovation of firms in non-oil sectors, potentially leading to the "Dutch disease" phenomenon.

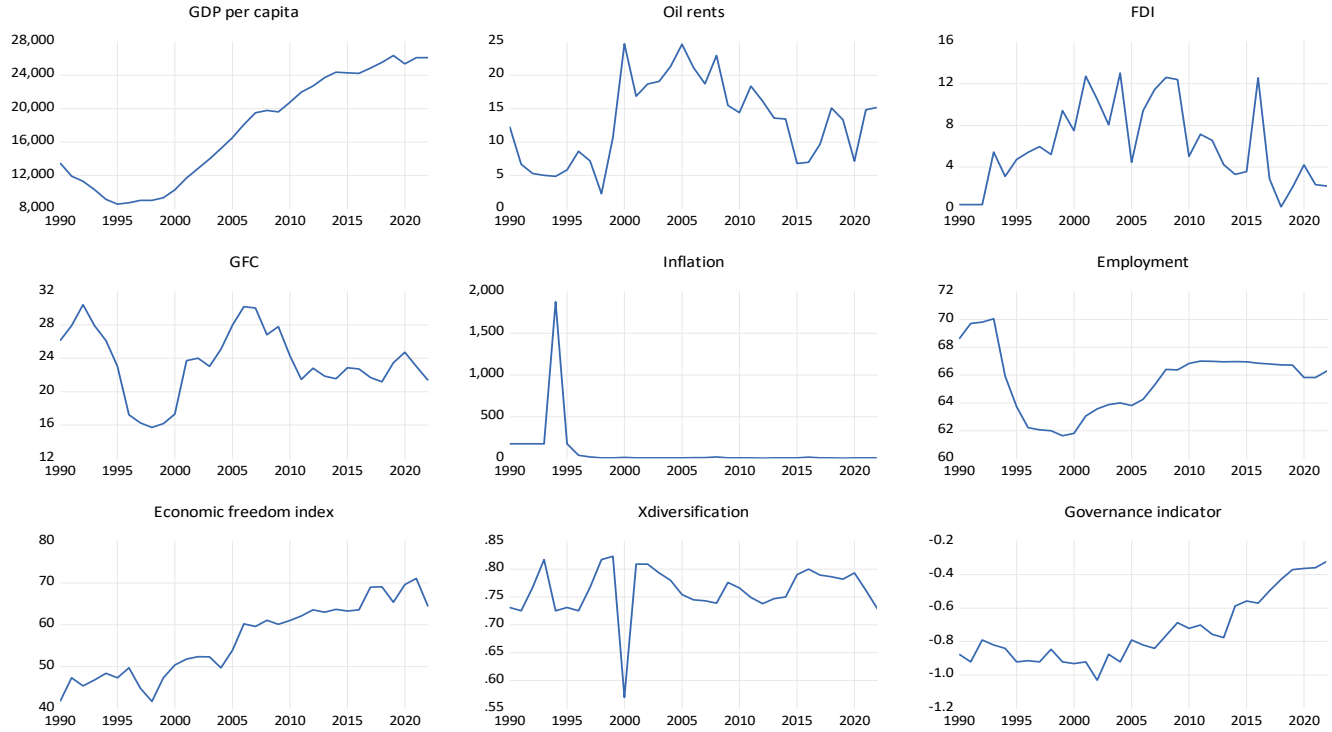

Figure 1. Trends of GDP per capita, Oil rents, FDI and the control variables in Kazakhstan.
Source: Author's computation (2022).

Figure 1 visually presents the descriptives, showcasing the trend of GDP per capita growth over time and highlighting the volatile nature of oil rents and FDI in Kazakhstan. From 2000 to 2013, the country experienced its highest revenues from oil production. During the early 2000s, the establishment of KazMunayGas (KMG), the national oil and gas firm, in 2002, attracted significant foreign investment, particularly from the US and the Netherlands. These investments played a pivotal role in the development of oil production in Kazakhstan, leading to an increase in oil rents (Kazakhstan Oil and Gas Report, 2014). In 2010, the Kazakh government reduced KMG's regulatory authority in the industry to allow the company to have a more active role in the commercial sector. Since then, the government has ensured that KMG maintains majority ownership in all future initiatives and joint ventures. Given the significance of the oil and gas sector to Kazakhstan's economy, the state's involvement in this sector has grown over time. The country's primary hydrocarbon output comes from three main fields: Tengiz, Karachaganak, and Kashagan, which are being developed by established consortia with the support of multinational vertically

integrated corporations. The National Company KazMunayGas, as a vertically integrated company, represents the state's interests in the sector and oversees 26% of Kazakhstan's total proven oil and gas reserves (Kazakhstan Oil and Gas Tax Guide, 2021). Currently, KMG is responsible for 27% of all oil and gas condensate production and 14% of gas production in Kazakhstan, and it holds 20% of the nation's overall proved oil and gas deposits. Foreign direct investment is crucial for the sustained growth of the oil and gas sector, and since 1998, the annual volume of FDI in Kazakhstan has been steadily increasing. A significant portion of these investments has been directed towards the oil and gas sector compared to the overall volume of FDI (Kazakhstan Oil and Gas Report, 2021).

