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Disturbing Effects of Global Oil Price Changes: Case of Azerbaijan

Müjgan DENİZ [1] **Azad HEYDEROV** [2]

Abstract

General topic in this paper is the role of oil industry in global economy and the result of changing oil prices on economic variables in Azerbaijan. The major aim is to analyze the effects of crude oil price changes on Azerbaijan economy in order to measure how changes in oil prices affect its basic economic variables. At the beginning, a general outlook on oil industry will be given and the main oil exporting economies will be analized. However, main focus will be on the structure of Azerbaijan's economy and it will examine the example of Azerbaijan as a transition economy where oil and gas production and exports have steadily increased from the mid '90s. Many critical oil and gas extraction projects have been implemented; while the oil and gas sector's dominance in the economy poses a number of threats to the balanced development of the country's economy. It will show how the economy of Azerbaijan was affected after the oil crisis, such as other developing countries that mainly depending on oil and petroleum products. For this purpose, VEC Model has been applied, consdering Azerbaijan Statistic Data and analized the effects of oil price fluctuations on its economic variables parallel with the oil industry. The main findings indicate that Azerbaijan's economy is strongly dependent on resource exports, which produce high growth rates when commodity prices are favorable, but end up with lower macroeconomic performance when global oil prices fall. It is clear that the main income of Azerbaijan comes from oil and oil products, so the export of oil will have a high impact on the saving level of the population. At the time of high revenues come from export and the low exchange rate of the foreign currency in Azerbaijan has also led to the low cost of imported goods. As well demonstrated in the research, Azerbaijan economy has been widely exposed to major crude oil price distortions. It can be said that in order to avoid increasing overdependence on oil earnings, diversifying the economy should be a top priority.

Keywords: Oil Industry, global oil prices, transition economy, Azerbaijan economy, Dutch disease.

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Küresel Petrol Fiyat Değişimlerinin İstikrarsızlaştırıcı Etkileri: Azerbaycan Örneği

Müjgan DENİZ [1] **Azad HEYREDOV** [2]

Öz

Çalışmada petrol endüstrisinin küresel ekonomideki rolü ile birlikte, bir geçiş ekonomisi olarak Azerbaycan ekonomisinde değişen petrol fiyatlarının ülke ekonomisi üzerindeki etkilerinin incelenmesi amaçlanmıştır. Bu doğrultuda, uluslararası piyasalarda ham petrol fiyat değişimlerinin Azerbaycan ekonomisi üzerinde son on yıllarda oluşturduğu etkiler, mevcut istatistiki veriler göz önünde bulundurularak analiz edilmeye çalışılmıştır. Ülke ekonomisi örneği olarak, küresel petrol fiyatlarında zaman içerisinde meydana gelen oynaklıkların Azerbaycan ekonomisindeki temel ekonomik değişkenleri nasıl etkilediği makro-ekonomik sonuçları ışığında ele alınmıştır. İlk olarak, petrol endüstrisine dair genel bir inceleme yapılmış, son yıllarda ilgili piyasa ve endüstrisindeki gelişmeler tablolar yardımıyla analiz edilmeye çalışılmıştır. Ancak, araştırmanın asıl odak noktası bir geçiş ekonomisi olarak Azerbaycan ekonomisi ve ham petrol fiyatları arasındaki ilişki olmuştur. Azerbaycan ekonomisinde petrol ve gaz üretimi ve ihracatının payı 1990'lı yılların ortalarından itibaren istikrarlı ve belirgin bir şekilde artmıştır. Bu gelişmeler doğrultusunda, birçok kritik petrol ve gaz çıkarma projesi hayata geçirilmiş; bundan dolayıdır ki, petrol ve gaz sektörünün ekonomideki hakimiyeti ülke ekonomisine yönelik birtakım tehditler oluşturmaya başlamıştır. Petrol kriziyle birlikte, gelişmekte olan bir ekonomi olarak petrol ve petrol ürünlerine bağımlı olan Azerbaycan ekonomisinin ciddi olarak etkilendiği gözlenmiştir. Ekonometrik analiz amacıyla VEC Modeli oluşturulmuş ve petrol endüstrisine paralel olarak petrol fiyatlarının ekonomik değişkenler üzerindeki etkileri analiz edilmiştir. Bu analiz neticesinde, ülke ekonomisi bağlamında hangi değişkenlerin -direk yabancı yatırımlar, ihracat ve Azerbaycan ekonomisindeki brüt tasarruf oranları- değişen petrol fiyatlarına daha duyarlı olduğu görülmüştür. Modelde yüksek petrol fiyatlarının yüksek büyüme oranlarını üretirken, petrol fiyatları düştüğünde ise daha düşük makroekonomik performansa yol açtığı da tespit edilmiştir. Bu durum ülke ekonomisinin kaynak ihracatına güçlü bir şekilde bağımlı olduğuna işaret etmektedir. Bundan dolayıdır ki, petrole bağımlı ekonomilerde keskin fiyat değişimlerinin ekonominin geneli üzerindeki bozucu etkilerini dengelemek adına diğer sektörlerin geliştirilmesine öncelik verilmelidir.

