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A boon or a bane? Testing the natural resource curse hypothesis in Kazakhstan

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The nexus between foreign direct investment (FDI), natural resource endowment, and their impact on sustained economic growth is contentious. This study investigates the symptoms of resource curse hypothesis and the effects of FDI on Kazakhstan's economic growth. This study covers from 1990 to 2022 and employs the autoregressive distributed lag model and Vector Error Correction method for causality. The Bounds cointegration results reveal the existence of long-term equilibria between GDP per capita and the predictors. The findings indicate a significant impact of oil rents on economic growth, contradicting the resource curse hypothesis and instead suggesting a resource boon. In stark contrast, the impact of FDI on Kazakhstan's economic growth is insignificant despite the presence of a causal nexus. Economic freedom, gross capital formation, governance, and export diversification have positive and significant effects on GDP per capita growth, with varying effects in the short- and long-run. As expected, the results establish a long-run causal relationship between export diversification, FDI, economic freedom, governance, oil rents, and economic growth. This underscores the fundamental role of the interplay between diversification, economic freedom, governance, and oil rent in fostering sustainable economic growth. Additionally, economic freedom stimulates gross fixed capital formation, indicating that it enhances domestic investment. Notably, these findings refute the crowding-out effect of FDI on domestic investment in Kazakhstan. Consequently, to avoid the resource curse and Dutch disease syndrome, this study advocates the enhancement of good governance capabilities in Kazakhstan. Therefore, we recommend that good governance be used to reconcile the twin goals of economic diversification and deriving benefits from oil resources, ultimately transforming oil wealth into a boon for Kazakhstan.

Keywords: Natural resource curse, Oil rents, Foreign direct investment, Kazakhstan

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 declining economic trajectories. Emerging nations possess abundant resources that can potentially accelerate their economic expansion *(Shahbaz et al., 2019; Cavalcanti et al. 2011; Philippot, 2010)*. Natural resources such as oil have been found to play a crucial role in the economic development of countries such as Azerbaijan, Kazakhstan, Turkmenistan, and Russia. However, Dutch disease models suggest that countries with abundant natural resources tend to experience slower growth rates than those with fewer resources, as resources often flow in and out of non-traded sectors, negatively affecting the economy *(Guan et al., 2020)*. Overreliance on resources and the absence of efficient and sustainable policies to effectively coordinate and utilise these resources to promote economic growth exacerbate the situation. Nevertheless, some economies, such as Norway and Botswana, have managed to defy the Dutch disease phenomenon by implementing sustainable resource and growth policies that enable the efficient utilisation of natural resource rents and elevate their growth levels, thereby avoiding the natural resource curse *(Guan et al. 2020).*

1. Introduction

The literature on the impact of natural resources on the long-term growth of resource-rich countries is characterised by differing viewpoints. Having abundant natural resources can provide a nation with wealth and purchasing power *(Holden, 2013).* However, 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–Santos, 2013; Elbra, 2013).* Moreover, the 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 manufacturing sector growth in resource-rich countries compared with their resource-poor counterparts *(Sachs–Warner, 1995)*. However, as noted above, Norway and Botswana are examples of resource-rich nations that have effectively managed their natural resource windfalls to achieve strong growth rates, thus providing valuable lessons for other resource-rich countries *(Larsen, 2005; Holden, 2013).* Norway has established transparent frameworks to separate oil rents from political motives and direct them towards productive investments *(Tsani, 2013).* Relatedly, *Acemoglu et al. (2002)* emphasised that Botswana's successful management of natural resource rents can be 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 prioritising 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)*. Foreign direct investment (FDI) involves the international flow of capital, in which a firm in one country establishes or expands a subsidiary in another and involves both resource transfer and control acquisition.

FDI is beneficial in leveraging natural resource rents to enhance growth in developing countries. Insufficient funds for investment, especially in capital-intensive activities such as natural resource extraction, often drive countries to seek FDI *(Solarin–Shahbaz, 2015)*. Many underdeveloped and transitional economies lack the capacity for such investments and therefore rely on FDI to leverage natural resource rents for development. For instance, in Malaysia, FDI has shown positive effects on human capital formation, technology spillovers, integration into international trade, enterprise development, and a competitive business environment. However, the associated costs include negative effects on the balance of payments through profit repatriation, environmental consequences, social disruptions, and the potential loss of sovereignty *(Solarin–Shahbaz, 2015; OECD, 2002).*

Oil is a significant global energy resource that plays a crucial role in capital markets *(Erdoğan, 2011).* The decline in oil prices since 2014 presents economic challenges for oil-producing nations that are heavily dependent on oil revenue *(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]. Similarly, countries such as Kazakhstan, Angola, and Brazil have implemented tax reforms aimed at increasing tax revenues; however, this has been met with varying levels of success *(Baffes et al., 2018).* Fundamentally, reliance

on natural resource rents negatively affects the institutional framework and long-term growth of resource-rich countries *(Alexeev–Conrad, 2011).* Thus, the effective management of oil derivative prices within these nations is crucial for controlling inflation and mitigating adverse consequences *(Erdoğan–Ilter, 2004; Erdogan–Dinç, 2009).*

This study examines Kazakhstan, a resource-rich transitional Asian economy that attracts significant FDI because of 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. East and Southeast Asia account for approximately 25% of Asia's coal assets *(World Energy Council, 2016)*, whereas Central Asia is rich in oil, gas, coal, and uranium resources *(United States Geological Survey, 2016).* South Asia also boasts natural resources such as oil, gas, fertile lands, trees, and minerals. Despite the abundance of resources in Asian countries, few have achieved steady-state levels of growth, highlighting the need for efficient utilisation of these resources for sustainable development. Natural resources and fossil fuel energy have the potential to drive economic growth, depending on policymakers' effective planning and policies *(Khan et al., 2020).* Developing countries are increasingly focusing on harnessing their sustainable resources for growth while considering environmental concerns. However, in developing Asian countries, challenges remain regarding the productive allocation of natural resources, fossil fuel consumption, and effective foreign investments to stimulate economic growth.