The data is initially tested for stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests in both their original level and first difference forms. The results from **Table 3** indicate that all variables, except for FDI, exhibit a unit root at the level, suggesting that FDI is integrated of order I (0). However, when the variables are differenced once, they become stationary. This implies that the dependent variable, GDP per capita, is integrated of order I (1), while the independent variables consist of a combination of I (1) and I (0) variables. This justifies the use of the Bounds method of cointegration to examine the long-term relationships between the variables.

Table 3. Unit root test.

	ADF-Statistic	***p*-value**	**Stationarity level**	**Series**
GDP	−2.743	0.0784	First difference	I (1)
OIL_R	−6.222	0.0000	First difference	I (1)
FDI	−3.269	0.0250	Level	I (0)
GFCF	−3.843	0.0064	First difference	I (1)
EMP	−3.292	0.0240	First difference	I (1)
INF	−5.787	0.0000	First difference	I (1)
XDIV	−6.518	0.0000	First difference	I (1)
EF	−6.030	0.0000	First difference	I (1)
GI	−7.479	0.0000	First difference	I (1)
	PP-Statistic	*p*-value		
GDP	−2.723	0.0816	First difference	I (1)
OIL_R	−9.556	0.0000	First difference	I (1)
FDI	−3.228	0.0274	Level	I (0)
GFCF	−3.812	0.0069	First difference	I (1)
EMP	−3.292	0.0240	First difference	I (1)
INF	−5.824	0.0000	First difference	I (1)
XDIV	−7.612	0.0000	First difference	I (1)
EFI	−7.072	0.0000	First difference	I (1)
GI	7.536	0.0000	First difference	I (1)

Source: Author's Computation (2023). GDP—gross domestic product per capita; OILR—Oil rents; FDI—foreign direct investment; EMP—employment; EF—economic freedom; XDIV—export diversification; GFCF—gross fixed capital formation; GI—governance index; INFL—inflation.

Next, vector autoregressive framework is employed to determine the lag order. The study identifies lag 2 at the optimum lag using the likelihood ratio (LR) criteria (**Table 4**). This is chosen out of parsimony as it is the lowest lag indicated.

Table 4. Lag length selection.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	127.1143	NA	3.97×10^{-15}	−7.620275	−7.203956	−7.484565
1	355.4240	309.3228	3.67×10^{-19}	−17.12413	−12.96094	−15.76703
2	514.5733	123.2124*	1.17×10^{-20}*	−22.16602*	−14.25596*	−19.58754*

Source: Own Computation (2024). LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion.

Table 5. Bounds co-integration.

F-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	Value	Signif.	I (0)	I (1)
			Asymptotic: $n = 1000$	
F-statistic	23.88229	10%	1.95	3.06
K	8	5%	2.32	3.5
		2.5%	2.6	3.84
		1%	2.96	4.26
Actual Sample Size	32		Finite Sample: $n = 35$	
		10%	2.3	3.606
		5%	2.753	4.209
		1%	3.841	5.686
			Finite Sample: $n = 30$	
		10%	2.384	3.728
		5%	2.875	4.445
		1%	4.104	6.151

Source: Author's computation (2024).

Given that the integration order of the data is I (1) for the dependent variable and a mix of I (1) and I (0) for the independent variables, we proceed to the next stage of analyzing co-integration (Pesaran et al., 2001). We employ the Bounds cointegration test to determine whether there is a long-term equilibrium among the different variables. The null hypothesis, stating that there is no cointegration relationship, can be rejected if the F-statistic exceeds the upper and lower bound critical values. This would indicate the presence of co-integration. Conversely, if the F-statistic does not surpass these critical values, the null hypothesis is accepted, suggesting the absence of co-integration. In our analysis, we consider the number of predictor factors as 'k,' and we interpret the critical values using a finite sample size of 'n = 35,' which is more suitable for our actual sample. The results, as presented in **Table 5**, demonstrate that we reject the null hypothesis of no cointegration. This is because the resulting F-statistic (23.883) is greater than both the upper bound (5.69) and lower bound (3.84) at a significance level of 1%. This signifies that there is long run relationship between per capita GDP and main independent variables of oil rents and FDI, and the control

variables of domestic investments, inflation, employment, export diversification, governance index, and economic freedom.

Table 6. Toda-Yamamoto causality.