Anahtar Kelimeler: Petrol endüstrisi, küresel petrol fiyatları, geçiş ekonomisi, Azerbaycan ekonomisi, Hollanda sendromu.

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Introduction

This paper mainly intends to analyze the impact of changes in world oil prices on developing countries and the Azerbaijani economy, mainly on oil-exporting countries. As well known, oil is the main strategic and dominant product in the world economy and its impact on other sectors is enormous. Any change in oil prices affects other variables in the global economy. Countries whose economies are largely dependent on oil are more effected by these changes. Due to the fact that there is a significant share of oil in the economy of Azerbaijan, it is affected by current and potential oil crises.

First of all, it will basically investigate the importance of oil in developing nations that export mainly crude oil and their effect on the economies of those states, and will pay special attention to Azerbaijan's economy. In this respect, there are two types of question about this research. The primary research question is: Which economic metrics is affected most by changing oil price in Azerbaijan? Secondary research questions are:

- What is the main reason for the Dutch syndrome in Azerbaijan?
- What are the main causes of crises in the oil sector?
- What are the consequences of the impact of oil on economic development?

Our study aims to measure how changes in oil prices in Azerbaijan affect economic variables. In this topic, it will focus on the economy of Azerbaijan and examine the example of Azerbaijan as a transition economy. First of al, it gives the broad understanding about world oil market, and show the relationship between oil price and economic variables. In Azerbaijan part, it demonstrates that Azerbaijan dependency from oil and its disruptive effects on the overall national economy in times of crisis. Since the aim of this study is to measure how changes in oil prices in Azerbaijan affect economic variables.

Secondly, it will focus on how the economy of Azerbaijan was affected after the oil crisis, such as other developing countries that mainly depending on oil and petroleum products. For this purpose, initially it will show the structure of oil industry, global oil crisis, and its effect on developing countries. Since, it will explain oil price effect on Azerbaijan example; its methodological analysis is based on data from Azerbaijan. Then it will show general information about literature review and the methodology part.

In the data analysis section, secondary data was used and findings retrieved from the official documents of the Republic of Azerbaijan, oil documents signed by the President of the Republic of Azerbaijan, the various literary publications, OPEC data and articles. The methods for evaluating both long and short-term economic factors using the vector error correction (VEC) models. These tests' results serve as an example of the project's "Empirical Results" section. In this section, the research have analyzed the VEC models in order to evaluate the impact of oil price fluctuations on various economic factors. It has been seen which variables -the effect of changing crude oil price, Azerbaijan FDI and Exports on Gross Savings in Azerbaijan- are more sensitive for changing prices.

In this research, four (4) macroeconomic variables of the Azerbaijan such as Oil price, Export (annual %), Gross savings (% of GDP) and FDI have been considered to analyse

the model in which oil price is dependent variable and FDI, Export and gross saving are independent variables. Dataset contains 25 years annual interval between 1995 and 2020.

Shortly, in order to analyze the effect of oil price on economic variables; VEC model was applied, using Azerbaijan Statistic Datas. As a result of this empirical analysis, one can understand which variables are more sensitive for changing. In the conclusion, it will show the general result of the analysis, the impact of oil in Azerbaijan. The main findings indicate that Azerbaijan's economy is strongly dependent on resource exports, which produce high growth rates when commodity prices are favorable but lower macroeconomic performance when oil prices fall. Huge amounts of foreign currency were injected into the economy during the oil boom period, which caused the local currency to appreciate, the manufacturing sector's competitiveness to decline, and the tertiary sector to grow as a result of government spending, all of which point to the first indication of Dutch disease.

1. General Look on Oil Industry

Oil is a major source of energy that has a significant impact on people's lives. Every sector of the economy is dependent on oil, directly or indirectly. Therefore, any changes in the oil markets can create different effects on both the country and the world economy. One of the most crucial products for the nation and the world is the price of oil. Naturally, the impact of rising oil prices on the macro economy will be larger and longer. The economy of states that produce oil is severely affected by the decline in global oil prices.

