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Riding the Waves of Fluctuating Oil Prices: Decoding the Impact on Economic Growth

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ABSTRACT

Oil price fluctuations have always been controversial and remain significant in how a country's economy develops. It is especially easy for the worldwide price of natural resources to fluctuate, putting developing nations at risk of economic instability. Consider Pakistan's economy, which is very sensitive to changes in oil prices due to its reliance on the commodity. This research analyses the effects of oil prices on several macroeconomic indicators, including inflation, imports, gross savings, domestic lending to the private sector (DCPS), and industrial value-added in Pakistan. The study uses an error-correcting framework known as autoregressive distributed lag (ARDL) modelling to examine long-term connections between variables and their short-term implications. Additionally, data acquired between 1970 and 2020 was analyzed using Granger causality tests, impulse response functions (IRFs), and variance decomposition analyses (VDAs). The study found that inflation and domestic loans to the private sector hampered economic development in the near run. Conversely, imports, gross savings, industrial value added, and oil rents have a positive effect. A long-term connection between these variables was verified using the boundaries test. A unidirectional link was found in the causality tests between economic growth and imports, inflation and economic growth, and gross saving and domestic credit. An inverse link between domestic credit and inflation was found. The effect of oil rents on economic development in Pakistan is expected to rise during the next 4 years, according to the forecasts, before levelling out. According to the VDA results, the most critical factor influencing Pakistan's economic development over the next decade would be domestic lending to the private sector. Following these empirical results, the study proposes policy adjustments that might help Pakistan's economy expand more quickly and sustainably.

Keywords: Oil Price Volatility, Economic Growth, Financial Development, Industrialization, ARDL Estimator, Pakistan
JEL Classifications: C32; E31; O10

1. INTRODUCTION

Both developed and emerging economies are severely affected by the unpredictable nature of oil prices. Due to several recent global economic catastrophes, investors are keen to learn how oil price fluctuations affect global financial markets, particularly stock market returns (Khan et al., 2021a; Ajmi et al., 2021; Omar et al., 2021). A nation's progress largely depends on the investment it receives in its economy. Numerous studies have been conducted over the last several decades to analyze the effects of fluctuating oil prices on various sectors of the global economy (Siddiqui, 2014; Papapetrou, 2001). The effect of rising oil prices on other

phenomena is the subject of much discussion (Humbatova et al., 2019). An oil price shock is an unexpected and significant increase or decrease in oil prices. Oil prices have been affected by several factors that experts have studied, and Middle Eastern wars have been the primary cause of oil price spikes worldwide (Masood, 2019). Oil price changes have been linked to various historical events, including World War II, the oil embargoes of 1973-1974 and 1978-1979, the Iranian Revolution, the Iran-Iraq War of 1980, and the Persian Gulf Wars of 1990-1991. Long-term economic growth and stability rely heavily on oil. A rise in oil prices is good for countries that export oil but bad for those that import it, say Jayaraman and Lau (2011). When oil prices rise worldwide, poorer countries that lack access to natural resources feel the effects the hardest. The instant gain in revenue from higher oil prices positively affects the economies of net oil exporting countries (Olomola and Adejumo, 2006; Akpan, 2009).

Most of the world's oil commerce occurs in Asia, making up more than 40% of all oil trading (Ashfaq et al., 2019). The high cost of oil has been proven to have a detrimental effect on the economies of many emerging countries (Ozturk et al., 2022; Miamo and Achuo, 2022; Mujtaba and Jena, 2021; Adekoya, 2021). Akinlo and Apanisile (2015), Hassan and Abdullah (2015), and Musa (2019), however, all found that higher oil prices were associated with greater economic growth. Countries like Pakistan, which have abundant natural resources but are still developing economically, are particularly exposed to swings in commodity prices on the international market. Extreme vulnerability to fluctuations in oil prices on the global market results from Pakistan's reliance on oil exports (Osigwe, 2015). High oil costs have a chilling effect on consumer spending, low-income farmers, and public transit in metropolitan areas, all of which contribute to emerging countries' stagnation (Kiani, 2011; Sahu et al., 2022; Ozturk and Ullah 2022).

Economic policy uncertainty may have positive and negative long-term implications on oil prices. There is evidence from earlier studies that suggest manufacturing benefits from favourable oil price shocks (Shahbaz et al., 2021; Balashova and Serletis, 2020; Ozturk et al., 2023). While privately-held companies' exports show an asymmetrical response to oil price variations, state-owned companies are considerably and continuously influenced by price changes in the commodity (Wei and Guo, 2016; Kee & Tang, 2016). In Pakistan, oil is vital to many different manufacturing procedures and consumer products. The proportion of crude oil imported by Pakistan each year increased from 0.07% in 2018 to 0.76% in 2035, according to an analysis of the country's predicted oil consumption (Raza and Lin, 2021). The oil share and rate of energy consumption in Pakistan, both of which rise with economic development, affect the severity of the country's vulnerability to energy price shocks (Zakaria and Noureen, 2016). In 2006 and 2007, Pakistan spent 44% of its export earnings on imported oil, a considerable rise from the 28% spent the year before. Oil's important position in energy production means that fluctuations in oil prices on the international market directly influence the economy (Hamilton, 1983; Malik et al., 2007; Bala and Chin, 2018). A surge in oil prices might affect the economy, including greater pricing for consumer products, more work for homeowners, and less money for private investment (Mo et al. 2019; Murshed and Ozturk, 2023; Razzaq et al., 2023).

The effect of rising oil prices on investment, job creation, and product development is conditional on the level of domestic savings (Khan et al., 2017). Pakistan's economy has grown despite multiple economic crises since independence, with oil as a critical raw material throughout the country's burgeoning industrial sector. When oil prices rise, so do manufacturing and labour costs (Ahmad and Luqman, 2012). Pakistan's GDP is heavily influenced by the price of crude oil, a crucial economic indicator, with increased energy prices having a negative long-term effect but a favourable short-term impact on the economy. The continuing growth of the economy depends on keeping the price of crude oil at a steady level. Oil prices and economic security are related since oil is essential to contemporary society's economic development, industrial production, and other economic indicators. Oil price swings over the last few decades have affected emerging and industrialised countries. Most oil-importing industrialised countries charge hefty oil taxes to fund their economies, and the precise amount varies according to monetary policy, oil taxation, industrial infrastructure, and oil reliance (Waheed et al., 2018). Because high inflation hinders the efficiency of a market economy, it is a fundamental aim of macroeconomic policy in both rich and developing countries to foster vigorous economic development while maintaining inflation in the single digits.

The immediate effect of oil prices and inflation on the import deficit and private sector lending are only two of the many economic issues Pakistan is now facing (Khalid, 2005). A significant influence on oil prices, moderate inflation, and sound policy execution are all required to ensure sustained economic development. The research aims to provide insight into the effects of these fundamental factors on economic development and the best ways to solve associated issues. An increase in oil prices is generally seen as bad for the economy, both in theory and practice (Trang et al., 2017).

The study's overarching goal is to investigate the short-and long-term impacts of oil price volatility due to policy uncertainty on Pakistan's economy. The following goals were set to help attain these ends:

i. Determine whether the resource curse concept is confirmed by analyzing how oil price fluctuations have affected the country's economy
ii. Examining the impact of domestic loans and savings on the economy
iii. Examine how inflation, increased imports, and higher industrial value-added have affected Pakistan's GDP, and
iv. The goal is to establish a hierarchy of causes and effects among the critical factors.

The ARDL, Granger causality test and innovation accounting matrix are just a few of the cutting-edge econometric tools that will be used to achieve these goals. A literature review, an explanation of data and econometric methodology, an empirical analysis of the results, and a conclusion comprise the study's five components.

2. LITERATURE REVIEW

There are three distinct parts to the literature review, each of which delves further into a particular subset of the issue at hand:

i. Economic growth as impacted by oil price swings and inflation
ii. Impact of household credit and savings on economic development in Pakistan, and
iii. The effect of imports and industrial value-added on national economic development is analyzed.

By focusing on these three areas, we may perform a thorough literature analysis on the topic at hand, deepening our knowledge and leading to better-informed policy suggestions.