Null Hypothesis	Chi-sq	df	Prob.
OILR does not homogenously cause GDP.	4.094870	2	0.0284
GDP does not homogenously cause OILR.	1.371685	2	0.5037
FDI does not homogenously cause GDP.	6.469687	2	0.0394
GDP does not homogenously cause FDI.	2.184553	2	0.3355
GFCF does not homogenously cause GDP.	2.326194	2	0.3125
GDP does not homogenously cause GFCF.	2.442082	2	0.2949
INF does not homogenously cause GDP.	6.132285	2	0.0466
GDP does not homogenously cause INF.	0.507828		0.7758
XDIV does not homogenously cause GDP.	7.185079	2	0.0275
GDP does not homogenously cause XDIV.	4.855968	2	0.0881
EMP does not homogenously cause GDP.	4.501940	2	0.1053
GDP does not homogenously cause EMP.	0.651023	2	0.7222
EF does not homogenously cause GDP.	6.827247	2	0.0475
GDP does not homogenously cause EF.	3.864743	2	0.1448
Governance does not homogenously cause GDP.	3.524299	2	0.1717
GDP does not homogenously cause Governance.	0.517757	2	0.7720
FDI does not homogenously cause OILR.	0.320309	2	0.8520
OILR does not homogenously cause FDI.	4.699570	2	0.0084
GFCF does not homogenously cause OILR.	5.367006	2	0.0683
OILR does not homogenously cause GFCF.	8.91073	2	0.0104
XDIV does not homogenously cause OILR.	6.802064	2	0.0324
OILR does not homogenously cause XDIV.	0.334836	2	0.8374
EF does not homogenously cause OILR.	9.605840	2	0.0082
OILR does not homogenously cause EF.	2.920128	2	0.2322
GFCF does not homogenously cause FDI.	0.436229	2	0.8040
FDI does not homogenously cause GFCF.	0.177161	2	0.9152
EF does not homogenously cause GFCF.	4.931060	2	0.0850
GFCF does not homogenously cause EF.	4.964209	2	0.0836
OILR does not homogenously cause Governance.	4.739604	2	0.1033
Governance does not homogenously cause OILR.	10.49103	2	0.0019

Source: Author's Computation (2024). GDP—gross domestic product per capita; OILR—Oil rents; FDI—foreign direct investment; EMP—employment; EF—economic freedom; XDIV—export diversification; GFCF—gross fixed capital formation; GI—governance index; INFL—inflation.

After establishing the cointegrating relationship between the variables, we proceed to estimate the Autoregressive Distributed Lag (ARDL) error correction model for both the long-run and short-run equilibria using Equations (6) and (7). The error correction model helps us understand the influence of equilibrium behavior on short-term dynamics. Equilibrium relationships have implications for short-term behavior as one or more series adjust to restore equilibrium. Based on the results (**Table 6**), the significance of the error correction term ECM (−1) or (CointEq (−1) *) is observed. The statistical significance is observed at the 1% level (0.000 < 0.001), with an expected negative signal (−0.16794). This confirms the existence of a long-term equilibrium relationship in the model. The value of the error correction factor (−0.16794) indicates that GDP per capita adjusts to its equilibrium value in each period

by approximately 17% of the remaining imbalance or deviation from the equilibrium in the previous period ($t-1$). In other words, when there are short-term deviations in oil rents values from their long-term equilibrium, around 17% of this deviation is corrected in the following period (t).

Likewise, the error correction reflects the speed of adjustment towards equilibrium. In this context, GDP per capita takes approximately one year to reach its equilibrium value after the impact of a shock in the system caused by a change in the independent variable (oil rents). Principally, the volatile nature of oil prices leads to temporary price shocks in the market, which disrupt the global supply chain. This presents a challenge associated with excessive reliance on natural resource rents, particularly for oil-exporting countries like Kazakhstan. Higher oil prices lead to a decrease in the purchasing power of local currencies, and vice versa, which in turn affects exports, inflation, and domestic investment by reducing aggregate demand in the economy. The decline in these factors indicates a short-term decline in GDP per capita, however, these results suggest that the system returns to long-run equilibrium as the effects of the shocks dissipate over time.

The results demonstrate a strong fit of the model, indicated by the adjusted R-square value of 0.9312. Additionally, the overall model is statistically significant, as evidenced by the F-statistic value of 46.0964 (p-value 0.000 < 0.1). This suggests that approximately 93.12% of the variation in GDP per capita in Kazakhstan can be explained by the variables included in the model, all else equal. To analyze the individual contributions of each variable to GDP per capita and test the hypotheses presented in Equation (2), such as the resource curse or blessing, we examine the coefficient parameters in both the long run and short run.

In the long run model (**Table 7**), we find that oil rents, economic freedom, and inflation have significant effects on GDP per capita. Specifically, a 1% increase in oil rents as a percentage of GDP leads to a 4.1% increase in GDP per capita, ceteris paribus. This emphasizes the substantial contribution of oil rents (natural resource rents) to the country's economy. These findings align with previous studies by Redmond and Nasir (2020) and Olayungbo (2019), which also highlight a positive and significant impact of natural resource abundance on economic growth. Alike, a 1% change in economic freedom results in a 98.7% increase in GDP per capita, ceteris paribus. Conversely, a unit change in inflation, influenced by oil price volatility, leads to a 28.5% decrease in GDP per capita, holding all else constant. In general, the positive significant effects indicates that natural resource extraction and export continue to be the main drivers of growth in Kazakhstan.

Table 7. ARDL model results.

ARDL Long run estimation				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LNOILR	0.041708	0.148087	0.281644	0.0014
LNFDI	−0.036475	0.039377	−0.926290	0.3665
LNEFI	0.987672	0.520837	3.816302	0.0013
LNEMP	−0.744805	2.175129	−0.342419	0.7360
LNGFCF	0.591068	0.394359	1.498805	0.1513

Table 7. (*Continued*).