Exploration and prospecting, transportation, refining, marketing, and the petrochemical sector are all part of the oil market's structure. "Upstream markets" refers to oil exploratio n and production operations (Karl, 2007, p. 35-47). Large enterprises and states actively search for natural gas and crude oil reserves on offshore and onshore areas. With utilizing cutting-edge drilling technologies, oil and natural gas are extracted from the sources and brought to the surface.

Exploration and prospecting, transportation, refining, marketing, and the petrochemical sector are all part of the oil market's structure. "Upstream markets" refers to oil exploration and production operation. Large enterprises and states actively search for natural gas and crude oil reserves on offshore and onshore areas. With utilizing cutting-edge drilling technologies, oil and natural gas are extracted from the sources and brought to the surface.

In the petroleum market, the midstream sector is the second of three stages. Transportation of crude or refined petroleum products by pipeline, oil tanker, barge, truck, or rail falls under this category. Refineries will be the last stop before the downstream process begins. The storing of these products and also wholesale marketing programs are both included in the midstream sector. The final stages of the process are processing, refining, and purification, which are referred to as the "downstream sector." Also the sale and distribution of goods connected to crude oil and natural gas are included in this "downstream sector".

The price of oil is determined by a number of factors: Acquisition of required documents, exploration, research, development, production, refining, shipping, distribution, and storage are all included in these expenditures. Production and distribution expenses, which vary by geographical location, account for a considerable portion of the

expenditures. It is also important that production and distribution expenses account for around one-third of total costs worldwide.

1.1. Structure of the Oil Industry and its Role in National Economies

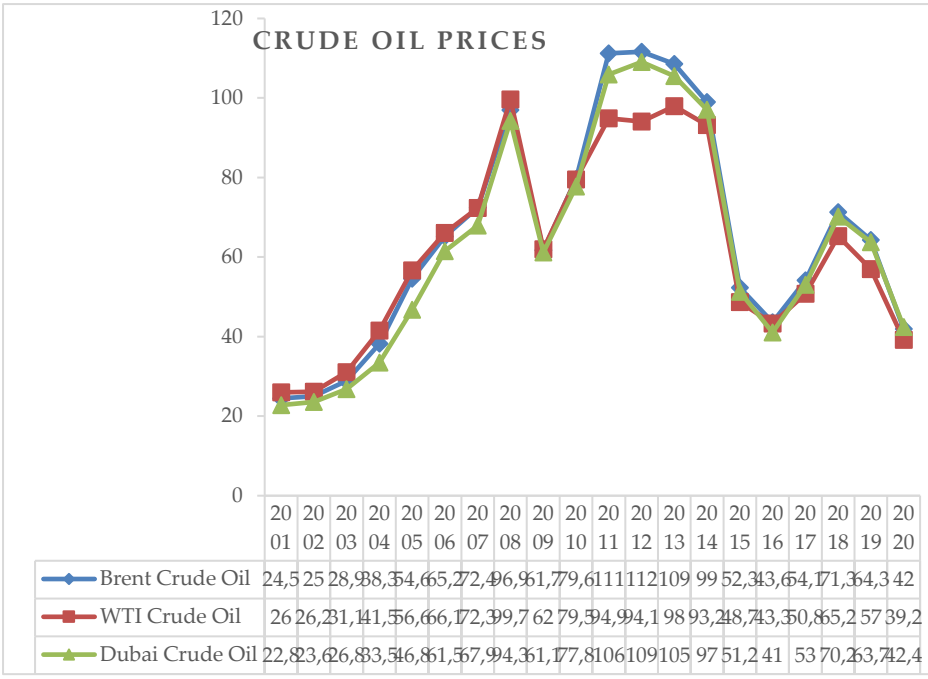
Brent, West Texas Intermediate (WTI), and Dubai Crude are the three primary oil brands currently available on the market. Brent oil is produced in the North Sea and marketed to European and Asian markets; the price of 70% of exported oil is decided by quotes, either directly or indirectly (Horsnell, 2004: 403).

The Intercontinental Exchange (ICE), which sets standard pricing for European and OPEC nations, trades the brand. The WTI oil brand (also known as Texas Light Sweet) is produced in the western hemisphere (USA) and serves as a benchmark for other types of oil prices. The NYMEX market is where this brand is traded. Meanwhile, the price of oil shipped from the Persian Gulf and the Middle East to the Asia- Pacific area is determined by the Dubai Crude brand. The Dubai Mercantile Exchange is where the brand is exchanged. As a result, the price of oil on the global market is influenced by a variety of variables. The extent to which these elements have an impact is determined by the global rate of economic development, supply and demand, numerous economic and political decisions, and so on.