2.1. The Interplay between Fluctuating Oil Prices, Rising Price Levels, and Economic Growth: A Literature Review

In order to keep inflation under control, authorities in the macroeconomic work toward a goal of strong and sustainable economic growth (Ahmad et al., 2022; Fatima, 2023). Since inflation has such a profound effect on economic expansion, it has been the subject of substantial study in macroeconomics (Uddin, 2021). Governments have instituted extensive programmes to control inflation and foster economic expansion, with monetary policy, fiscal policy, and other tools all playing a part. Instead of concentrating primarily on economic growth, these strategies aim to keep inflation steady (Dinh, 2020). Throughout globalization, national economies have been continually reshaped. In the last several decades, the world economy has gone through two distinct phases: Times of high oil prices and times of low oil prices. In many empirical investigations, variations in oil prices have been shown to have a linear effect on the economic expansion (Werner, 2005; Gbadebo, 2009). Whether a nation is, an oil exporter or oil importer affects the strength of this connection. Countries that rely on petroleum imports see large swings in their production costs and output volumes when oil prices rise and fall. This has a rising effect on fundamental macroeconomic indices like inflation and job growth. Dinh (2020) analyzed inflation's long-term effects on Vietnam's GDP growth from 1996 to 2018. While the research did find a correlation between inflation and economic expansion, it concluded that inflation was not a significant contributor to GDP expansion. From 1981 to 2018, Zimbabwe's inflation and GDP growth were studied by Runganga (2020). According to the findings, inflation slows down an economy, but the link is nonlinear, and stable prices boost productivity. Researchers determined that an inflation rate that above 4% began to impact economic growth negatively. Inflation has a beneficial influence on GDP in Eurozone nations, according to a study by Kryeziu and Durguti (2019) that looked at data from 1997 to 2017. From 2011 to 2018, Singh (2018) examined the effects of inflation on India's GDP growth. He found a negative association between inflation and GDP growth and little effect on employment growth. The effects of inflation, capital, demography, trade, and population on Pakistan's economic development were analyzed by Ahmad and Luqman (2012), who found a positive effect on population growth and export markets and an adverse effect of inflation. According to research by Pollin and Zhu (2009), which looked at the correlation between inflation and GDP growth in various nations from 1961 to 2000, higher inflation had a beneficial effect on economic growth up to the 15-18% barrier. In their study of Pakistan's financial demand function from 1972 to 2017, Atil et al. (2020) found that commodities prices have a beneficial influence on production, but globalization stifles financial advancement. Oil products, gasoline, and palm oil prices all have a role in Indonesia's economy, and Prabheesh and Laila (2020) undertook empirical research to determine the extent of that role. Using quarterly data from 2000 to 2019, they discovered that the oil price has a significant nonlinear influence on the country's production. Commodity prices were shown to affect national production more than fuel prices significantly. The research also showed that a drop in global palm oil prices had a more significant negative impact on Indonesia's economy than fluctuations in gasoline prices. Oil price shocks influenced both the short- and long-term development of Indonesia's economy, which Rumbia et al. (2020) analyzed, as well as the growth of the ASEAN-4 area from 1967 to 2018. A 1% rise in crude oil prices was shown to boost the size of the economy by 0.42% over the long term, according to the research. The research also shows that discretionary expenditure contributes very little to GDP growth over the long run. The findings show that crude oil prices have a short-term asymmetrical effect on the real economy. Wen et al. (2019) analyzed the changing effects of commodity prices and financial regulation on the Chinese economy from January 1996 to June 2017. According to the study's findings, global commodity price shocks seemed to boost China's economic growth rate in the short run, but their influence in the long term remained unclear. It was determined that properly comprehending the connection between crude oil price shocks and business activity required examining China's monetary policy and its impact on crude oil prices. Musa (2019) assessed how crude oil prices and market circumstances changed Nigeria's economic growth. Both short-term and long-term economic growth was shown to be significantly affected by crude oil prices and market pricing. The findings suggested that fluctuations in oil prices and currency values affect the economy in the near and medium term. The effect of crude oil prices on GDP growth in the BRICS nations was studied by Mo et al. (2019). Different impacts were found across countries, periods, and quantiles due to petroleum policy and industrial advancement disparities. Overall, the analysis indicated a beneficial influence from the BRICS nations. However, it was less when oil prices in Brazil and Russia were high and larger when they were low in India. It was discovered that oil prices in China had a positive influence in the medium to long term, followed by a negative impact, but eventually promoted macroeconomic stability. Though the negative impact faded quickly, the positive one lingered for much longer in South Africa, although at a reduced intensity. Overall, Table 1 shows that increased oil prices may significantly affect economic growth, supporting the findings of previous work.

Based on the given literature, the study formulizes the following hypothesis, i.e.,

H_1: Oil rents and rising prices are expected to hurt economic growth.

2.2. The Relationship between Domestic Saving, Domestic Credit and Economic Growth in the Literature

According to the notion of economic development, a nation's progress and success are directly tied to the rate at which its citizens save money. This concept may be traced back to early

Table 1: Recent studies on the impact of oil prices on economic performance

Authors	Country	Time period	Results
Xia (2021)	India	2001-2015	Unemployment hurts economic development as it can drive up inflation rates
Mandeya and Ho (2021)	South Africa	1961Q1-2019 Q4	One factor contributing to inflation is unemployment, which can hinder economic growth and development in both the short and long term
Batrancea (2021)	European Union	2019-2020	Inflation has a detrimental influence on the growth of the economy
Helali et al. (2021)	Tunisia	1982-2018	A low inflation rate below 4.89% can positively affect economic growth by promoting financial depth. However, as inflation increases, this benefit becomes less noticeable
Chugunov et al. (2021)	OECD countries	1990-2019	When prices rise too quickly, it might slow down the economy. A high inflation rate lessens the purchasing power of individuals and dampens economic activity. In addition to threatening financial stability, high inflation discourages investors from outside the country. Governments must keep inflation under control to sustain economic expansion
Canakci (2021)	Turkey and USA	1909-2019	The impact of inflation on economic growth is considered minimal or insignificant
Uddin (2021)	Pakistan	1990-2015	In general, GDP grows with inflation. It is worth noting, however, that the strength of this connection varies with things like the ebb and flow of the business cycle, the federal reserve's interest rate, and other macroeconomic factors
Baek et al. (2021)	China	2019-2020	The impact of oil prices on economic growth is not uniform and can vary in magnitude and direction
Rosnawintang et al. (2021)	ASEAN	1995-2018	The relationship between crude oil and economic growth has been demonstrated to have a positive effect
Jassim (2021)	Iraq	1981-2019	The growth of the oil sector has been shown to correlate with a country's social well-being positively
Gong et al. (2022)	USA	1990-2018	An increase in currency depreciation raises the price of crude oil and negatively impacts economic growth and international trade
Yu et al. (2023)	China and India	1990-2019	Commuting benefits the economy and the energy industry, while the move to alternative energy sources has a detrimental effect on petroleum oil supplies. Because of the country's fast modernization and substantial capital inflows, China's economic activity level has significantly influenced the demand for petroleum

GDP: Gross domestic product

Table 2: Recent research on the connection between household savings, lending, and wealth creation

Authors	Country	Time Period	Results
Khoueiri et al. (2021)	Lebanese	1980-2014	There is an inverse correlation between private savings and the economy's advancement
Van Wyk and Kapingura (2021)	South Africa	1986-2018	Private savings do not positively impact economic growth
Rahman and Ferdaus (2021)	Pakistan	1973-2018	The consumption of capital formation negatively impacts economic growth
Taguchi et al. (2021)	Asian Countries	1970-2018 2018-2050	The savings rate and economic growth mutually positively affect each other
Ribaj and Mexhuani (2021)	Kosovo	2010-2017	Saving has a favourable impact on the economy's growth
Dahal and Luitel (2021)	Nepal	1987/88-2019/20	The relationship between saving and GDP is positive
Bendahmane and Kerrouche (2021)	Algeria	1970-2018	The provision of domestic credit hurts economic growth
Jarrar (2021)	Jordan	1989-2018	The growth of private-sector lending leads to a positive effect on the economy's growth and development
Haralayya and Aithal (2021)	India	1981-2019	The distribution of domestic credit has a positive impact on individual wealth
Afonso and Blanco-Arana (2022)	OECD countries	1990-2016	The growth of domestic lending, the value of businesses, and the stock market's liquidity have a significant impact on the country's income
Nkemgha et al. (2023)	African countries	2003-2019	Investments in infrastructure in Africa have a favourable effect on industrial sector development. In contrast, unintended consequences have emerged from the interplay of energy and transportation networks, product expansion, and social resources

GDP: Gross domestic product

growth models created by people like Harrod-Domar and others and to works like Rostow's phases of development and Lewis' growth theory. These analyses agree that a rise in the savings rate is a significant element in a country's capacity to sustain strong growth over time (Saha, 2009). Saving rates in developing Asian countries are often greater than in developed ones. These high savings rates have prompted significant domestic investment and contributed to considerable capital outflows. Acquiring capital and financial investments from savings may be a driving force in a nation's development and success (Siddik et al. 2018; Tessema, 2020; Lu et al., 2020). Banks play a significant role in facilitating the free movement of investment from regions of economic excess to deficit. However, banks are subject to regulatory constraints and wield considerable power over the flow of capital. Therefore, they are pivotal in deciding the level of investment, the number of new jobs created, and the distribution of income (Gross, 2001). Expansion of the private sector is a reliable barometer of economic development. In the United States, private sector credit expansion is quantified by the total amount of domestic credit granted by banks and other financial organizations (Anyanwu et al., 2018). Tessema's (2020) research examined the causes of the Turkish economy's growth, and decline from 1980 to 2018. Among the factors

considered are economic growth, commodity prices, savings, borrowing costs, liquid assets, and reliance on the young and old.