Although the literature covers the relationship between the natural resource curse and FDI extensively *(Baffes et al. 2018; Huang et al., 2020; Redmond–Nasir, 2020; Perez–Claveria, 2020; Hao et al., 2019; Soejoto et al., 2017; Olayungbo, 2019; Yazdanian, 2014)*, a research gap remains pertaining to former Soviet Union economies. Therefore, 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. This study differs from previous research in three ways. First, it tests the natural resource curse hypothesis by analysing the impact of oil rents on Kazakhstan's economic growth. Second, it contributes to the current understanding of how FDI enhances economic growth in this resource-rich nation. This study employs the autoregressive distributed lag (ARDL) bounds cointegration approach to assess both short- and long-term effects. Third, this study uses the Toda-Yamamoto causality approach to address the ambiguity in the literature regarding the causal relationships 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 such as Kazakhstan. This study aims to address the following research questions:

1. Does oil rent attract FDI in Kazakhstan? What are the causal implications of oil rent and FDI in countries with abundant natural resources?
2. Is there evidence of a natural resource boon or bane in Kazakhstan? What are the possible remedial measures to escape the resource curse phenomenon and Dutch disease syndrome?
3. What are the effects of oil rents and FDI on economic growth in Kazakhstan? What are the implications of export diversification, economic freedom, and governance on oil rents for sustained economic growth?

The remainder of this paper is organised as follows. Section 2 reviews the literature, theoretical foundations, and empirical studies. Section 3 describes the datasets and the methodology. Section 4 presents and discusses the findings. Finally, Section 5 presents the conclusions and policy implications.

2. Literature review

2.1 Theoretical foundations

2.1.1 Natural resource curse

Theoretical perspectives on the role of natural resources in an economy can be categorised as either optimistic or pessimistic. The optimistic perspective, advocated by *Adam Smith* and *David Ricardo*, suggests that natural resources contribute positively to economic development *(Costa et al., 2016)*. According to *Rostow (1961)*, countries with abundant natural resource endowments, such as Australia, the US, and Britain, can transition from underdevelopment to industrial advancement. This perspective emphasises the potential of natural resources to foster industrial development, create markets, and attract investment. Although dissenting opinions existed *(Nankani, 1979)*, the optimistic view prevailed until the concept of the Dutch disease emerged in the early 1980s *(Cordon–Neary, 1982; Corden, 1984; Neary–Wijnbergen, 1986)*.

The Dutch disease, named after the decline in Dutch manufacturing following the discovery of natural gas in Groningen, marked a shift towards a more pessimistic perspective *(Cordon–Neary, 1982; Corden, 1984; Neary–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 to represent a syndrome characterised 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 supposed curse. First, unlike other resources, natural resources, such as oil, gas, and minerals, require extraction rather than production. This means that the generation of natural resource wealth can occur independent of other economic processes and does not necessarily contribute significantly to employment creation. Industries such as oil and gas are capital-intensive and offer relatively few job opportunities per unit of capital invested. Furthermore, the skills required in these sectors may not align with the profiles of a country's unemployed population *(Karl, 2007)*. Second, a crucial characteristic of natural resource wealth, particularly oil and gas, is its non-renewable nature *(Humphreys et al., 2007)*.

Natural resources can provide significant advantages to underdeveloped economies. First, income generated through resource extraction can improve living standards by enabling higher levels of public and private consumption. Second, 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, such as infrastructure *(Sachs, 2007)*. However, several decades of observations indicate that the mere possession of natural resources is not sufficient to guarantee economic success. Many resource-rich countries in, such as Angola, Congo, Nigeria, Venezuela, continue to experience low per capita incomes and a low quality of life *(Sachs, 2007)*.

Indicators of the resource curse phenomenon include 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–Santos, 2013)*. While natural resource rents are often used to fund government expenditures on infrastructure, telecommunications, healthcare, and education, their positive impact diminishes beyond a certain threshold, particularly in the presence of institutional deficiencies *(Papyrakis–Gerlagh, 2004; Mehrara, 2009)*. Moreover, natural resource abundance can lead to structural distortions that harm growth, such as higher real wages and real exchange rate appreciation, and negative effects 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. Furthermore, overreliance on natural resources can weaken institutional frameworks and contribute to market failure, further hindering economic growth potential *(Boyce–Emery, 2011)*.

2.1.2 FDI internationalisation theory

The concept of FDI 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–Ohlin, 1933)*. These theories predict trade patterns based on a region's factor endowments, with countries exporting products that use abundant and inexpensive factors of production and importing products that rely on scarce factors. However, these theories do not fully account for FDI because they are 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 FDI research. According to this theory, companies engage in internationalisation because of factors related to their size, ownership of specific assets, and market failure. FDI occurs when the benefits of utilising firm-specific advantages (FSAs) across borders outweigh the additional costs of operating in foreign markets [Hymer, 1960]. This theory suggests that multinational enterprises (MNEs) have unique advantages that enable them to operate profitably abroad. *Aliber (1970)* added that companies become MNEs owing to market imperfections and because they possess competitive advantages that domestic firms cannot easily access in the host country. Furthermore, *Caves (1971)* highlighted the significance of product diversification in FDI by categorising 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 geographic locations, with lower-wage countries manufacturing labour-intensive intermediate goods for higher-wage countries *(Caves, 1971)*. It is often known as ‘efficiency-seeking’ FDI, aimed at improving the cost-effectiveness of a firm's production process. Backward vertical FDI occurs when a company invests in an industry abroad to obtain inputs for its domestic production process, which is often observed in extractive industries such as oil extraction. Forward vertical FDI involves investing in an industry abroad to sell domestic production outputs. In contrast, 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 MNE. Referred to as ‘market-seeking’ FDI, this is driven by the desire to access new and larger markets *(Botric–Skulic, 2005)*. Horizontal investments replicate the entire production process of the home country in a foreign country and tend to increase the labour intensity of domestic production in the home country. MNEs involved in the extraction or utilisation of natural resources represent another type of FDI, attracted by the availability of

resources such as oil, gas, minerals, forests, and waterfalls in many developing countries.

2.2 Empirical literature

Huang et al. (2020) used data from 25 developing countries in Asia between 1996 and 2016, employing the pooled mean group regression method to analyse the effects of natural resource utilisation and FDI on economic growth. These findings indicated that FDI positively affects economic growth in Asia; however, this study did not find a significant relationship between total natural resources and economic growth. In contrast, evidence was provided to support a significant association between economic growth and income generated from forest and mineral resources, as well as oil. The crucial role played by robust financial systems in channelling natural resource revenue into productive investments has also been highlighted. Similarly, *Erdoğan et al. (2020)* conducted research on the relationship between natural resource exports, economic growth, and financial deepening using data from Next-11 countries between 1996 and 2016. They employed a nonlinear panel data technique with two regimes and found that when the financial deepening rate 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, characterised by a financial deepening level above 45%, economic growth increased by 7%. This finding suggests that financial deepening is an important factor in the relationship between natural resource exports and economic growth.