ARDL Long run estimation				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LNINF	−0.285591	0.108157	−2.640528	0.0166
LNXD	−1.228485	1.099961	−1.116844	0.2787
GOVERNANCE	−0.553566	0.491673	−1.125882	0.2750
ARDL ECM Regression for Short run analysis				
C	0.754558	0.054867	13.75240	0.0000
D(LNOILR)	0.031193	0.007371	4.231644	0.0010
D(LNFDI)	0.186727	0.101927	1.831979	0.1043
D(LNFDI (−1))	−0.490873	0.140353	−3.497419	0.0081
D(LNEMP)	0.537509	0.311931	1.723169	0.1085
D(LNEMP (−1))	−1.154305	0.320099	−3.606090	0.0032
D(LNGFCF)	0.146095	0.290352	2.028802	0.1617
D(LNEF)	0.090702	0.061413	1.476910	0.0135
D(LNEF (−1))	0.247103	0.057127	4.325490	0.0008
D(LNINF)	−0.007708	0.005455	−1.412941	0.0182
D(LNXD)	0.190015	0.099961	−1.116844	0.0217
D(LNXD (−1))	0.227185	0.099961	−1.116844	0.0174
D(GOVERNANCE)	−0.060479	0.045472	−1.330032	0.2064
D(GOVERNANCE (−1))	−0.103611	0.044433	−2.331860	0.0364
ECT (−1)/CointEq (−1) *	−0.16794	0.001272	−13.20499	0.0000
R-squared	0.951820	Mean dependent var		0.025279
Adjusted R-squared	0.931172	S.D. dependent var		0.057168
S.E. of regression	0.014998	Akaike info criterion		−5.306074
Sum squared resid	0.004724	Schwarz criterion		−4.843498
Log likelihood	92.24415	Hannan-Quinn criter.		−5.155286
F-statistic	46.09640	Durbin-Watson stat		2.516052
Prob(F-statistic)	0.000000			

Source: Author's computation (2024) * *p*-value incompatible with t-Bounds distribution, LN—Logarithm, D—First difference. GDP—gross domestic product per capita; OILR—Oil rents; FDI—foreign direct investment; EMP—employment; EF—economic freedom; XDIV—export diversification; GFCF—gross fixed capital formation; GI –governance index; INFL -inflation.

Kazakhstan's GDP growth has been closely linked to global oil prices for over two decades. When oil prices increase, the country's GDP also rises, and vice versa. This highlights the significant role of net exports, with hydrocarbons comprising a majority share, as a key driver of GDP growth. Notably, during the global pandemic, substantial public spending was partially offset by unusually high oil prices. In 2022, government revenues increased by 70%, primarily due to the surge in international oil prices. During 2021-2022, oil revenues saw a growth of 177% compared to 27% for non-oil revenues, while export volumes experienced only a minor increase.

The findings indicate that employment has an insignificant impact on GDP per capita in Kazakhstan, both in the short run and long run. This suggests that the expected economic logic of structural change, which involves reallocating labor and

capital from lower productive activities to higher ones, has not been effectively realized in Kazakhstan. Around 81.5% of the population is employed in sectors where productivity is either at or below the national average. However, due to the prevalence of economic informality, particularly in low productivity sectors like trade and agriculture, the actual number of workers in lower productivity activities may be higher than official data suggests. A major challenge faced by Kazakhstan is that the national average productivity is only 28% of the average productivity in the three most productive sectors: mining, real estate services, and manufacturing. Consequently, there is a significant issue regarding the inclusivity of growth, as these highly productive sectors contribute very little to overall employment, accounting for only 11.7% combined. Furthermore, the sustainability of these sectors is uncertain due to their vulnerability to short-term price shocks and exposure to the long-term effects of global decarbonization.

The overall productivity situation at the national level masks significant challenges related to sustainability and inclusivity, affecting various sectors, firms, genders, and regions. Approximately 41% of the population is employed in sectors where the average productivity is less than half of the national average. For instance, the education sector employs 12.7% of the workforce, while the public administration sector employs 5.5%. However, the value added per worker in these sectors is significantly below the national average, with 2.9 million KZT and 3.2 million KZT respectively, compared to the national average of 9 million KZT. The agricultural sector still accounts for 13.4% of total employment, but the value added per worker in this sector averages KZT 3.6 million (around USD 7750).

Shifting our attention to the short run model, the constant term, which represents other random factors affecting GDP per capita, is statistically significant (*p*-value 0.000 < 0.1). It is worth noting that, like the long run results, oil rents have a positive and significant impact on GDP per capita in the short run (0.031193, *p*-value 0.001 < 0.1). However, the effect is more pronounced in the long run, indicated by the larger coefficient. This positive influence of oil rents on GDP per capita challenges the resource curse hypothesis and suggests a resource blessing instead. Nevertheless, the contribution of oil rents to economic growth is not as substantial as anticipated in countries rich in natural resources. Nonetheless, the extractive industry continues to play a significant role in both growth and budgetary resilience, enabling the government to accumulate sizable reserves.

One of the major challenges for the government is effectively managing the volatility that arises from excessive reliance on resource rents, which affects macroeconomic stability, such as exchange rate volatility, and creates difficulties in establishing a stable and predictable business environment. Moreover, the government must confront the reality that, although it remains a competitive exporter of hydrocarbons, the global shift towards decarbonization will reduce its competitiveness, with an expected 50% decline in global demand for hydrocarbons by 2050 (IEA, 2022).