Several studies have examined how savings, private investment, and economic growth are interconnected. Saxena (2020) examined this connection between saving, capital, and wealth development in the Indian economy from 1992 to 2018 and found a favourable one. From 1988 to 2018, Basabose (2020) investigated the interplay between Rwanda's domestic savings, FDI, population growth, manufactured products, and income. The findings pointed to an immediate positive effect of exports on savings, whereas a longer-term negative effect was shown for income. To determine how much of an effect saving has on Algeria's economic development, Sellami et al. (2020) performed research on the country's economy. The data collected from 1980 to 2018 showed that saving had a beneficial impact on income growth. This further proves that Algeria's domestic saving is essential to the country's economic development. Using information from 1970 to 2018, Lar and Taguchi (2020) studied the impact of an ageing population and a high spending rate on Myanmar's economic development. The research shows that the economic growth in Myanmar is positively affected by the saving rate but negatively affected by the country's ageing population. The negative effect more than cancels out the savings rate's potential benefits. Li (2019) studied family savings and investments in Australia and Korea between 2008 and 2017. Results show that a rise in the personal savings rate leads to higher GDP over time, which in turn allows for more government investment in physical capital and technological advancements, boosting productivity and lowering unemployment. Mohanty (2019) used yearly time series data from 1975 to 2016 to analyse the correlation between national savings in Ethiopia and economic development. The findings demonstrated a causal association between savings and economic expansion in Ethiopia, which operates in both directions. From 1995 to 2016, Khan et al. (2018) analysed retained profits in Asian nations and the factors that affected them. Multiple econometric techniques concluded that gross domestic product, current assets, and stock markets significantly affect domestic savings, but tax income has a negligible effect. For 124 emerging nations, Azizi (2020) investigated the connection between financial growth and homecoming. Finding a favourable correlation between credit expansion and economic development, the researchers examined the effect of loans made inside the business sector.

Economics and finance in Europe were studied by Matei (2020). Private sector financing boosted the size of the economy in the near term, according to data gathered between 1995 and 2016, but its long-term implications remained unclear. For their study, Zhou et al. (2020) looked at data from 1985 to 2018 to see whether there was a connection between geopolitical worries and economic development. As the data showed, business sector borrowing decreased as geopolitical fears increased, demonstrating that geopolitical tensions had a depressing effect on consumer loans, national expenditure, and capital creation. From 2004Q1 to 2017Q4, Pham and Nguyen (2020) analysed the correlation between Vietnam's growing credit market and economic output. According to the data, there is a two-way connection between credit availability and economic growth, with rising debt levels hampering Vietnam's long-term development. From 2005 to 2019, Mukhtarov et al. (2019) investigated the relationship between borrowed money, market prices, and non-oil industrial progress in Azerbaijan. Their findings imply a long-term beneficial influence of lending institutions and currency exchange on non-oil GDP. Table 2 shows the latest literature for ready reference.

Based on the cited literature, the study formulates the second hypothesis, i.e.,

H_2: There is a potential for national savings to drive economic growth, while domestic credit may hinder it.

2.3. Literature Review on the Impact of Industrial Value-Added and Imports on the Nation's Economic Growth

Due to the increased global dispersion of production, exporting enterprises have been less reliant on local inputs in recent years. However, the result has been a decline in the share of domestic materials in international shipments for most nations. The share of a country's GDP that goes toward its exports has become an increasingly relevant indicator of its global competitiveness (Vrh, 2018). Throughout history, the global economy has been profoundly impacted by the practice of international commerce, simply doing business across national borders (Okyere and Jilu, 2020). The importance of imports and exports to an economy cannot be overstated, nor can the impact of fluctuations in the exchange rate. Exports, imports, and currencies are essential in forecasting economic expansion (Habanabakize, 2019). Power consumption, fuel imports, and power pricing all have a role in how much of an economic effect manufacturing value-added has, as stated by Murshed et al. (2020). Using data from 1987 to 2017, they determined that the energy sector contributed equally to agricultural, industrial, and service value additions and economic growth. Though, inflationary oil costs and the rising need for imported energy have stymied development. While we did find a correlation between energy consumption and total intangible value, we did not find one between agricultural output and profit margins. Central and Eastern European and European Union export value-added were evaluated by Vrh (2018) during 2000-2011. The findings revealed substantial cross-national variation in the extent to which R&D investment and other intangible capital contributed to domestic value creation. Income creation in 41 African nations was studied by Aluko and Adeyeye (2020), who looked into the connection between imported items and exports. The analysis concluded that imports caused one-way causation in seven countries, short-term causality in four, and long-term causality in ten. From 1998 to 2018, Okyere and Jilu (2020) analysed the effect of international trade on Ghana's Economic growth. According to the numbers, foreign trade imports had no impact on growth in Ghana. There was a negative link between cocoa exports and economic growth in Ghana. The exchange rate and the price level were both Granger caused by Income, but neither aided economic growth. From 1970 to 2017, Bakari et al. (2019) analysed data on the connection between FDI, importation, export profits, and output growth in Brazil. According to the data, there was a temporary effect on the economy from the rise in produced products, sales, and investment. The expansion of export businesses was another

byproduct of increased wealth. The results demonstrated that both domestic expenditure and manufactured items contributed to the growth of the national economy over the long run. The relationship between commerce, purchases, and capital creation in the Gambia was investigated by Ceesay et al. (2019). The research found a direct relationship between growth rates and the import of foreign products. In contrast, variations in exports could not be explained by changes in productivity growth but could be explained by changes in imports. Growth in imports and productivity in Gambia were affected by the actual exchange rate and the currency's value. Table 3 compiles findings from previous research on how industrial value-added and imports affect economic expansion.

Based on the given literature, the study formulates the third hypothesis, i.e.,

H_3: Manufacturing value added helps industrial prosperity, whereas exports operate as a brake on productivity expansion.

The literature's bird's-eye perspective of the effect of numerous factors on growth rate varies based on the economic conditions of the economy and the available resources. Multiple studies have shown that inflation and oil prices positively impact the growth rate of different nations (Uddin, 2021; Jassim et al., 2021; Dinh, 2020). Several studies have shown a negative correlation between oil prices and inflation rates (Xia, 2021; Batrancea, 2021; Helali et al., 2021). Several studies point to an asymmetric effect (Rumbia et al., 2020; Chugunov et al., 2021). In addition, domestic savings and domestic loans to the private sector influence development in both directions. Multiple studies have shown a positive and an adverse reaction to the rate of domestic saving and domestic lending to the private sector, respectively (Khoueiri et al., 2021; Van Wyk and Kapingura, 2021; Rahman and Ferdaus, 2021). Both exports and imports contribute considerably to the economic growth of their respective nations. Most countries' exports depend on their industrial production in their respective industries (Abbasi et al., 2021; Yang and Khan, 2021). In light of this, the study examining the oil resource curse theory in a country evaluated the practicability of the aforementioned factors.

3. DATA SOURCE AND METHODOLOGY

Pakistan's economy was the focal point of this study's examination. Fifty years of data were used to create the sample for the research. Since its independence, Pakistan, a developing country, has endured a series of economic crises. Previous governments have all done everything they could to increase the interconnectedness of the economic crises. Pakistan is a developing country that relies heavily on oil as an industrial input. As a consequence, rising oil prices not only increase output costs but also boost input costs, raising production costs and the unemployment rate (Ahmad and Luqman, 2012). This research examined the connection between the variables using time series data from 1971 to 2020. Data collection efforts used the World Development Indicator (World Bank, 2021). The set of potential variables is tabulated for easy perusal in Table 4.