Redmond and Nasir (2020) used 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 that natural resource abundance has a positive and significant impact on economic growth. However, a negative effect on human development was also found, suggesting that overreliance on natural resources may hinder the development of human capabilities and welfare. *Pérez and Claveria (2020)* proposed a new approach to visually analyse the relationship between human development, economic growth, and dependence on mineral resources in ten African countries that are major mineral exporters, covering from 2007 to 2016. The empirical findings showed 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 emphasised 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 the concept of the environmental Kuznets curve to examine the relationship between water resource use and economic growth using a 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 gross domestic product (GDP) per capita. Additionally, this 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)* analysed the factors influencing economic growth in Southeast Asian countries using panel regression techniques. This study investigated the impact of investment, labour, natural resources, and technology (Solow variable) on economic growth. These findings indicated that the Solow variable affects each country differently. For example, in Indonesia and Brunei, economic growth is significantly influenced by investment, human resources, and labour. In Thailand and the Philippines, economic growth is significantly influenced by investment, natural resources, and labour.

Olayungbo (2019) employed the Bayesian time-varying parameter 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, this study demonstrated the positive and significant effect of exported oil revenue on economic growth. However, the study also found that unfavourable trade openness and 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 FDI in MENA countries from 1960 to 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, were negatively related to 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 dilute the positive effects of institutions. However, variables such as trade openness, GDP, inflation, and investment profile had positive effects on FDI. Infrastructure and human capital did not significantly affect FDI inflows.

Carril-Caccia et al. (2019) supported the existence of the 'oil curse' on FDI in oil-abundant countries. According to their estimates, a one-percentage-point increase in oil rents can lead to a decrease in the number of FDI projects by an average of 3%. This relationship varies between oil-abundant countries with poor

and rich capital. In the former group, countries tend to attract FDI to process their resources. However, oil-abundant countries with rich capital have sufficient financial resources to sustain their growth, adopt autarkic policies, and exhibit rent-seeking behaviour. These countries do not actively pursue FDI and often impose local ownership conditions that act as potential barriers to FDI inflows. *Zallé (2019)* examined the conditional impact of natural resource dependence on human capital development and institutional quality on economic growth using an ARDL estimation technique on a sample of 29 countries with an average dependency level of 19.53% between 2000 and 2015. The findings showed that the interactions between natural resources and institutional quality, as well as those between natural resources and human capital, suggest that leveraging the human capital–corruption relationship is crucial for exploiting natural resources in Africa. Therefore, they concluded that African countries should prioritise and enhance investments in human capital while intensifying their efforts to combat corruption.

Abdulahi et al. (2019) adopted institutional quality 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 was above the threshold level of –1.28, and within the range of –1.28 to –1.37. However, when institutional quality falls below the threshold level of –1.37, the resource curse begins to manifest, hindering economic growth. *Ben-Salha et al. (2021)* contributed to the literature on the relationship between natural resource rents and economic growth by 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 estimation technique and found a long-term positive effect of natural resource rent on economic growth but no evidence of a short-term effect. Their 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 a panel analysis of 28 countries, they found evidence that improving institutional efficiency in natural-resource-based countries can enhance manufacturing sector performance, thereby mitigating the negative effects of the natural resource curse. Additionally, they found that the ratio of value added to manufacturing 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 that were formerly part of the Soviet Union, using data from 1996 to 2010. They used various panel estimation methods

to address endogeneity and clustering issues and found a crowding-out effect of natural resources on manufacturing, except in cases where domestic institutions were of significantly high quality.

Henri (2019) utilised the two-stage least squares method to examine the connections between institutional and economic indicators with negative effects on natural resource rents in Africa from 1992 to 2016. The study identified corruption, weak rule of law or justice, inadequate public administration, poor regulation, lack of accountability, and political instability as the main institutional problems associated with natural resource rents. Furthermore, natural resource rents were found to lead to volatility in GDP per capita, resulting in low-quality physical and human capital accumulation. *Rantao (2019)* examined the causal channels of the resource curse in Mozambique by studying the operations of multinational corporations in the country's gas fields. Through an exploratory case study and an analysis of secondary data, the study showed that multinational corporations prioritise their corporate social responsibility activities to mask their failure to comply with local content laws. In addition, they will take advantage of the diplomatic relations of the parent country's government to exert dominance over the host country's sovereignty.

3. Methodology

3.1 Data sources

This study uses annual time-series data for Kazakhstan from 1990 to 2022, focusing on the dependent variable, GDP per capita, as a measure of economic growth and overall social welfare *(Khayat, 2017; Carril-Caccia et al., 2019)*. The main independent variables are oil rent and FDI, which are essential for assessing the effects of natural resource wealth on population well-being. The control variables include gross fixed capital formation, a proxy for domestic investment, export diversification, economic freedom, and governance indicators, identified in previous studies as relevant factors for influencing economic growth *(Abdel-Raman, 2007; Belloumi–Alshehry, 2018; Mahmood–Alkahteeb, 2018; Rogmans–Ebbers, 2013; Khayat, 2017)*.

Oil rents, which have been used in previous studies *(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–Ebbers, 2013; Khayat, 2017)*. Domestic investment, economic freedom (graded from 0 to 100, indicating repression to freedom), and the export diversification index (ranging from 0 = high degree of diversification to 1 = low degree of diversification) are also included in the analysis *(Abdel-Raman, 2007; Belloumi–Alshehry, 2018)*. Table 1 presents the variables, measurements, and data sources used in this study.

Table 1

Variables and measurements

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 (%) (modelled 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	Inflation, consumer prices (annual %)	World Development Indicators
Governance Indicator	Proxied by overall index of government effectiveness; political stability; voice and accountability, corruption, and rule of law	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).

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 et al. (2020)*, *Aimer (2018)*. These studies examined the relationship between economic growth, natural resources, and FDI. The theoretical expectation is that natural resources will positively impact economic growth through the rents they generate, whereas FDI is considered a driver of growth in the modern era. The

extended endogenous growth model incorporating natural resource utilisation, net FDI, and economic growth is as follows:

$$Growth = f\ (Natural\ resourses\ rents, FDI, r) \quad (1)$$

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

$$GDP_t = \beta_0 + \beta_1 OILR_t + \beta_2 FDI_t + \beta_3 GI_t + \beta_4 GFCF_t + \beta_5 XDIV_t + \beta_6 EF_t + \mu_t \quad (2)$$

where GDP_t represent the GDP in period t; $OILR_t$ is the Oil rents in period t; FDI_t is the FDI 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. $XDIV_t$ is the export diversification in period t, while EF_t represents the economic freedom in period t. $\beta_1 - \beta_6$ 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 $\beta_0 - \beta_6$ are positively related with economic growth. For example, a positive FDI coefficient indicates a positive relationship between FDI and economic growth. An increase in FDI inflow leads to enhanced economic growth in Kazakhstan. Conversely, if FDI is negatively correlated with economic growth, it does not contribute to GDP growth. The hypotheses are as follows:

Hypothesis 1

H_0: $\beta = 0$ Null hypothesis

H_0: $\beta \neq 1$ Alternative hypothesis

The null hypothesis (H0: β = 0) suggests no relationship between FDI and GDP per capita, whereas the alternative hypothesis (H1: β ≠ 0) indicates a significant relationship between them. If the t-statistic is less than the lower-bound critical value (0.1), the null hypothesis is not rejected. However, if the t-statistic exceeds the 10 percent critical value, the null hypothesis is rejected, indicating a significant relationship between the independent and dependent variables. It is important to note that we test the significance of each parameter coefficient as hypothesis ($\beta_1 - \beta_6$).