Over the past few decades, Kazakhstan's export basket has become more concentrated, with minerals and metal products accounting for over 80% of all exports in 2022. Despite the country's efforts to diversify its product range, its export portfolio remains relatively concentrated in terms of value. Equipment and other capital items with higher value added constitute only 1% of the nation's exports, while they make

up the largest portion of its imports (27.3%). In other words, the profits generated from natural resources play a significant role in financing Kazakhstan's sustained growth and development.

Furthermore, the findings suggest that gross capital formation, which measures domestic investments, has no significant impact on Kazakhstan's economy, despite accounting for an average of 23.5% of GDP. It is argued that since Kazakhstan joined the World Trade Organization in 2015, external trade has become a major driver of growth and domestic output. In 2021, trade made up 58% of Kazakhstan's GDP, compared to the OECD average of 28.2%, while exports of goods and services constituted 33.6% of GDP (World Bank, 2023). In addition, in the short run, we observe a positive and significant effect of economic freedom (0.091) and export diversification (0.190). Although Kazakhstan has made efforts to diversify its economy, the impact on the composition of its output has been limited. This is evident in the concentration of Kazakhstan's export basket. While the country has expanded the range of products it exports, surpassing other Central Asian countries and approaching the OECD average in terms of the number of different export products from 2000 to 2019, there has been little change in the concentration of its exports in terms of volume.

On the other hand, the lagged governance indicator, which reflects good governance and institutional quality, has a significant but inverse (−0.103) effect on GDP per capita. This indicates that the interaction between diversification, governance, and oil rents plays a crucial role in promoting sustainable economic growth. Based on these findings, it can be concluded that diversification, good governance, economic freedom, and oil rents collectively provide a strong foundation for the sustainable growth of Kazakhstan as an oil-exporting nation. However, caution must be exercised in drawing definitive conclusions regarding the resource curse phenomenon in oil-rich Kazakhstan, as our study does not extend to examining the main symptoms associated with the resource curse.

The impact of foreign direct investment on GDP per capita in Kazakhstan is not statistically significant in both the long and short run, contrary to expectations and in contradiction to the FDI internationalization theory. Despite oil rents, which attracts FDI, contributing only 13% to GDP, Kazakhstan heavily relies on the energy sector, including gas. Even with having relatively lenient investment regulations, Kazakhstan continues to experience low levels of FDI. In 2020, FDI inflows amounted to only 2% of GDP, indicating a continuous decline relative to GDP since the Global Financial Crisis in September 2008. The mining and quarrying sector received the largest portion of FDI in 2020, followed by manufacturing and wholesale trade, which also attracted significant investment. The Netherlands held the largest share of investment in 2022 at 29.75%, followed by the United States at 18.23%, Switzerland at 9.86%, and Belgium at 5.57%. China accounted for 5.11% of the total investment inflows (National Statistical Office of Kazakhstan, 2023). Despite these figures, it is important to note that overall FDI levels remain relatively small in Kazakhstan when considering its financing needs.

As a result, net inflows of FDI in these sectors may not lead to widespread economic development. Instead, they can exacerbate the resource curse phenomenon, characterized by excessive dependence on a single sector, resulting in volatility,

inequality, and limited diversification. This is evident in the lack of a significant effect of FDI net inflows in improving GDP per capita beyond the resource sector in Kazakhstan. Alike, FDI net inflows, particularly in resource-rich countries like Kazakhstan, lead to currency appreciation, which makes other sectors, such as manufacturing or agriculture, less competitive in the global market. Consequently, these sectors may suffer, leading to a decline in their contribution to GDP and potentially negative impacts on GDP per capita. Also, FDI net inflows in Kazakhstan have not generated sufficient linkages and spillover effects within the domestic economy. If FDI is primarily directed towards isolated sectors or enclaves that lack significant connections with the rest of the economy, as is the case in Kazakhstan, the positive effects on GDP per capita may be limited. In such situations, the benefits of FDI may not spread widely throughout the economy, affecting overall growth and development. Moreover, Kazakhstan's governance index indicates a lack of effective institutions, transparent governance, and investor-friendly regulations. Weak institutions and regulatory barriers can impede the efficient allocation of resources, restrict productivity gains, and dampen the positive impact of FDI on GDP per capita.

We proceed with an analysis of the causal pathways to determine whether there is a causal nexus between the variables, which supports the resource curse hypothesis, the crowding out effect of domestic investment by foreign direct investment, and the influence of diversification, governance, and economic freedom, combined with oil rents, on maintaining robust economic growth in Kazakhstan. To investigate the direction of causality between the variables, we utilize the Toda-Yamamoto causality approach. The results presented in **Table 6** indicate that the probability of the null hypothesis is less than 0.1 at a significance level of 10%. Therefore, we accept the alternative hypothesis and reject the null hypothesis. This suggests a unidirectional causal relationship between the variables, particularly from oil rents towards economic growth. As the volume of oil revenues increases in Kazakhstan, it leads to a higher economic growth rate. These findings support the outcomes of the model, which show a significant effect of oil rents on GDP per capita in Kazakhstan, thus refuting the existence of the resource curse. Although the model shows an insignificant effect of FDI on economic growth in Kazakhstan, we confirm the presence of a causal relationship from FDI to GDP per capita. This finding aligns with existing literature and the theoretical foundations that emphasize the positive benefits of FDI for host countries. Likewise, there is a causal link between oil rents and FDI in Kazakhstan, supporting the assumption that natural resource endowments such as oil, gas, minerals, forests, and waterfalls can be significant attractions for international investments in resource-rich countries like Kazakhstan.