3.1. Theoretical Framework

According to classical economics, long-term economic growth and development are primarily driven by natural resources. The resource blesses theory explains why countries rich in natural resources tend to prosper economically. The profits made by renting out natural resources are very unpredictable. Because of this, their impact on economic development varies from one country to the next. Because of this, the famous "resource curse" idea about developing nations and their natural wealth was developed (Badeeb et al., 2017). Economic booms in oil, gas, agricultural commodities, and other minerals can have a chilling effect on other parts of the economy, particularly the products and service sectors, leading to slower overall growth. This is best demonstrated by the phenomenon known as Dutch Disease, which is at the heart of the resource curse hypothesis (Adabor and Buabeng, 2021). Since oil is the fundamental component of the production function, the supply-side channel predicts that a rise in oil prices would lead to higher production costs. Oil price shocks caused by consumer demand hurt spending and savings. Increases in oil prices can impact the economy via the exchange rate channels and inflation (Shahbaz et al., 2019). Aljebrin (2006), Akçay (2019), Neog and Yavada (2020), Jassim (2021), Sohail

Table 3: Recent studies on the influence of Imports and manufacturing production on income

Authors	Country	Time period	Results
Abbasi et al. (2021)	Pakistan	1972-2018	The industrial sector's contribution to the economy can have both short-term and long-term effects on its growth
Yang and Khan (2021)	IEA Members	1992-2016	Increased industrial value addition and capital formation are expected to impact environmental sustainability in the long-term outlook positively
De Soyres et al. (2021)	EMU Countries	1995-2009	In the long run, increased industrial value-added and capital formation are expected to impact environmental sustainability positively
Asif et al. (2021)	Pakistan	1981-2017	Pakistan's economy experienced both positive and negative effects from the import substitution policy
Bildirici and Kayıkçı (2021)	India, Brazil, Turkey Pakistan	1972-2017	Foreign energy imports amplify the effect of economic growth
Shadab (2021)	UAE	1975-2017	Imports play a role in the development of the UAE's economy
Carrasco et al. (2021)	Nigeria	1981-2019	There is a clear one-way relationship between the import of energy resources (fuel imports) and economic growth
Panta et al. (2022)	Nepal	1965-2020	Find evidence for both the import-led development and import-led economic growth theories
Kim et al. (2023)	28 countries	2001-2014	In contrast to the power of labour unions, economic evidence supports the objectives of corporate lobbying groups. The degree of commercial intervention by the opposite party grows as the investment resource ratio rises

Table 4: List of variables and their measurements

Variables	Symbol	Measurement	Expected sign	Theoretical expectations
Economic growth	GDPGR	GDPGR (annual%)	--	A high in the oil prices will stifle economic growth, thus validating the "resource curse" hypothesis
OPRICE	OPRICE	Oil rents (% of GDP)	Negative	
INF	INF	Consumer price index (2010=100)	Negative	
INDVAD	INDVAD	Industry (including construction), value added (% of GDP)	Positive	The rise in capital goods imports and the increase in industrial value-added are expected to contribute to the country's economic development
IMPORTS	IMPORTS	Imports of goods and services (% of GDP)	Positive	
DS	DS	Gross domestic savings (% of GDP)	Positive	An increase in domestic savings would contribute to its economic development. In contrast, increasing domestic credit will likely reduce economic growth due to the overcrowding effect
Domestic credit	DCPSB	Domestic credit to private sector by banks (% of GDP)	Negative	

GDP: Gross domestic product, GDPGR: GDP growth rate, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added, DS: Domestic saving, DCPSB: Domestic credit to private sector by banks

et al. (2021), Shafiq et al. (2021), and Adabor and Buabeng (2021), were used to develop an equation for the study:

$$GDPGR = \beta 0 + \beta_1 OPRICE_t + \beta_2 INF + \beta_3 DCPSB_t + \beta_4 IMPORTS_t + \beta_5 INDVAD_t + \beta_6 DS_t + \varepsilon_t \quad (1)$$

Where GDPGR shows economic growth, OPRICE shows oil prices, INF shows inflation, DCPSB shows domestic credit, IMPORTS shows imports, INDVAD shows industry value added, DS shows domestic savings, and ε shows error term.

3.2. Econometric Framework

The study adopted several econometric techniques for analysis of results, i.e.,

3.2.1. Step-I: Unit root test

Using the autoregressive (AR) framework, one may first verify the results of the unit root test for each independent variable. For this first stage of the process, the AR (1) model may be used, which

$$y_t = \theta\, y_{t-1} + \varepsilon_t \quad (2)$$

where ε_t is the error term.

There are many possible states: Level stationary, explosion, non-stationary, and first different stationary. The scholarly work of Zaman (2023), which employs a unique strategy and represents progress in statistical methods, has lately garnered much interest. When using the Augmented Dickey Fuller (ADF) unit root test, the order of integration of the candidate variables may be determined with the help of the following equation:

$$\Delta GDPGR_t = \alpha + \beta time + \gamma GDPGR_{t-1} + \delta_1 \Delta GDPGR_{t-1} + ... + \delta_{p-1} \Delta GDPGR_{t-p-1} + \varepsilon_t$$

$$\Delta OPRICE_t = \alpha + \beta time + \gamma OPRICE_{t-1} + \delta_1 \Delta OPRICE_{t-1} + ... + \delta_{p-1} \Delta OPRICE_{t-p-1} + \varepsilon_t$$

$$\Delta INF_t = \alpha + \beta time + \gamma INF_{t-1} + \delta_1 \Delta INF_{t-1} + ... + \delta_{p-1} \Delta INF_{t-p-1} + \varepsilon_t \quad (3)$$

$$\Delta DCPSB_t = \alpha + \beta time + \gamma DCPSB_{t-1} + \delta_1 \Delta DCPSB_{t-1} + ... + \delta_{p-1} \Delta DCPSB_{t-p-1} + \varepsilon_t$$

$$\Delta IMPORTS_t = \alpha + \beta time + \gamma IMPORTS_{t-1} + \delta_1 \Delta IMPORTS_{t-1} + ... + \delta_{p-1} \Delta IMPORTS_{t-p-1} + \varepsilon_t$$

$$\Delta INDVAD_t = \alpha + \beta time + \gamma INDVAD_{t-1} + \delta_1 \Delta INDVAD_{t-1} + ... + \delta_{p-1} \Delta INDVAD_{t-p-1} + \varepsilon_t$$

$$\Delta DS_t = \alpha + \beta time + \gamma DS_{t-1} + \delta_1 \Delta DS_{t-1} + ... + \delta_{p-1} \Delta DS_{t-p-1} + \varepsilon_t$$

Where "α" denotes an intercept, "β" denotes the time trend coefficient, and "P" is the lag order autoregressive (AR) process. The lag is calculated using AIC. By applying constraints on α=β=0, the appropriate model is transformed into a random walk with drift.

3.2.2. Step-II: ARDL approach

Limits testing is superior to multivariate cointegration in terms of small sample characteristics, as stated by Narayan (2005), Belloumi (2014), and Wang et al. (2019). In order to examine the long-term cointegration relationship between the variables, the study used an ARDL Bounds testing strategy. The ARDL form of equation (4) reads as follows:

$$\begin{aligned}\Delta \ln GDPGR_t &= c_0 + \delta_1 \ln OPRICE_{t-1} + \delta 2 \ln DCPSB_{t-1} \\ &+ \delta_3 \ln IMPORTS_{t-1} + \delta_4 \ln INF_{t-1} + \delta 5 \ln INDVAD_{t-1} \\ &+ \delta 6 \ln DS_t + \sum_{i=1}^{p} \varphi_i \Delta \ln OPRICE_{t-i} + \sum_{j=1}^{q1} \varphi_j \Delta \ln DCSPB_{t-j} \\ &+ \sum_{k=1}^{q2} \varphi_k \Delta \ln IMPORTS_{t-k} + \sum_{l=1}^{q3} \varphi_l \Delta \ln INF_{t-l} \\ &+ \sum_{m=1}^{q4} \varphi_m \Delta \ln INDVAD_{t-m} + \sum_{n=1}^{q5} \varphi_n \Delta + \varepsilon_t \end{aligned} \quad (4)$$

Where Δ is the first difference operator and ε_t is the white noise error term. The parameters δ_i = 1, 2, 3, 4, 5, 6 are the long run multiplier whereas φ_i = 1, 2, 3, 4, 5, 6 are the parameters which represents short run dynamic coefficient of ARDL model.

This method utilizes the Wald-test (F-statistics) to determine which variables need to be normalized over time. The Wald test has two different groups of thresholds. If there is just one set, then there is no cointegration (since all variables are I(0)). The other group shows cointegration between the variables since they are all I(1) (Nkoro and Uko, 2016). However, due to the study's small size,

it was impossible to use the critical values determined by Pesaran et al. (2001). So, from 30 to 80 observations, Narayan (2005) provides a range of essential values. If the calculated F-statistic falls below the critical value at the specified level of significance. Therefore, the absence of a long-term correlation is accepted under the null hypothesis. In order to reject the null hypothesis of no cointegration, the F-statistic value must be greater than the upper limit critical value. Therefore, the function's variables set up a connection in long-term equilibrium. If the value of the F-statistic lies between the minimum and maximum values, then there is insufficient evidence to form a judgement (Kanjilal and Ghosh, 2014; Chia and Lim, 2015).