To determine the integration sequence of the series, the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests *(Dickey–Fuller, 1981; Phillips–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)) as I (0), the possibility of cointegration is examined. The PP test is used as an alternative to the ADF test because it calculates the 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 Eq. (4)

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

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 is as follows:

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

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

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

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

Hypothesis 2

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

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

When the calculated statistics exceeded the threshold value (or the probability was < 0.10), the null hypothesis was rejected, indicating that the series was stationary. PP tests are particularly effective for trending series and use a nonparametric approach with a moving average (MA) methodology. The PP test model is as follows:

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

To identify long-term relationships, a cointegration test was conducted after establishing the order of integration using a stationarity test. If the series has an integration order of I (1), I (0), the cointegration tests proposed by *Engle and Granger (1987)* and *Johansen (1988)* cannot be used. To evaluate the cointegration relationships between series that are stationary at different levels, Pesaran et al. (2001) developed a 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, in which the null hypothesis is the absence of cointegration. The bound test equation is provided in Equation (6):

Hypothesis 3

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

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

$$\begin{aligned}\Delta LNGDP = {} & \alpha_0 + \alpha_1 LNGDP_{t-1} + \alpha_2 LNOILR_{t-1} + \alpha_3 LNFDI_{t-1} + \alpha_4 LNGI_{t-1} \\ & + \alpha_5 LNGFCF_{t-1} + \alpha_6 LNXDIV_{t-1} + \alpha_7 LNEF_{t-1} \\ & + \sum_{n=1}^{k} \beta_n \Delta LNGDP_{t-n} + \sum_{n=0}^{k} \beta_{2n} \Delta LNOILR_{2t-n} \\ & + \sum_{n=0}^{k} \beta_{3n} \Delta LNFDI_{3t-n} + \sum_{n=0}^{k} \beta_{4n} \Delta LNGI_{4t-n} \\ & + \sum_{n=0}^{k} \beta_{5n} \Delta LNGFCF_{5t-n} + \sum_{n=0}^{k} \beta_{6n} \Delta LNXDIV_{6t-n} \\ & + \sum_{n=0}^{k} \beta_{7n} \Delta LNEF_{7t-n} + \mu_t\end{aligned} \tag{6}$$

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 FDI inflows (percentage of GDP), $LNGI$ is the natural logarithm of the governance indicator, $LNGFCF$ is the natural logarithm of gross fixed capital formation (measure of domestic investment, % GDP), $LNXDIV$ 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 the long-term analysis, the ARDL method is employed when the bounds test is conducted as a cointegration test. The ARDL model proposed by Pesaran et al. (2001) is used to investigate the short- and long-term effects of oil rents and FDI, on Kazakhstan's GDP per capita, the ARDL model proposed by Pesaran et al. (2001) is utilised. The level values of the series are employed to examine the long-term equilibrium, and the equation is as follows:

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

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

$$\begin{aligned}\Delta LNGDP_t = \alpha_0 &+ \sum_{n=1}^{k} \beta_{1n} \Delta LNGDP_{t-n} + \sum_{n=1}^{k} \beta_{2n} \Delta LNOiLR_{2t-n} \\ &+ \sum_{n=1}^{k} \beta_{3n} \Delta LNFDI_{3t-n} + \sum_{n=1}^{k} \beta_{4n} \Delta LNGI_{4t-n} \\ &+ \sum_{n=1}^{k} \beta_{5n} \Delta LNGFCF_{5t-n} + \sum_{n=0}^{k} \beta_{6n} \Delta LNXDIV_{6t-n} \\ &+ \sum_{n=0}^{k} \beta_{7n} \Delta LNEF_{7t-n} + \delta ECT_{t-1} + \mu_t\end{aligned} \tag{8}$$

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-term 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 that obtained from the Granger causality test (when the series is nonstationary at the level). To explore both short-run and long-run causal relationships between our variables, we employ the Vector Error Correction Model (VECM). While our independent variables are integrated of order I (1) except for FDI, which is I (0), taking the first difference results in all series being I (1), I (1). This necessitates the use of the VECM. When a cointegration relationship is detected, it implies the existence of at least one short-run or long-run causal relationship between the variables *(Granger, 1988)*. The VECM model is formulated as follows:

$$\Delta Y_t = \alpha_1 + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta X_{t-i} + \varphi_1 ECT_{t-1} + u_t \tag{9}$$

$$\Delta X_t = \alpha_2 + \sum_{i=1}^{p} \delta_i \Delta X_{t-i} + \sum_{i=1}^{p} \theta_i \Delta Y_{t-i} + \varphi_2 ECT_{t-1} + v_t \tag{10}$$

In Equation (9), γ_i coefficients tests the short-run causality, while φ_1 coefficient tests the long-run causality. If $\gamma_i \neq 0$ (significant), it shows short-run causality, and if $\varphi_1 \neq 0$ (significant), it shows long-run causality relationship X to Y.

4. Results and discussion

Table 2 provides descriptive statistics for the data used in the analysis while Figure 1 presents visualisations of various indicators, including GDP per capita (constant at 2017 international $), net inflows of FDI (as a percentage of GDP), oil rents, gross fixed capital formation (proxy for domestic investment), export diversification, economic freedom, and institutional quality. The GDP per capita ranged from $8,552 to $26,351, with an average of $17,410, indicating that Kazakhstan has a prominent economic position in Central Asia. Following its 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 demonstrated commendable macroeconomic performance over the past two decades.

Table 2

Descriptive statistics

Denomination	GDP per capita	OIL rents	FDI	Domestic investments
Mean	17410.87	13.244	6.020	23.516
Median	18112.78	13.575	5.202	23.054
Maximum	26351.80	24.702	13.013	30.431
Minimum	8552.452	2.252	0.197	15.719
Std. Dev.	6513.714	6.268	4.023	4.003
Observations	33	33	33	33

Denomination	Governance indicator	Economic freedom	Export diversification
Mean	–0.739	56.388	0.761
Median	–0.790	59.600	0.766
Maximum	–0.319	71.100	0.823
Minimum	–1.031	41.700	0.570
Std. Dev.	0.201	8.832	0.046
Observations	33	33	33

Note: The aggregate governance indicator, ranging from -2.5 (bad) to 2.5 (good), Economic freedom (graded from 0 to 100, indicating repression to freedom), and the export diversification index (ranging from 0 = high degree of diversification to 1 = low degree of diversification). Source: Author's Computation (2024).