As a result of the unstable nature of natural resource rents, which can trigger exchange rate and inflation shocks, we discover a one-way causal relationship from inflation to economic growth. This finding supports our previous findings that indicate a negative but significant impact of inflation on GDP per capita in Kazakhstan. Extensive resource extraction activities can lead to higher real wages and appreciation of the real exchange rate, which hampers competitiveness and production in non-resource sectors, thereby resulting in decreased economic growth. We also identify a unidirectional causality from export diversification and economic freedom to GDP per capita, while governance does not have a causal effect on per capita GDP. Additionally,

we observe a one-way causal relationship from export diversification, economic freedom, and governance to oil rents. This supports the idea that a combination of diversification, good governance, and economic freedom plays a crucial role in sustaining economic growth in Kazakhstan. The relationship between oil rents and gross fixed capital formation suggests that oil revenues can be reinvested in various sectors of the economy, such as agriculture, tourism, or manufacturing, like the practices observed in Norway and Botswana, to mitigate the Dutch disease syndrome. This reinvestment can be facilitated by economic freedom, which promotes export diversification. Furthermore, we find a bidirectional causality between economic freedom and gross fixed capital formation in Kazakhstan, indicating that economic freedom enhances domestic investment in the country. We can rule out the crowding out effect of FDI on domestic investment, as we observe a neutral causality between FDI and gross fixed capital formation. This finding is supported by the earlier results that show the negligible contribution of FDI (**Table 1**) and the insignificant impact of FDI and gross fixed capital formation on GDP per capita (**Table 7**).

The results confirm that foreign direct investment in Kazakhstan is primarily driven by the country's availability of natural resources and its comparative advantage in those resources. This attracts multinational companies from countries such as the United States, Russia, and more recently, China. Kazakhstan's lack of substantial capital for resource extraction makes it an appealing destination for foreign investment. The causality between the diversification index and oil rents suggests that sustained economic growth in Kazakhstan could be influenced by diversification. However, we observed that the diversification index is relatively high in Kazakhstan, indicating limited diversification as higher oil rents correspond to lower diversification scores. The presence of significant oil rents tends to encourage a focus on resource extraction rather than engaging in productive activities, hindering diversification efforts. This is reflected in the insignificant long-term effect of export diversification on economic growth.

Furthermore, heavy reliance on oil rents in resource-rich countries often leads to weak governance frameworks. In Kazakhstan, the average governance index is −0.739, indicating poor governance. This lack of effective governance further hampers diversification efforts in the economy. It is important to note that the combination of economic freedom, export diversification, and governance positively influences oil rents (with a unidirectional causality), contributing to long-term sustained growth. A higher governance index leads to higher diversification (as a low diversification score indicates high diversification), underscoring the significance of governance in promoting diversification. The combined effect of governance and oil rents can be effective in fostering diversification and mitigating the negative impact of oil rents on diversification. This emphasizes the importance of improving the governance situation in Kazakhstan, as it would enable oil rents to serve as a crucial source of funding for various sectors and facilitate economic diversification.

The governance indicator comprises of voice and accountability, political stability, and government effectiveness. Voice and accountability ensure the pursuit of the public interest and prevent the dissipation of resource rents by monitoring those in positions of authority and holding them accountable. This, in turn, facilitates the initiation and guidance of economic diversification. Political stability and the absence

of violence encourage politicians to utilize oil rents efficiently, providing a foundation for economic diversification and creating a favorable environment in which non-oil sectors can thrive. Government effectiveness enables Kazakhstan to judiciously utilize oil rents in a manner that significantly contributes to economic diversification. It enhances the capacity of civil servants to deliver high-quality public services and mandates the implementation of sound oil management policies aligned with diversification requirements.

To sum up, improving Kazakhstan's governance capabilities is the pathway to overcoming the resource curse and the Dutch disease. Governance acts as a mediator that reconciles the twin goals of diversifying economic activity and deriving benefits from oil endowments. By doing so, it transforms oil wealth into a boon. Simply put, strengthening good governance offers oil-rich countries like Kazakhstan greater opportunities for economic diversification and provides them with increased resilience against the resource trap, this, in turn, enables the generation of robust and sustainable economic growth.

5. Diagnostics

We conducted diagnostic tests to ensure the stability of our model results and to verify that our findings are not influenced by econometric issues such as autocorrelation and heteroscedasticity. The results of the diagnostic checks (refer to the Appendix) indicate that our model is free from serial correlation (p-value 0.5311 > 0.1) and heteroscedasticity (p-value 0.9979 > 0.1). Moreover, at a 10% significance level, the series is found to follow a normal distribution (p-value 0.5951 > 0.1). To assess the stability of the model, we utilized the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests (Pesaran and Pesaran, 1997). The CUSUM test detects systematic errors in the parameter estimates, while the CUSUMSQ test identifies any abrupt changes in the model's stability. The plots generated from these tests fall within the acceptable range at a 95% confidence level. Based on the results of these diagnostic tests, we can conclude that our findings are reliable. There is sufficient evidence to support a significant impact of oil rents on economic growth, while foreign direct investment (FDI) net inflows exhibit an insignificant effect, despite the existence of a causal relationship between FDI and economic growth.