The higher bound I (1), which causes cointegration, verifies the values. The error correction term (ECT) is used to strike a balance between the various components of the model via the parameter of adjustment speed. Harmonic with negative ECT values is the model's long-term convergence to equilibrium at counter-frequency. The ECT is defined by equation (5) in the ARDL model:

$$\begin{aligned}&\Delta \ln \mathrm{GDPGR}_t = c_0 + \delta_1 \ln \mathrm{OPRICE}_{t-1} + \delta_2 \ln \mathrm{DCPSB}_{t-1} \\ &+\delta_3 \ln \mathrm{IMPORTS}_{t-1} + \delta_4 \ln \mathrm{INF}_{t-1} + \delta_5 \ln \mathrm{INDVAD}_{t-1} \\ &+\delta_6 \ln \mathrm{DS}_{t-1} + \sum_{i=1}^{p} \varphi_i \Delta \ln \mathrm{OPRICE}_{t-i} + \sum_{j=1}^{q1} \varphi_j \Delta \ln \mathrm{DCSPB}_{t-j} \\ &+\sum_{k=1}^{q2} \varphi_k \Delta \ln \mathrm{IMPORTS}_{t-k} + \sum_{l=1}^{q3} \varphi_l \Delta \ln \mathrm{INF}_{t-l} \\ &+\sum_{m=1}^{q4} \varphi_m \Delta \ln \mathrm{INDVAD}_{t-m} + \sum_{n=1}^{q5} \varphi_n \\ &\Delta \ln \mathrm{DS}_{t-n} + \pi \left(\mathrm{ECT}\right)_{t-1} + \varepsilon_t\end{aligned} \tag{5}$$

3.2.3. Step-III: Granger causality

Then, the Granger causality test was run on the potential predictors to see whether there was a cause-and-effect connection between the variables. In this case, the F-test is used to determine whether the variables in question are highly related but have developed just one-way or two-way connections or if the relationship has become neutral. These three findings about causes might be used to guide the creation of sustainable policies that boost the economy generally. The following association between the variables may be seen as a causation framework:

i. Unidirectional causality and revere causality

GDPGR → OPRICE, INF, DCPSB, IMPORTS, INDVAD, DS but not other way around

And OPRICE, INF, DCPSB, IMPORTS, INDVAD, DS → GDPGR but not other way around

ii. Bidirectional causality

OPRICE↔INF↔DCPSB↔IMPORTS↔INDVAD↔DS↔GDPGR

iii. No causality

OPRICE≠INF≠DCPSB≠IMPORTS≠INDVAD≠DS≠GDPGR

Where, → shows One-way Granger causality, ↔ shows two-way Granger causality and ≠ shows no causality.

The Granger causality test is carried out within the context of the vector autoregressive model, which is represented by equation (6), i.e.,

$$\begin{aligned}&\begin{bmatrix} GDPGR_t \\ OPRICE_t \\ DCPSB_t \\ INF_t \\ IMPORTS_t \\ INDVAD_t \\ DS_t \end{bmatrix} = \begin{bmatrix} \tau_0 \\ \tau_1 \\ \tau_2 \\ \tau_3 \\ \tau_4 \\ \tau_5 \\ \tau_6 \end{bmatrix} + \sum_{i=1}^{p} \begin{bmatrix} \sigma_{11t}\sigma_{12t}\sigma_{13t}\sigma_{14t}\sigma_{15t} \\ \sigma_{21t}\sigma_{22t}\sigma_{23t}\sigma_{24t}\sigma_{25t} \\ \sigma_{31t}\sigma_{32t}\sigma_{33t}\sigma_{34t}\sigma_{35t} \\ \sigma_{41t}\sigma_{42t}\sigma_{43t}\sigma_{44t}\sigma_{45t} \\ \sigma_{51t}\sigma_{52t}\sigma_{53t}\sigma_{54t}\sigma_{55t} \\ \sigma_{61t}\sigma_{62t}\sigma_{63t}\sigma_{64t}\sigma_{65t} \end{bmatrix} \times \begin{bmatrix} GDPGR_{t-i} \\ OPRICE_{t-i} \\ DCPSB_{t-i} \\ INF_{t-i} \\ IMPORTS_{t-i} \\ INDVAD_{t-i} \\ DS_{t-i} \end{bmatrix} + \\ &\sum_{j=p+1}^{d\max} \begin{bmatrix} \theta_{11j}\theta_{12j}\theta_{13j}\theta_{14j}\theta_{15j} \\ \theta_{21j}\theta_{22j}\theta_{23j}\theta_{24j}\theta_{25j} \\ \theta_{31j}\theta_{32j}\theta_{33j}\theta_{34j}\theta_{35j} \\ \theta_{41j}\theta_{42j}\theta_{43j}\theta_{44j}\theta_{45j} \\ \theta_{51j}\theta_{52j}\theta_{53j}\theta_{54j}\theta_{55j} \\ \theta_{61j}\theta_{62j}\theta_{63j}\theta_{64j}\theta_{65j} \end{bmatrix} \times \begin{bmatrix} GDPGR_{t-j} \\ OPRICE_{t-j} \\ DCPSB_{t-j} \\ INF_{t-j} \\ IMPORTS_{t-j} \\ INDVAD_{t-j} \\ DS_{t-j} \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \end{bmatrix}\end{aligned} \tag{6}$$

Equation (6) is simplified by using VAR (2) model testing Granger causality for multivariate system, i.e.,

$$\begin{aligned}&GDPGR_t = c_1 + \sum_{i=1}^{2} \beta_1 GDPGR_{t-i} + \sum_{i=1}^{2} \beta_2 OPRICE_{t-i} \\ &+\sum_{i=1}^{2} \beta_3 INF_{t-i} + \sum_{i=1}^{2} \beta_4 DCPSB_{t-i} + \sum_{i=1}^{2} \beta_5 IMPORTS_{t-i} \\ &+\sum_{i=1}^{2} \beta_6 INDVAD_{t-i} + \sum_{i=1}^{2} \beta_7 DS_{t-i} + \varepsilon \\ &OPRICE_t = c_1 + \sum_{i=1}^{2} \beta_1 OPRICE_{t-i} + \sum_{i=1}^{2} \beta_2 GDPGR_{t-i} \\ &+\sum_{i=1}^{2} \beta_3 INF_{t-i} + \sum_{i=1}^{2} \beta_4 DCPSB_{t-i} + \sum_{i=1}^{2} \beta_5 IMPORTS_{t-i} \\ &+\sum_{i=1}^{2} \beta_6 INDVAD_{t-i} + \sum_{i=1}^{2} \beta_7 DS_{t-i} + \varepsilon \\ &INF_t = c_1 + \sum_{i=1}^{2} \beta_1 INF_{t-i} + \sum_{i=1}^{2} \beta_2 OPRICE_{t-i} \\ &+\sum_{i=1}^{2} \beta_3 GDPGR_{t-i} + \sum_{i=1}^{2} \beta_4 DCPSB_{t-i} + \sum_{i=1}^{2} \beta_5 IMPORTS_{t-i} \\ &+\sum_{i=1}^{2} \beta_6 INDVAD_{t-i} + \sum_{i=1}^{2} \beta_7 DS_{t-i} + \varepsilon\end{aligned}$$

$$DCPSB_t = c_1 + \sum_{i=1}^{2}\beta_1 DCPSB_{t-i} + \sum_{i=1}^{2}\beta_2 OPRICE_{t-i} + \sum_{i=1}^{2}\beta_3 INF_{t-i} + \sum_{i=1}^{2}\beta_4 GDPGR_{t-i} + \sum_{i=1}^{2}\beta_5 IMPORTS_{t-i} + \sum_{i=1}^{2}\beta_6 INDVAD_{t-i} + \sum_{i=1}^{2}\beta_7 DS_{t-i} + \varepsilon$$

$$IMPORTS_t = c_1 + \sum_{i=1}^{2}\beta_1 IMPORTS_{t-i} + \sum_{i=1}^{2}\beta_2 OPRICE_{t-i} + \sum_{i=1}^{2}\beta_3 INF_{t-i} + \sum_{i=1}^{2}\beta_4 DCPSB_{t-i} + \sum_{i=1}^{2}\beta_5 GDPGR_{t-i} + \sum_{i=1}^{2}\beta_6 INDVAD_{t-i} + \sum_{i=1}^{2}\beta_7 DS_{t-i} + \varepsilon$$

$$INDVAD_t = c_1 + \sum_{i=1}^{2}\beta_1 INDVAD_{t-i} + \sum_{i=1}^{2}\beta_2 OPRICE_{t-i} + \sum_{i=1}^{2}\beta_3 INF_{t-i} + \sum_{i=1}^{2}\beta_4 DCPSB_{t-i} + \sum_{i=1}^{2}\beta_5 IMPORTS_{t-i} + \sum_{i=1}^{2}\beta_6 GDPGR_{t-i} + \sum_{i=1}^{2}\beta_7 DS_{t-i} + \varepsilon$$

$$DS_t = c_1 + \sum_{i=1}^{2}\beta_1 DS_{t-i} + \sum_{i=1}^{2}\beta_2 OPRICE_{t-i} + \sum_{i=1}^{2}\beta_3 INF_{t-i} + \sum_{i=1}^{2}\beta_4 DCPSB_{t-i} + \sum_{i=1}^{2}\beta_5 IMPORTS_{t-i} + \sum_{i=1}^{2}\beta_6 INDVAD_{t-i} + \sum_{i=1}^{2}\beta_7 GDPGR_{t-i} + \varepsilon \quad (7)$$

If the assumptions are accepted, it is determined that the statistical connection is not causal. In contrast, if the assumptions are rejected, it is determined that there is a causal link between the factor and the malleable variable. This allows the model to be used for making predictions about the connections between the variables.