The net FDI inflows as a percentage of the GDP range from 0.19% to 13.01%, with an average of 6.02%. Net FDI inflows constitute a relatively small portion of Kazakhstan's GDP. In 2019, FDI stocks accounted for 84.0% of the 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, declining 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 capital-intensive extractive sectors. Notably, while the volume of inflows and volume of stocks relative to GDP have grown significantly since 2000, indicating a substantial expansion in inward investment in nominal terms, both measurements have experienced a noticeable decline.

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

Furthermore, gross fixed capital formation, which measures domestic investment, ranges from 15.7% to 30.4% of GDP, with an average of 23.5%. Importantly, we do not observe the crowding out effect of domestic investments by the FDI inflows in Kazakhstan. This finding indicates the relative importance of domestic investments in Kazakhstan's economy. The economic freedom index ranges from 41.7% to 71.1%, with an average of 56.4%. This suggests that Kazakhstan enjoys favourable levels of trade freedom, a manageable tax burden, an effective judiciary, and an open economy. These factors imply the potential for increased investment, rapid growth, and higher income levels in the long term. Conversely, the governance index has an average value of -0.738, indicating poor governance and weak institutional quality.

The export diversification index ranges from 0.57 to 0.823, with an average of 0.76. This indicates that Kazakhstan's heavy reliance 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 Kazakhstan's total value, underscoring their significant contribution to the country's GDP growth *(Observatory of Economic Complexity, 2023)*. By

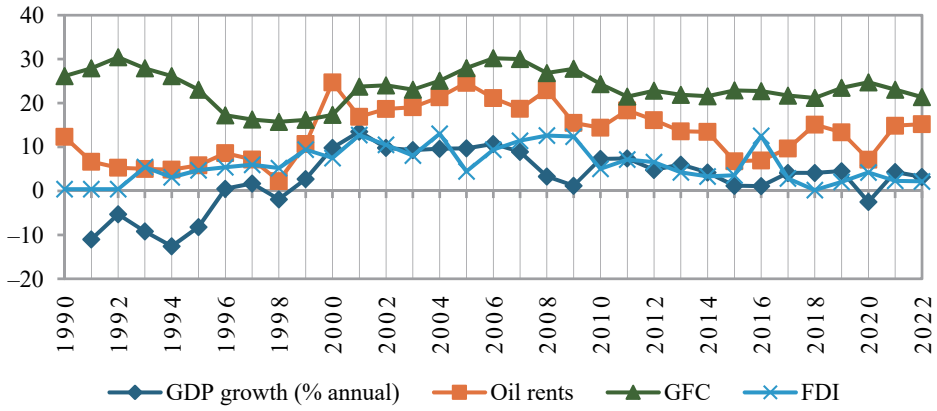
broadening the definition of the extractive sector to include fuels, material processing, and crude materials, it becomes evident that the extractive sector represents 76% of the total exports and 29% of the GDP *(OECD, 2020)*. However, Kazakhstan faces the challenge of limited positive and sustainable linkages between the extractive sector and broader economy in terms of enhancing productivity and competitiveness. These limited linkages may hinder the growth and innovation of firms in non-oil sectors, potentially leading to the 'Dutch disease'.

Figure 1 depicts the trends of GDP per capita growth over time and highlighting the volatile nature of oil rents and FDI in Kazakhstan. We observe that Kazakhstan experienced a spike in oil rents between 1998 and 2000. Since 2000 to 2011, Kazakhstan had the highest oil production revenue, although characterized with slumps in 2001, 2007 and 2010. During the early 2000s, the establishment of Kazmunay Gas (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 over the industry, allowing companies to play a more active role in the commercial sector. Since then, the government has ensured that KMG maintains majority ownership of all future initiatives and joint ventures. Given the significance of the oil and gas sector in Kazakhstan's economy, state involvement in this sector has grown over time. The country's primary hydrocarbon output comes from three main fields, Tengiz, Karachaganak, and Kashagan, which were developed by established consortia with the support of multinational vertically integrated corporations. The National Company KazMunayGas, a vertically integrated company, represents the state's interest in the sector and oversees 26% of Kazakhstan's total proven oil and gas reserves *(Kazakhstan Oil and Gas Tax Guide, 2021)*.

Moreover, FDI inflows have remained stark over the years 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. Furthermore, we see that gross fixed capital formation has steadily remained higher than the oil revenues and FDI inflows.

Figure 1

Trends in GDP, Oil rents, FDI and Gross fixed capital formation in Kazakhstan

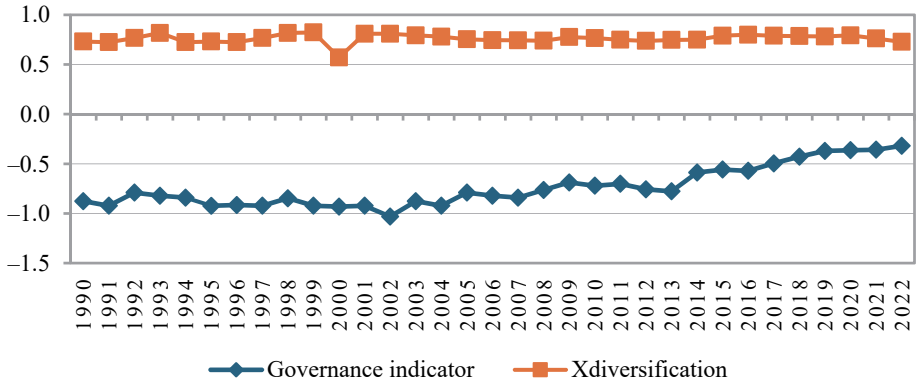


Source: Author's computation (2024)

Figure 2 indicates that while governance and institutional quality in Kazakhstan have improved since 2014, they still fall short of the standards for good governance and strong institutions. Additionally, Kazakhstan's economy remains heavily reliant on the natural resource sector for exports, with limited export diversification.

Figure 2

Trends in governance and export diversification



Source: Author's computation (2024)

Next, we tested for stationarity of the data using ADF and PP tests at both the original level and first difference forms. The results in Table 3 indicate that all

variables except FDI exhibit a unit root at this level, suggesting that FDI is integrated of order I (0). However, when variables are differentiated, they become stationary. This implies that the dependent variable, GDP per capita, is integrated in the order I (1), whereas the independent variables consist of a combination of I (1) and I (0). This justifies the use of the Bound's method of cointegration to examine the long-term relationships between variables.