6. Conclusion

This study assessed the impact of oil rents and FDI on economic growth in resource-rich Kazakhstan. Control variables, including inflation, employment, domestic investment, export diversification, economic freedom, and governance indicators, were considered. The study utilized the Autoregressive Distributed Lag (ARDL) Bounds Co-integration approach and the Toda-Yamamoto method with data from 1990 to 2022. The results showed a positive and significant impact of oil rents on economic growth, challenging the resource curse hypothesis but affirming the macroeconomic theory that resource revenues stimulate economic growth. However, Kazakhstan faces the challenge of limited positive and sustainable linkages between the extractive sector and the broader economy in terms of enhancing productivity and

competitiveness. In fact, such limited linkages may hinder the growth and innovation of firms in non-oil sectors, potentially leading to "Dutch Disease." Therefore, it is important to exercise caution in drawing conclusive remarks that completely refute the resource curse in resource-rich Kazakhstan, as the contribution of oil rents to economic growth may not be as substantial as expected in oil-rich nations. Therefore, while affirming the possibility of a resource curse diagnosis, we remain cautious in making definitive conclusions.

In stark contrast, the result show that the impact of FDI on Kazakhstan's economic growth is insignificant in both the short run and long run, despite confirming a causal relationship. These results contradict FDI internationalization theory and align with the idea that poor governance undermines institutions and regulatory enforcement. As a result, multinational companies repatriate the proceeds from resource extractions, and they exert dominance over host countries through diplomatic relationships. Kazakhstan heavily relies on the energy sector, particularly oil and gas, however, FDI net inflows in these sectors do not lead to broad-based economic development. Instead, FDI in the energy sector exacerbates the resource curse, leading to volatility, inequality, and limited diversification and this is evident in the insignificant effect of FDI net inflows. FDI inflows also cause currency appreciation, making other sectors less competitive and resulting in a trade deficit. The currency appreciation makes sectors like manufacturing or agriculture, less competitive in the global market, as domestic goods become more expensive, resulting in a trade deficit.

The study found that economic freedom and export diversification have a significant impact on economic growth in both the short run and long run. There is also a causal relationship between export diversification, economic freedom, governance, oil rents, and economic growth. This emphasizes the importance of diversification, economic freedom, governance, and oil rents in promoting sustainable economic growth. Undoubtedly, intensifying efforts to implement trade facilitation, expand the region's export portfolio, foster a highly competitive and dynamic business environment, and enhance the private sector's capacity to generate employment will provide greater protection against the resource curse. Improving governance in Kazakhstan is crucial for utilizing oil rents to fund various sectors and facilitate economic diversification. Good governance acts as a mediator, allowing for the dual objectives of diversification and benefiting from oil resources. By establishing good governance, Kazakhstan can transform oil wealth into a boon, enabling economic diversification and resilience against the resource trap, leading to robust and sustainable economic growth. However, resolving long-standing governance issues in resource-rich nations is a gradual process that cannot be resolved overnight. Lastly, it is of utmost importance to recognize the significance of embracing change and making vigorous efforts to enhance the quality and effectiveness of education. Prioritizing education equips future generations with the knowledge to protect their rights and shield their economies from potential detrimental shocks.

7. Policy recommendations

Based on the findings of this study, the following recommendations are proposed:

i. Leveraging oil rents: The government should reinvest oil revenues to diversify

the economy, hence, reducing dependency on oil and energy sector, and fostering long-term stability; it should ensure effective management and utilization of oil rents, with the aim of promoting sustainable economic growth.

ii. Promoting structural change and employment: Initiatives to develop and facilitate structural change and the reallocation of labor and capital from less productive activities to more productive ones. Furthermore, the government should encourage investments and initiatives that generate employment opportunities in sectors with higher productivity and value-added.

iii. Enhancing gross capital formation: The government should establish special economic zones in non-energy sectors to support and incentivize the development of non-oil industries. These zones can promote innovation, enhance competitiveness in international markets, attract both domestic and foreign investments, and encourage the productive use of capital and tackle barriers that impede the effective impact of domestic investments.

iv. Strengthening economic freedom: Prioritize efforts to reduce bureaucratic obstacles, promote market competition, and create a business-friendly environment. Continued diversification efforts should be pursued to decrease reliance on a limited number of export sectors. Strict penalties on multinational corporations that evade tax which hinder the realization of the potential benefits of foreign direct investment (FDI) in the country.