3.2.4. Step-IV: Variance decomposition analysis (VDA)

Finally, the study used the VDA technique to analyze the correlation between the variables across time. Each process determines how much of the observed random error in predictions can be explained by changes in other variables in the model. The variance of the forecast error may be calculated using the VAR (p) form:

$$y_t = v + \alpha_1 y_{t-1} + ... + \alpha_p y_{t-p} + \varepsilon_t \quad (8)$$

Equation (8) further transformed into VDA:

$$\begin{aligned}
&Var(\sigma(GDPGR, OPRICE) = Var(E[\sigma \perp OPRICE]) \\
&+E[Var(\sigma \perp OPRICE)] \Rightarrow Var(E[\sigma \perp OPRICE]) \\
&\leq Var(\sigma[GDPGR, OPRICE)]Var(\sigma(GDPGR, INF) \\
&= Var(E[\sigma \perp INF]) + E[Var(\sigma \perp INF)] \\
&\Rightarrow Var(E[\sigma \perp INF]) \leq Var(\sigma[GDPGR, INF)] \\
&Var(\sigma(GDPGR, DCPSB) = Var(E[\sigma \perp DCPSB]) \\
&+E[Var(\sigma \perp DCPSB)] \Rightarrow Var(E[\sigma \perp DCPSB]) \\
&\leq Var(\sigma[GDPGR, DCPSB)]Var(\sigma(GDPGR, IMPORTS) \\
&= Var(E[\sigma \perp IMPORTS]) + E[Var(\sigma \perp IMPORTS)] \\
&\Rightarrow Var(E[\sigma \perp IMPORTS]) \leq Var(\sigma[GDPGR, IMPORTS)] \\
&Var(\sigma(GDPGR, INDVAD) = Var(E[\sigma \perp INDVAD]) \\
&+E[Var(\sigma \perp INDVAD)] \Rightarrow Var(E[\sigma \perp INDVAD]) \\
&\leq Var(\sigma[GDPGR, INDVAD)]Var(\sigma(GDPGR, DS) \\
&= Var(E[\sigma \perp DS]) + E[Var(\sigma \perp DS)] \\
&\Rightarrow Var(E[\sigma \perp DS]) \leq Var(\sigma[GDPGR, DS)]
\end{aligned} \quad (9)$$

Equation (10) presents the mean sequence error term for the provided group of exogenous variables, i.e.

$$\begin{aligned}
MSE_\mu &= E_{OPRICE}[MSE_\mu(OPRICE)] \\
MSE_\mu &= E_{INF}[MSE_\mu(INF)] \\
MSE_\mu &= E_{DCPSB}[MSE_\mu(DCPSB)] \\
MSE_\mu &= E_{IMPORTS}[MSE_\mu(IMPORTS)] \\
MSE_\mu &= E_{INDVAD}[MSE_\mu(INDVAD)] \\
MSE_\mu &= E_{DS}[MSE_\mu(DS)]
\end{aligned} \quad (10)$$

Where, MSE shows mean square error.

Decision-makers may utilize predictions for 2022-2030 to shape policies consistent with those years. Forecast variance errors may show the variables most likely to alter the response variable over time. This time connection inspires new strategies for protecting our planet's natural resources.

4. RESULTS AND DISCUSSION

In this section, the notion of the oil resource curse is examined for the economy of Pakistan using data spanning the years 1971-2020. The theory of the oil resource curse examined the relationship between natural resources and economic activities in an economy (Adabor and Buabeng, 2021). The cointegration link between GDP, INF, OPRICE, INDVAD, DCPSB, and GS are all investigated in this study. Descriptive statistics for the variables included in the research are shown in Table 5.

According to the data provided, Pakistan's economy has experienced annual percentage growth of approximately 4.618% over the past year, with a standard deviation of 2.222%. There is a positive skewness to the distribution of the variable and a high peak in the distribution. The value of domestic credit ranges from a maximum of 29.786% of GDP to a minimum of 15.305%, with

an average value of 22.540%. The CPI index has an average value of around 53.229. GS, imports, and INDVAD account for 16.547% of GDP, 18.674% of GDP, and 20.383% of GDP. OPRICE have fluctuated between a high of 1.312% of GDP and a low of 0.018% of GDP, with an average of 0.521% of GDP. The study contributes to a strong perception that the price of oil and its determinants have a significant influence on the nation's economy under consideration. Table 6 shows the correlation estimates.

The findings indicate that OPRICE, INDVAD, and DCPSB increases the country's economic growth, implying that OPRICE contribute to its economic growth rather than hindering it. This supports the resource blessing hypothesis rather than the resource curse hypothesis. On the other hand, the other variables, including INF, GS, and imports, have a positive but lower association with the country's economic development, which will need to be investigated further in the subsequent regression analysis of the data. Among the other correlation estimates, imports and OPRICE are positively related to DCPSB in a nation. In contrast, imports are the most critical factor contributing to inflation in that country. The value generated by industry and imports boosts government savings, although oil prices are positively connected with the country's industrial output. As a result, it is essential to ensure control over oil price fluctuations to progress toward economic success. Table 7 shows the unit root estimates of the candidate variables.

The study employed the ADF to test for stationary properties of the variables. Under the assumption of constants and trends, this test was applied at the level and the first difference. It is also used to check that none of the variables are integrated at the second difference, which is helpful. The study also used the breakpoint unit root test for the INF variable because it is not significant at the first difference in the ADF unit root process. Therefore, the study used it to check the order of integration of the respective variable and verify that the INF variable is first differenced stationary. The ADF estimates indicated that GDP, GS, IMPORTS, and OPRICE are level stationary variables, while the other variables are first differenced stationary variables, as predicted by the ADF estimates. The mixed order of integration of the stated variables provides a reasonable justification for using an ARDL Bounds testing technique, which was shown to be effective in evaluating the mixed order of integration of the variables series. Table 8 shows the ARDL short-run estimates.

Since the starting value of GDP declines over time, the results suggest that Pakistan's government should priorities economic

Table 5: Descriptive statistics

Methods	GDPGR	DCPSB	INF	GS	IMPORTS	INDVAD	OPRICE
Mean	4.618	22.540	53.229	16.547	18.674	20.383	0.521
Maximum	10.215	29.786	200.079	22.310	23.306	22.930	1.312
Minimum	0.468	15.305	3.053	12.217	8.645	17.548	0.018
SD	2.221	3.7867	55.228	2.734	3.196	1.498	0.289
Skewness	0.019	−0.221	1.173	0.345	−1.059	−0.353	0.456
Kurtosis	2.637	2.154	3.128	2.253	4.016	2.220	2.911
Jarque-Bera	0.277	1.896	11.508	2.153	11.511	2.308	1.756
Probability	0.870	0.387	0.003	0.340	0.003	0.315	0.415

Source: Author's estimation. SD: Standard deviation, GDP: Gross domestic product, GDPGR: GDP Growth rate, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added, DCPSB: Domestic credit to private sector by banks

Table 6: Correlation matrix

Probability	GDPGR	DCPSB	INF	GS	IMPORTS	INDVAD	OPRICE
GDP	----						
DCPSB	0.3618	----					
INFI	0.0354	0.0001	----				
GS	0.0296	0.0812	0.0611	----			
IMPORTS	0.0446	0.6218	0.8976	0.4269	----		
INDVAD	0.5080	0.0007	0.0001	0.8404	0.0040	----	
OPRICE	0.9236	0.6700	0.0539	0.0908	0.0048	0.4118	----

Source: Author's estimation. GDP: Gross domestic product, GDPGR: GDP growth rate, OPRICE: Oil price, INF: Inflation, INDVAD: Industry Value-added, DCPSB: Domestic credit to private sector by banks