Table 3

Unit root test results

	ADF-Statistic	p-value	Stationarity level	Series
LNGDP	–2.743	0.0784	First difference	I (1)
LNOIL_R	–6.409	0.000	First difference	I (1)
LNFDI	–6.161	0.000	Level form	I (0)
LNGFCF	–3.843	0.0064	First difference	I (1)
LNXDIV	–6.518	0.000	First difference	I (1)
LNEFI	–6.030	0.000	First difference	I (1)
LNGI	–7.479	0.000	First difference	I (1)
	PP–Statistic	p–value		
LNGDP	–2.723	0.0816	First difference	I (1)
LNOIL_R	–9.556	0.000	First difference	I (1)
LNFDI	–7.291	0.000	Level Form	I (1)
LNGFCF	–3.812	0.0069	First difference	I (1)
LNXDIV	–7.612	0.0000	First difference	I (1)
LNEFI	–7.072	0.0000	First difference	I (1)
GI	7.536	0.0000	First difference	I (1)

Notes: LNGDP- Natural logarithm of gross domestic product per capita; LNOIL_R; Natural logarithm of Oil rents; LNFDI -foreign direct investment; LNEFI – Economic Freedom Index; LNXDIV – export diversification; LNGFCF -gross fixed capital formation; GI –governance index.
Source: Author's Computation (2024).

Then, a vector autoregressive framework is employed to determine the lag order. This study identifies lag 2 as the optimum lag using the likelihood ratio (LR) criteria (Table 4). This selection is due to parsimony, as it has the lowest indicated lag.

Table 4

Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	127.1143	NA	3.97e–15	–7.620275	–7.203956	–7.484565
1	355.4240	309.3228	3.67e–19	–17.12413	–12.96094	–15.76703
2	514.5733	123.2124*	1.17e–20*	–22.16602*	–14.25596*	–19.58754*

Notes: LR: Sequential modified LR test statistic (each test at the 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan–Quinn information criterion.
Source: Own 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 the co-integration *(Pesaran et al., 2001).* We employ the bounds cointegration test to determine whether a long-term equilibrium exists among the different variables. The null hypothesis, which states that no cointegration relationship exists, is rejected if the F-statistic exceeds the upper- and lower-bound critical values. This indicates 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 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 (5.69) and lower (3.84) bounds at a significance level of 1%. This signifies a long-term relationship between per capita GDP and the main independent variables of oil rents and FDI, as well as the control variables of domestic investments, export diversification, governance index, and economic freedom.

Table 5

Bounds co-integration test

F-Bounds Test		Null Hypothesis: No levels relationship		
test statistic	value	significance, %	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).

After establishing the cointegrating relationship between the variables, we estimate the ARDL model for both the long- and short-term equilibria using equations (7) and (8). The error correction model helps us understand the influence

of equilibrium behaviour on short-term dynamics. Equilibrium relationships have implications for short-term behaviour, as one or more series adjust to restore equilibrium. Based on the results (Table 6), the significance of the error correction terms ECM (–1) is observed. The statistical significance is observed at the 1% level (0.000 < 0.001), with an expected negative signal (0.0326). This result confirms the existence of a long-term equilibrium relationship in the model. The value of the error correction factor (0.0326) indicates that the GDP per capita adjusts to its equilibrium value in each period by approximately 3.3% of the remaining imbalance or deviation from the equilibrium in the previous period (t–1). Thus, when short-term deviations exist in the variables from their long-term equilibrium, approximately 3.3% of this deviation is corrected in period (t).

Similarly, error correction reflects the speed of adjustment towards equilibrium. In this context, the GDP per capita takes approximately one year to reach its equilibrium value after a shock in the system caused by a change in the independent variables (e.g., oil rent). The volatile nature of oil prices leads to temporary price shocks in the market that disrupt the global supply chain. This presents a challenge associated with the excessive reliance on natural resource rents, particularly for oil-exporting countries such as 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 upsurge in these factors indicates a short-term upsurge in GDP per capita. However, these results suggest that the system returns to a long-term equilibrium as the effects of shocks dissipate over time.

The results demonstrate a strong fit of the model as evidenced by an F-statistic of 804.425 (p-value 0.000). Also, we note that the intercept (0.1221), which accounts for other factors in the model that influences GDP per capita, significantly influences the GDP per capita growth. To analyse 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 and short term.

In the long-term model (Table 6), we find that oil rent, economic freedom, FDI, export diversification, and governance significantly affect GDP per capita. Specifically, a 1% increase in oil rents as a percentage of GDP leads to approximately 5% increase in GDP per capita, *ceteris paribus*. As well, the lagged values of oil revenues as a percentage of GDP results to approximately 4.8% significant increase in GDP per capita. This emphasises the substantial contribution of oil rents (natural resource rents) to the country's economy. Generally, the significant positive effects indicate that natural resource extraction and exports continue to be the main drivers of growth in Kazakhstan. For over two decades, Kazakhstan’s GDP growth has been closely linked to global oil prices.

When oil prices increase, a country's GDP also increases and vice versa. This highlights the significant role of net exports, with hydrocarbons comprising the majority share, as a key driver of GDP growth. Notably, during the pandemic, substantial public spending was partially offset by unusually high oil prices. In 2022, government revenues will increase by 70%, primarily owing to a surge in international oil prices. During to 2021-2022, oil revenues saw a growth of 177% compared with 27% for non-oil revenues, while export volumes experienced only a minor increase. These findings align with those of Redmond and Nasir (2020) and Olayungbo (2019), who also highlight the positive and significant impact of natural resource abundance on economic growth. Similarly, a 1% increase in export diversification results in about 26% increase in GDP per capita *ceteris paribus*. Conversely, a percentage change in gross fixed capital formation leads to about 30.5% decrease in GDP per capita, holding all other variables constant. Although, FDI, economic freedom, and governance indicator have positive contribution to GDP per capita, this effect is insignificant.