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Appendix

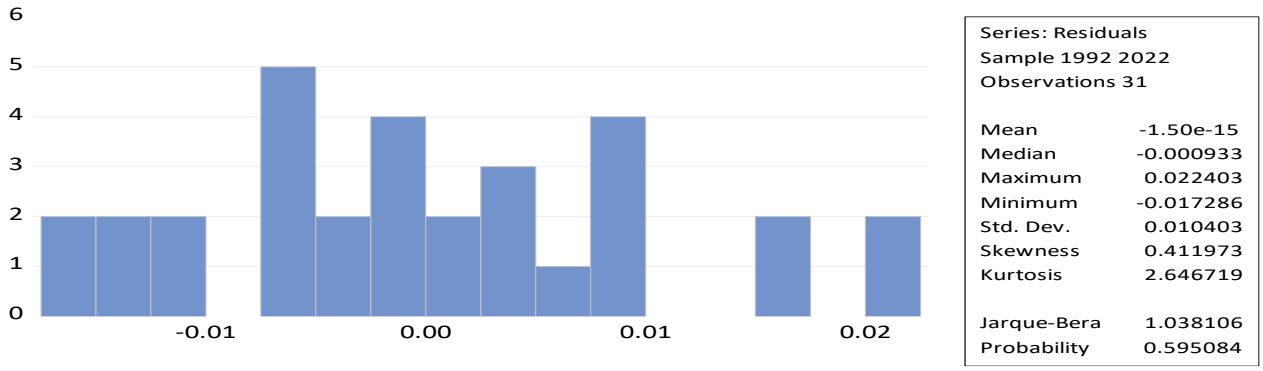

Figure A1. Normal Distribution

Table A1. Breusch-Godfrey serial correlation LM test

Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	5.930441	Prob. F (2,7)	0.5311
Obs*R-squared	19.49471	Prob. Chi-Square (2)	0.0001

Table A2. Heteroskedasticity test: Breusch-Pagan-Godfrey.

Null hypothesis: Homoskedasticity			
F-statistic	0.221943	Prob. F (21,9)	0.9979
Obs*R-squared	10.57659	Prob. Chi-Square (21)	0.9704

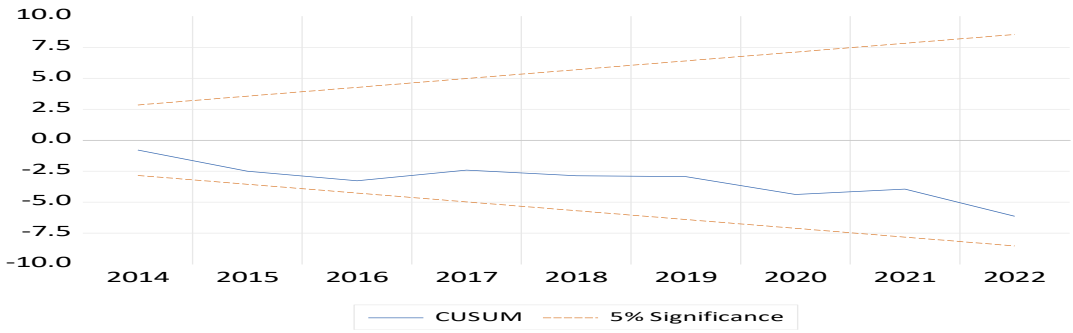

Figure A2. Cumulative Sum test for model stability

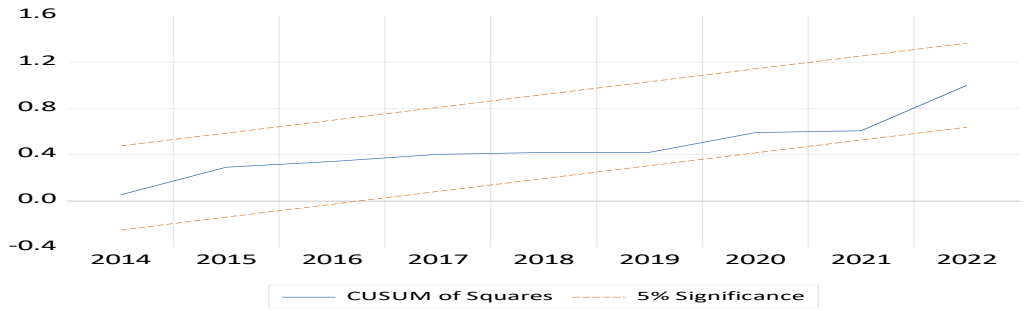

Figure A3. Cumulative Sum of Squares (CUSUMSQ) test for model stability

Table A3. Covariance Analysis: Ordinary.

Covariance Analysis: Ordinary								
Sample: 1990 2022								
Included observations: 33								
Correlation								
Observations	LNGDP	LNOILR	LNFDI	LNGFCF	LNINF	LNEMP	LNEFI	GOVERNANCE
LNGDP	1.000							
	33							
LNOILR	0.407	1.000						
	33	33						
LNFDI	-0.079	0.269	1.000					
	33	33	33					
LNGFCF	0.253773	0.208917	−0.126531	1.000000				
	33	33	33	33				
LNINF	−0.583427	−0.514841	−0.366855	0.282587	1.000000			
	33	33	33	33	33			
LNEMP	0.444080	−0.143322	−0.538235	0.608708	0.312143	1.000000		
	33	33	33	33	33	33		
LNEFI	0.922237	0.406612	0.053512	0.143560	−0.584187	0.267163	1.000000	
	33	33	33	33	33	33	33	
GOVERNANCE	0.801015	0.010555	−0.301214	0.036059	−0.347652	0.389076	0.790365	1.000000
	33	33	33	33	33	33	33	33