Table 7: Unit root estimates

Variables	Level		1st difference		Decision
	Only intercept	Intercept and trend	Only intercept	Intercept and trend	
GDPGR	−4.699 (0.004)	−5.160 (0.006)	−10.723 (0.000)	−10.890 (0.000)	I (0)
DCPSB	−2.537 (0.113)	−2.778 (0.212)	−5.836 (0.000)	−5.763 (0.0001)	I (1)
INF[a]	4.453[a] (>0.99)	4.099[a] (>0.99)	−1.529[a] (>0.99)	−4.972[a] (0.035)	I (1)[a]
GS	−2.828 (0.0617)	−2.792 (0.2071)	−7.092 (0.000)	−7.020 (0.000)	I (0)
IMPORTS	−3.336 (0.018)	−3.2706 (0.083)	−6.6940 (0.000)	−6.895 (0.000)	I (0)
INDVAD	−2.234 (0.197)	−2.788 (0.208)	−7.945 (0.000)	−7.947 (0.000)	I (1)
OPRICE	−3.210 (0.025)	−3.369 (0.0675)	−8.238 (0.000)	−8.238 (0.000)	I (0)

Source: Author's estimation. [a]Breakpoint unit root estimates. Small bracket shows probability values. GDP: Gross domestic product, GDPGR: GDP Growth rate, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added, DCPSB: Domestic credit to private sector by banks

growth by using more sound and efficient policies. The findings indicate that DCPSB will hurt growth in the near term. A rise in domestic private sector loans would have a short-term effect on Pakistan's GDP of −1.29% for every percentage point it rose. Consistent with other studies, the results of Tinoco-Zermeno et al. (2014), Frimpong and Marbuah (2010), Agbenyo et al. (2019), and Farooq et al. (2021) are presented here. These results also demonstrate how inflation hinders Pakistan's economic growth. The economy's growth rate falls by 0.67% for every one-point increase in inflation. Consistent price rises affect the buying power of the typical Pakistani, making life more expensive for the country's populace and contributing to their economic disadvantage (Khan et al., 2020; Enih and Seraj, 2021).

The data also reveal that domestic saving affects the nation's growth rate positively, suggesting that a greater saving rate leads to a better growth rate of the economy. Similar results have been discovered in previous studies by Mohanty (2019), Zamilur and Ferdaus (2021), Quraishi and Ali (2021), and Lebeta and Biyena (2021). In the near term, Pakistan's heavy reliance on imports is a good thing since an increase in imports stimulates economic expansion (Bildirici and Kayiki, 2021). This means that exports and imports are the indicators of a country's trade balance, and therefore rising growth rates would support the import-induced growth theory (Awokuse, 2008; Ektiarnanti et al., 2021). Further, the first lag of the relevant variable shows that economic development has slowed because the country relied on imported raw materials and intermediate goods. In addition, there is a strong positive correlation between the value contributed by industries and the expansion of a country's economy. First-, second-and third-lag values are shown, further proving that a rise in industrial value-added results in expanded economic activity (Yang and Khan, 2021; Abbasi et al., 2021; Bekele, 2020). Potentially damaging to economic activity is the volatility of oil prices. Short-term growth is stimulated by oil rents, with a one-unit increase in the price of oil correlated with a 3.14-unit increase in GDP (Algahtani, 2016; Kakanov et al., 2018; Al Rasasi et al., 2019; Khan et al.,2021b; Anis, 2021). This research lends credence to the view that the country is well blessed with natural resources.

Table 8: Autoregressive distributed lag short run estimates

Variables	Coefficient	SE	t-statistic	Probability
$\Delta (GDP)_{t-1}$	1.286874	0.270658	4.754615	0.0002
$\Delta (GDP)_{t-2}$	0.428327	0.150892	2.838642	0.0119
$\Delta (GDP)_{t-3}$	0.248174	0.115653	2.145848	0.0476
$\Delta (DCPSB)_{t}$	−1.295478	0.235930	−5.490939	0.0000
$\Delta (DCPSB)_{t-1}$	−0.047377	0.138515	−0.342032	0.7368
$\Delta (DCPSB)_{t-2}$	0.328780	0.130399	2.521340	0.0227
$\Delta (DCPSB)_{t-3}$	0.230063	0.098504	2.335570	0.0329
$\Delta (INF)_{t}$	−0.674489	0.103532	−6.514806	0.0000
$\Delta (INF)_{t-1}$	−0.592769	0.135247	−4.382867	0.0005
$\Delta (INF)_{t-2}$	−0.391641	0.134752	−2.906383	0.0103
$\Delta (GS)_{t}$	0.524936	0.113830	4.611571	0.0003
$\Delta (GS)_{t-1}$	−0.735202	0.169530	−4.336716	0.0005
$D (IMPORTS)_{t}$	0.944744	0.161030	5.866865	0.0000
$\Delta (IMPORTS)_{t-1}$	−0.588371	0.152338	−3.862267	0.0014
$\Delta (IMPORTS)_{t-2}$	0.086380	0.109329	0.790091	0.4410
$\Delta (IMPORTS)_{t-3}$	0.597288	0.115965	5.150587	0.0001
$\Delta (INDVAD)_{t}$	0.633973	0.262570	2.414492	0.0281
$\Delta (INDVAD)_{t-1}$	1.705919	0.256216	6.658133	0.0000
$\Delta (INDVAD)_{t-2}$	1.511223	0.252698	5.980363	0.0000
$\Delta (INDVAD)_{t-3}$	0.407700	0.242552	1.680879	0.1122
$\Delta (OPRICE)_{t}$	3.145810	0.871546	3.609458	0.0024
$\Delta (OPRICE)_{t-1}$	−1.800139	0.960010	−1.875126	0.0791
ECT_{t-1}	−2.760246	0.320445	−8.613791	0.0000

Source: Author's estimation. SE: Standard error, GDP: Gross domestic product, DCPSB: Domestic credit to private sector by banks, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added

The error correction term describes the rate at which the dynamic model reaches equilibrium again. There should be an exterior and an interior form of the connection, and statistical significance and a negative ECM coefficient demonstrate how quickly the relationship reverts to its original condition (Pahlavani and Rahimi, 2009). Hence, −2.76 is the significant negative number, as shown by ECM. A speed of adjustment coefficient of −2.76% confirms the parameters' long-run convergence to equilibrium. The INF, INDVAD, OPRICE, imports, the DCPSB, and GDP all complement one another in Pakistan. The ARDL long-term projections are shown in Table 9.

The results suggest that inflation contributes to economic expansion in the nation. If inflation rises by one unit, the annual growth rate in the nation will rise by around 0.018 units. As a result, an increase in prices helps the nation's supply chain function, resulting in the production of various goods and services by domestic and international manufacturers and a consequent decrease in the need for domestic credit (Al Mamun et al. 2018). Moreover, the rise in domestic credit has hampered the nation's economic growth, which may be offset by raising the country's saving rate, leading to more substantial investment. This has the potential to lighten its financial load. In general, the results are in line with those of Dilanchiev et al. (2021), Uroos et al. (2021), and Arain et al. (2021). The life cycle model argues that encouraging domestic savings is vital for a country's economic growth because of the positive impact savings have on the economy (Hamida Begum and Azizi, 2019; Khan et al., 2020; Reddy and Tesfaye, 2021). Government debt may be reduced by increased revenue generated through increased production that, in turn, can be used to pay down the national debt that is incurred through the purchase of capital goods (Bakari et al., 2019; Alam et al., 2019; Khan and Khan, 2021; Belgodere et al., 2021). Because oil prices have little to no effect on economic growth in the long run, this study evaluated causality estimates to make predictions for the near future. All of the ARDL-Bounds estimations are shown in Table 10.

In order to ascertain whether the variables were related across time, the ARDL bound test was used. The ARDL model's

Table 9: Autoregressive distributed lag long run estimates

Variable	Coefficient	SE	t-statistic	Probability
INF	0.018974	0.006768	2.803473	0.0127
DCPSB	−0.259004	0.084499	−3.065153	0.0074
GS	0.359798	0.075092	4.791425	0.0002
IMPORTS	0.631539	0.058814	10.73783	0.0000
INDVAD	−0.747036	0.114764	−6.509329	0.0000
OPRICE	0.572365	0.738374	0.775169	0.4495
Constant	8.843512	3.630213	2.436086	0.0269

Source: Author's estimation. SE: Standard error, DCPSB: Domestic credit to private sector by banks, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added

calculated F-statistics is 6.451, which is larger than the essential upper limits. Therefore, the null hypothesis is rejected, suggesting the extrinsic and intrinsic variables are connected over the long run in a cointegrated fashion. In order to verify the mentioned variables' causal linkages, Table 11 displays the Granger causality estimates.

Estimates of Granger causality supported the growth-led imports theory, as a country's GDP Granger causes its imports. It suggests that the import-substitution strategy helps keep the growth rate stable and provides more evidence that imports are the "engine of growth" in the economy (Awokuse, 2008). Accelerating inflation significantly slows economic expansion. Pakistani researchers have verified the existence of the Tobin effect. The statistics do not match the "Mutatis Mutandis" theory, which asserts that declining inflation would severely dampen economic growth (Gillman et al., 2001). There is a one-way causal link between Pakistan's gross savings and the domestic lending to the private sector by banks. Increases in the domestic saving ratio are thought to be associated with increased macroeconomic stability (Nzotta and Okereke, 2009). The banking sector is impacted by inflation in the economy. It influences monetary policy because of the bidirectional causal link between inflation and domestic lending to the private sector supplied by banks. The IRF estimations are included in Table 12 for convenience.