Table 6

ARDL results

Variable	Coefficient
Long-Run Analysis	
LNOIL_R	0.0495*** [3.882]
$LnOIL\_R_{t-1}$	0.0488** [2.833]
LNFDI	0.004112 [0.627]
LNGFCF	–0.305*** [–3.325]
$LnGFCF_{t-1}$	0.188* [1.836]
LNXD	0.259** [2.218]
LNEFI	0.0483*** [0.415]
GI	0.00195*** [0.276]
Constant	1.221** [2.682]
F-Statistics, Prob (F-statistic)	804.425*** (0.000)
Short-Run Analysis	
ECT_{t-1}	0.0326*** [13.748]
$\Delta LnOIL\_R$	0.049*** [5.492]
$\Delta LnOIL\_R_{t-1}$	–0.0234* [–2.111]
$\Delta LnEFI_{t-1}$	0.00347 [0.509]
$\Delta LnGFCF$	–0.304*** [–6.043]
$\Delta LnGFCF_{t-1}$	0.155** [3.652]
$\Delta LnXD$	0.25*** [4.927]
$\Delta LnXD_{t-1}$	–0.165** [–2.893]
$\Delta LnEFI$	0.0483 [0.590]
$\Delta LnEFI_{t-1}$	0.411*** [5.279]
ΔGI_{t-1}	–0.103*** [–1.0714]
Constant	33.433*** (0.000)

Note: *, **, *** significance at 10%, 5%, and 1%. Standard errors in brackets while t-statistics in parentheses.
Source: Author's computation (2024).

In the short-term analysis, 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, similar to the long-term results, oil rents have a positive and significant short-term impact on GDP per capita (0.04, p-value 0.001 < 0.1). However, the effect is more pronounced in the long term, as indicated by the larger coefficients. This positive influence of oil rents on GDP per capita challenges the resource curse hypothesis and suggests a resource blessing. Nevertheless, the contribution of oil rents to economic growth is not as substantial as anticipated in countries rich in natural resources. However, the extractive industry continues to play a significant role in growth and budgetary resilience, enabling governments to accumulate large reserves. A major challenge governments face 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 decarbonisation 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 baskets have become more concentrated, with mineral and metal products accounting for over 80% of all exports by 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, whereas they make up the largest portion of its imports (27.3%). Therefore, 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 significant negative impact on Kazakhstan's economy, despite accounting for an average of 23.5% of the GDP. However, we observe that the lag of GFCF significantly and positively influences GDP per capita. Since Kazakhstan joined the World Trade Organisation in 2015, external trade has become a major driver of growth and domestic output. In 2021, trade will account for 58% of Kazakhstan's GDP, compared to the OECD average of 28.2%, while exports of goods and services will constitute 33.6% of the GDP (World Bank, 2023). Additionally, in the short term, the lag of economic freedom (0.155) and export diversification (0.259) have positive and significant effects on GDP per capita. Although Kazakhstan has made efforts to diversify its economy, its impact on output composition has been limited. This is evident from Kazakhstan’s export basket concentrations. While the country has expanded its range of products, 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.

However, 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 among diversification, governance, and oil rents are crucial in promoting sustainable economic growth. Based on these findings, we conclude that diversification, good governance, economic freedom, and oil rents collectively provide a strong foundation for Kazakhstan's sustainable growth as an oil-exporting nation. However, caution must be exercised in drawing definitive conclusions regarding the resource curse phenomenon in oil-rich Kazakhstan because our study did not examine the main symptoms associated with the resource curse.

The impact of FDI on GDP per capita in Kazakhstan is not statistically significant in either the long or short term, contrary to expectations and contradicting the FDI internationalisation theory. Despite oil rents, which attract FDI and contribute only 13% to the GDP, Kazakhstan relies heavily on the energy sector, including gas. Despite relatively lenient investment regulations, Kazakhstan continues to experience low FDI. In 2020, FDI inflows amounted to only 2% of GDP, indicating a continuous decline relative to GDP since the 2008–2009 Global Financial Crisis. The mining and quarrying sectors received the largest portion of FDI in 2020, followed by manufacturing and wholesale trade, which attracted significant investments. The Netherlands will hold the largest share of investment in 2022 at 29.75%, followed by the US (18.23%), Switzerland (9.86%), and Belgium (5.57%). China accounted for 5.11% of total investment inflow *(National Statistical Office of Kazakhstan, 2023)*. Despite these figures, it is important to note that Kazakhstan's overall FDI levels remain relatively low when considering its financing needs.

Consequently, the net FDI inflows in these sectors may not lead to widespread economic development. Instead, they can exacerbate the resource curse, characterised by excessive dependence on a single sector, resulting in volatility, inequality, and limited diversification. This is evident from the lack of a significant effect of net FDI inflows on improving GDP per capita beyond the resource sector. Net FDI inflows, particularly in resource-rich countries such as Kazakhstan, lead to currency appreciation, which makes other sectors such as manufacturing and agriculture less competitive in the global market. Consequently, these sectors may suffer, leading to a decline in their contribution to the GDP and potentially negative impacts on the GDP per capita. In addition, net FDI inflows to Kazakhstan have not generated sufficient linkages or 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 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, thereby affecting the overall growth and development. Kazakhstan's governance index indicates a lack of effective institutions, transparent governance, and investor-friendly regulations. Weak institutional and regulatory barriers can impede the efficient allocation of resources, restrict productivity gains, and dampen the positive impact of FDI on per-capita GDP.

We proceed with an analysis of the causal pathways to determine whether a short-run and long-run causal nexus exists between the variables, which would support the resource curse hypothesis; the crowding-out effect of domestic investment by FDI; 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 variables, we utilised the VECM causality approach. Table 7 indicates that there is a short-run causal relationship from FDI (3.583*), economic freedom (3.272*), and governance (3.660*) to GDP per capita. In the long run, there exist a causal relation from all the predictor variables to GDP per capita (0.042**). An increase in the volume of oil revenue in Kazakhstan 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 a resource curse. Although the model shows that FDI has an insignificant effect on Kazakhstan's economic growth, we confirm a causal relationship between FDI and GDP per capita. This finding aligns with existing literature and theoretical foundations emphasising the positive benefits of FDI for host countries. Likewise, a short-run causal link exists from oil rents (0.702*) to 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 such as Kazakhstan.

We also observe a short-run causality from export diversification to gross capital formation, from oil rents, GDP per capita, and economic freedom to export diversification, and from gross fixed capital formation to economic freedom. All in all, we observe that there's long-run causal relation from all the variable to either of the variable in the model. Our findings support the idea that the combination of diversification, good governance, and economic freedom plays a crucial role in sustaining Kazakhstan's economic growth. 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, and manufacturing, similar to the practices observed in Norway and Botswana to mitigate the Dutch Disease syndrome. Economic freedom facilitates reinvestment, which promotes export diversification. Furthermore, our results indicate that economic freedom

enhances domestic investment in the country. We can rule out the crowding-out effect of FDI on domestic investment because we observe a short-run neutral causality between FDI and gross fixed capital formation.