The IRF predicts that from 2028 to 2030, domestic credit will have a depressing effect on Pakistan's economic growth rate. The rising price level suggested that inflation would be detrimental to the country's economic development for the first 7 years but would have a beneficial effect for the next 3 years. The expansion rate is expected to quicken from 2027 to 2030, measured by GS. Statistics on imports suggest that the economy will be negatively affected for the first 4 years, rise rapidly for the next 3 years, and then suffer again for the last 2 years. From 2026 to 2030, the industry's negative contribution to GDP is expected to slow Pakistan's economic expansion. The growth rate is predicted to rise in Pakistan in 2030 after decreasing between 2026 and 2029 due to oil rents. The VDA is tabulated in Table 13 for convenience.

During the next decade, DCPSB had a larger impact on the country's annual growth rate, with a variance error shock of 6.695%. The GDP is predicted to be affected by manufacturing value added (5.437%), OPRICE (4.976%), and INF (4.646%). Imports are expected to have the slightest effect, with a variance of 0.644% in real GDP growth over time.

Table 10: Autoregressive distributed lag bounds estimates

Test statistic	Value	Significance (%)	I (0)	I (1)
F-statistic	6.451	10	1.99	2.94
		5	2.27	3.28
		2.5	2.55	3.61
		1	2.88	3.99

Table 11: Granger causality estimates

Granger causality	Observations	F statistics	Probability
GDPGR→IMPORTS	48	4.95258	0.0116
INF→GDPGR	48	4.93671	0.0117
GS→DCPSB	48	6.17417	0.0044
INF↔DCPSB	48	4.48743	0.0170
DCPSP↔INF	48	3.40782	0.0423

Source: Author's estimation. →shows one-way causation and↔shows two-way causation. GDP: Gross domestic product, GDPGR: GDP growth rate, DCPSB: Domestic credit to private sector by banks, OPRICE: Oil price, INF: Inflation

Table 12: Impulse response function estimates

Periods	GDPGR	DCPSB	INF	GS	IMPORTS	INDVAD	OPRICE
2022	0.267903	0.011054	−0.361325	0.179698	−0.169882	0.256623	0.165217
2023	0.363537	−0.354617	−0.301989	−0.073679	−0.046273	−0.106412	0.358139
2024	0.004220	−0.432302	−0.143181	−0.006993	−0.044532	0.133261	0.255749
2025	0.007661	−0.307295	−0.042139	0.071214	−0.012103	0.218086	0.165906
2026	−0.106379	−0.120293	−0.016895	0.006884	−0.039149	0.261428	0.123525
2027	−0.101462	−0.012429	−0.025400	−0.092737	−0.027515	0.198029	0.099930
2028	−0.112489	0.032370	−0.044938	−0.122367	−0.013690	0.157277	0.048230
2029	−0.085790	0.046563	−0.064737	−0.096892	0.004874	0.124439	0.002818
2030	−0.063415	0.047145	−0.082582	−0.064471	0.012538	0.107805	−0.015285

Source: Author's estimation. GDP: Gross domestic product, GDPGR: GDP Growth rate, DCPSB: Domestic credit to private sector by banks, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added

Table 13: Variance decomposition analyses estimates

Period	SE	GDPGR	DCPSB	INF	GS	IMPORTS	INDVAD	OPRICE
2022	2.068846	93.34176	0.002855	3.050276	0.754447	0.674274	1.538635	0.637757
2023	2.185495	86.41048	2.635368	4.642689	0.789716	0.649046	1.615843	3.256858
2024	2.251442	81.42289	6.170070	4.779129	0.745096	0.650704	1.872905	4.359206
2025	2.290319	78.68326	7.762580	4.652112	0.816695	0.631593	2.716562	4.737196
2026	2.314480	77.26035	7.871489	4.560821	0.800618	0.647086	3.935989	4.923651
2027	2.329478	76.45836	7.773300	4.514169	0.948827	0.652732	4.608134	5.044475
2028	2.341882	75.88128	7.710278	4.503296	1.211826	0.649253	5.010474	5.033593
2029	2.350114	75.48389	7.695614	4.547684	1.373331	0.645143	5.255805	4.998536
2030	2.356325	75.15889	7.695128	4.646569	1.440962	0.644577	5.437452	4.976426

Source: Authors' estimation. SE: Standard error, GDP: Gross domestic product, GDPGR: GDP Growth rate, DCPSB: Domestic credit to private sector by banks, OPRICE: Oil price, INF: Inflation, INDVAD: Industry value-added

5. CONCLUSIONS AND POLICY IMPLICATIONS

The ever-changing price of oil has been a source of conflict, but it remains a significant factor in shaping the economies of all nations. The fluctuating cost of oil worldwide has profoundly affected both developing economies throughout time. Moreover, institutional investors are curious about how oil price fluctuations can affect international stock markets in the future. Experience a series of worldwide financial crises that occurred at different times, such as the global economic collapse, the European debt crisis, and the COVID-19 disease epidemic (Mahmad et al., 2021a and b; Sadiqa, 2023). As a result of these challenges, financial activities in Pakistan are very unpredictable, which slows the country's progress. It is one of the world's most modern, ominous, and noteworthy circumstances right now because of the fluctuations in oil prices. A number of factors contribute to the ebb and flow of commercial development and the slowing of the country's growth rate, and they are all intertwined with the price of oil. The research looks at how oil prices have affected Pakistan's economy. Using time-series data from 1971 to 2020, the study also examines the impact of rising prices, national rescuing, foreign goods, and financial sector borrowing by institutions on Pakistan's economic progress. Short-term projections show that inflation and local credit considerably reduce Pakistan's growth rate. Meanwhile, growth has been boosted in the short term by retained earnings, shipments, and venture capital. In the long run, DCPSB and NDVAD are predicted to hurt Pakistan's level of growth. Simultaneously, growth benefits from prices, capital formation, and importation. Imports driving expansion, inflation fueling growth, and saving fueling credit all pan out according to the data in a given country. Inflation and DCPSB are both cyclical and causal. The forecasts are that oil rents will speed up GDP growth over the next 4 years but slow it down during the subsequent 5 years. The economy will slow down because of inflation during the next 7 years. According to the VDA, DCPSB has the largest size, at 7.69%, suggesting that it would contribute to the future development of the growth rate in Pakistan. The study concluded with both broad policy recommendations in this regard, i.e.,

The study indicated that the government of Pakistan should expand domestic investments in the oil sector and guarantee efficient distribution and management of oil income. In order to mobilize resources effectively and channel them into productive investments, which leads to faster growth, policymakers should adopt steps to increase domestic savings. Because most bank branches are found in urban areas, and most of the population lives in rural areas where financial institutions are scarce, monetary authorities should priorities increasing the number of bank branches in all parts of the country to ensure that all citizens have access to banking services. It may help developed countries to import technology and know-how from more developed countries. Evidence from large emerging economies that used the import-substitution growth model as their development strategy suggests that limiting imports on a broad scale may slow economic growth. Economic growth and new jobs depend on expanding the industrial sector. Adopting tax cuts, a market-friendly atmosphere, law enforcement stability, low-interest credit lines, and simple import/export procedures would draw foreign and local investors.

In order to boost domestic demand and the economy as a whole, the study recommends that Pakistan's banking institutions adopt an expansionary monetary policy. As a second step toward boosting private sector participation in economic development, the government should adopt measures to entice banks and other financial intermediaries to provide domestic loans to private enterprises. Typically, the inflation rate and the income per capita are significant considerations when a government aims for maximum growth. To ensure Pakistan's long-term success, the government should encourage its citizens to put their money into constructive endeavours that create a thriving business community. Microfinance institutions need to proliferate so that more individuals can access their services and are encouraged to save money. Money sent home by Pakistanis living abroad helps the country preserve resources and creates jobs for those who would otherwise have to leave the country. Government spending would be pushed to boost the industrial value added. Spending on domestically produced goods, infrastructure improvement, and increased government transparency and responsibility are all possibilities.

The study only looks at the most crucial aspects of the economy. However, its scope might be expanded to examine the global resource conservation goal by integrating environmental considerations. Although this research only covers the Pakistani economy, its conclusions may be extrapolated to other Asian and European countries to look at oil price volatility on a broader scale. Additional macroeconomic variables that may add to the existing literature and supplement the present results may be included in future studies of this topic in addition to these fundamental elements. It is possible to utilise the method on panel data, and a wide variety of econometric techniques, including panel regression, might be used.

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