Table 7

VECM causality

	Short-run causality							Long-run causality
	LogGDP	LogOIL_R	LogFDI	LogGFCF	LogXD	LogEFI	GI	
LogGDP	–	1.0236 (0.312)	3.583* (0.0583)	0.383 (0.536)	2.534 (0.111)	3.272* (0.0705)	3.6604* (0.0557)	0.042** [1.76196]
LogOIL_R	1.0273 (0.311)	–	0.702* (0.402)	0.0346 (0.852)	0.0435 (0.834)	1.144 (0.284)	1.159 (0.281)	0.424* [1.12349]
LogFDI	0.064 (0.800)	0.629 (0.427)	–	0.988 (0.320)	0.013 (0.908)	2.662 (0.103)	1.556 (0.212)	–1.0021* [–1.407]
LogGFCF	0.0316 (0.858)	0.234 (0.628)	0.041 (0.839)	–	15.208*** (0.0001)	2.282 (0.131)	3.186* (0.0743)	0.1346** [2.445]
LogXD	15.90747*** (0.0001)	3.674* (0.0553)	0.00158 (0.968)	0.154 (0.694)	–	4.506** (0.0338)	2.213 (0.136)	–0.1884** [–4.269]
LogEFI	0.942 (0.331)	0.556 (0.455)	1.509 (0.219)	3.505* (0.0612)	2.153 (0.142)	–	0.000223 (0.9881)	0.0581** [1.512]
GI	0.301 (0.583)	0.166 (0.682)	1.432 (0.231)	0.0234 (0.878)	1.119 (0.290)	0.216 (0.642)	–	0.0578** [1.0901]

Source: Author's computation (2024).

The results confirm that Kazakhstan's FDI is driven primarily by the country's availability of natural resources and comparative advantage in these resources. This attracts multinational companies from countries such as the US, Russia, and China. Kazakhstan lacks substantial capital for resource extraction, making it an appealing destination for foreign investment. The causality between the export diversification and oil rents suggests that diversification can influence sustained economic growth in Kazakhstan. However, we also find that Kazakhstan's export diversification index is relatively high, 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 productive activities, thus hindering diversification efforts.

Furthermore, the 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. The lack of effective governance hampers economic diversification. The combination of economic freedom, export diversification, and governance has a positive effect on oil rents (with unidirectional causality) and contributes to sustained long-term growth. A higher governance index leads to higher diversification (a low diversification score

indicates higher diversification), highlighting the significance of governance in promoting diversification. The combined effect of governance and oil rents can foster diversification and mitigate their negative impact on diversification. This emphasises the importance of improving the governance situation in Kazakhstan, as it would enable oil rents to become a crucial source of funding for various sectors and facilitate economic diversification.

The governance indicators comprised voice, 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. In turn, this facilitates the initiation and guidance of economic diversification. Political stability and the absence of violence encourage politicians to efficiently utilise oil rents, providing a foundation for economic diversification and creating a favourable environment in which non-oil sectors can thrive. Government effectiveness enables Kazakhstan to use oil rents judiciously to significantly contribute to economic diversification. This 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.

Thus, improving Kazakhstan's governance capabilities is a pathway to overcoming the resource curse and Dutch disease. Governance acts as a mediator in reconciling the twin goals of diversifying economic activities and deriving benefits from oil endowments. By doing so, oil wealth is transformed into a boon. Therefore, strengthening good governance offers oil-rich countries such as Kazakhstan greater opportunities for economic diversification and provides them with increased resilience against the resource trap, which, in turn, enables robust and sustainable economic growth.

5. Conclusion

This study assessed the effects of oil rents and FDI on economic growth in resource-rich Kazakhstan. Control variables, including domestic investment, export diversification, economic freedom, and governance indicators, were considered. This study utilised the ARDL bounds co-integration approach and VECM model with data from 1990 to 2022. The results showed a positive and significant effect of oil rents on economic growth, challenging the resource curse hypothesis but supporting the macroeconomic theory that resource revenue

stimulates economic growth. However, Kazakhstan faces the challenge of limited positive and sustainable linkages between the extractive sector and broader economy in terms of enhancing productivity and competitiveness. Such limited linkages may hinder the growth and innovation of firms in non-oil sectors, potentially leading to the 'Dutch Disease'. Therefore, caution should be exercised when drawing conclusive remarks that completely refute the resource curse in resource-rich Kazakhstan, because 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 about making definitive conclusions.

In contrast, the results further show that the impact of FDI on Kazakhstan's economic growth is insignificant in both the short and long term, despite confirming a long-run causal relationship. These results contradict the FDI internationalisation theory and align with the idea that poor governance undermines institutions and regulatory enforcement. Consequently, multinational companies repatriate proceeds from resource extraction and exert dominance over host countries through diplomatic relationships. Kazakhstan relies heavily on the energy sector, particularly oil and gas; however, net FDI 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, as demonstrated by the insignificant effect of net FDI inflows. FDI inflows also cause currency appreciation, making other sectors less competitive, and resulting in a trade deficit. Currency appreciation makes sectors such as manufacturing and agriculture less competitive in the global market, as domestic goods become more expensive, resulting in a trade deficit.

This study indicates that economic freedom and export diversification have significant impacts on economic growth in both the short and long term while governance has a significant effect on GDP per capita in the long run. A long-run causal relationship was also demonstrated from export diversification, economic freedom, governance, FDI, gross capital formation, oil rents to GDP per capita. This emphasises 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 utilising oil rents to fund various sectors and facilitate economic diversification. Good governance acts as a mediator, allowing for the dual objectives of diversification and benefits of oil resources. By establishing good governance, Kazakhstan can transform oil wealth into a boon, enabling

economic diversification and resilience against resource traps, and leading to robust and sustainable economic growth. However, resolving long-standing governance issues in resource-rich nations is a gradual process that cannot be completed overnight. Finally, the significance of embracing change must be recognized, and vigorous efforts are needed to enhance the quality and effectiveness of education. Prioritising education equips future generations with the knowledge to protect their rights and shield their economies from potentially detrimental shocks.

Policy recommendations

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

1. Leveraging Oil Rents: The government should reinvest oil revenue to diversify the economy, thereby reducing dependency on the oil and energy sectors, fostering long-term stability, and ensuring the effective management and utilisation of oil rents, with the aim of promoting sustainable economic growth.
2. Enhancing Gross Capital Formation: The government should establish special economic zones in non-energy sectors to support and incentivise the development of nonoil industries. These zones can promote innovation, enhance competitiveness in international markets, attract domestic and foreign investments, encourage productive use of capital, and address barriers that impede the effectiveness of domestic investments.
3. Strengthening economic freedom: Prioritising efforts to reduce bureaucratic obstacles, promote market competition, and create a business-friendly environment. Continued diversification efforts should be pursued to decrease the reliance on a limited number of export sectors. Strict penalties should be imposed for multinational corporations that evade taxes, as this hinders the realisation of the potential benefits of FDI nationwide.

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