It should be stated that Brent Crude is more widely used and also most oil prices are based on it. Since Brent type of crude oil is produced near the cost, shipping expenses are much cheaper. WTI on the other hand, is produced in landlocked location, increasing transportation expenses. Also WTI is the major measurement and the pricing technique in the Unitd States. Brent is also somewhat "sweeter" and "lighter". However the price of WTI is lower than Brent. Geopolitical turmoil is another reaason that might cause big disparities between Brent Crude and WTI. During times of crises, the gap widens as political unrest causes Brent Crude prices to rise.

The crude oil prices from 2001 to 2020 may be shown in chart 1. It displays the pricing of three different brands of oil. WTI oil prices were better to Brent and Dubai crude oil prices until 2010, when they passed to Brent oil prices. The graph clearly shows that global economic conditions have a direct impact on global oil prices, and that oil prices have risen considerably from 2001 to 2008. However, as a result of the global financial crisis of 2008, it plummeted to roughly $60. (Berument et. al. 2010, p.149-176)

Chart 1. Crude Oil Prices in the Worl



Source: http://www.statista.com/topics/839/oil-prices/#topicHeaderwrapper

In 2014, a new breaking point arises. The Crimea problem had arisen between Ukraine and Russia at the time, and as a result of Russia's invasion of Crimea, which is Ukrainian territory, the political and economic battle against Russia began. The imposition of sanctions and the rise in the price of the dollar throughout the world resulted in a drop in the price of oil around the world. This process has a big impact on oil exporting nations such as Kazakhstan, Oman, Angola, Chad, Azerbaijan, Algeria, Brunei Darussalam, Iraq, Kuwait, Libya, Sudan, and Venezuela, and has a substantial impact on their economic status. Because oil products account for about 90% of overall exports in these nations, their economies have been significantly impacted. In 2019, another breakdown point has emerged as a result of Corona Virus Pandemic.

1.2. Top Oil Producers in the World and their Proportion of Global Oil Production

The oil industry is a significant industry, thus the state-owned and private oil and gas companies are enormous. One of the largest oil-related businesses and the largest oil company in terms of revenue is Saudi Aramco worldwide. Saudi Aramco company is expected to have the second-largest proven oil reserves in the world, thus, there is approximately 270 billion barrels. (Arab Monetary Fund, 2005) The company's financial indicators and operating structure have always been kept under wraps. Other major oil firms, on the other hand, such as Exxon Mobil, BP, PetroChina, and Chevron, have significant market power and may influence crude oil prices.

According to US Energy Information Administration (EIA), in 2020, the production of petroleum liquids from the top three producers are the United States, Saudi Arabia, and Russia together produced 43% of the world's oil.

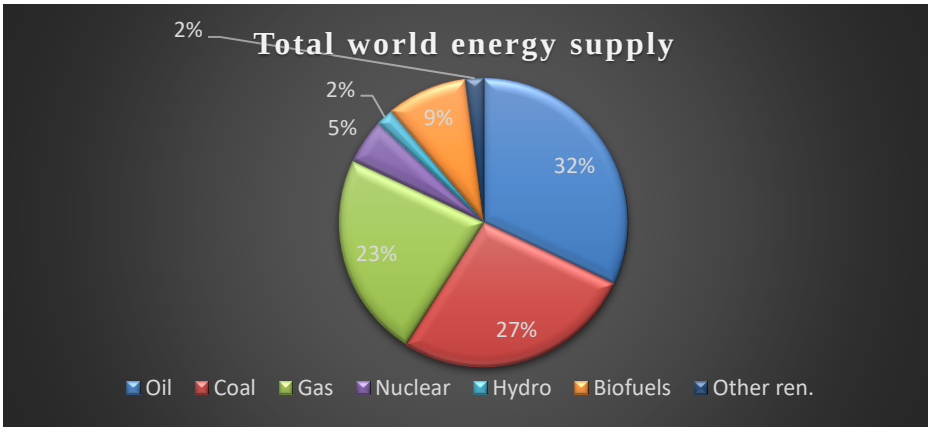
Table 1. The Top 10 Oil Producers and Their Proportion of Global Oil Production in 2020

Country	Million Barrels per day	Share of World Total
United States	18.61	58.4
Saudi Arabaia	10.81	66.4
Russia	10.50	61.4
Canada	5.23	68.9
China	4.86	78.6
Iraq	4.16	85.1
United Arab Emirates	3.78	91.4
Brazil	3.77	88.9
Iran	3.01	86.0
Kuwait	2.75	82.2

Source: Total oil (petroleum and other liquids) production as of December 8, 2021, according to International Energy Statistics. https://www.eia.gov/dnav/pet/pet_crd_crpdn

It can be derived from Diagram 1. that oil had a bigger percentage of total global supply than other resources. In 2018, the global total energy supply reached 14.282 Mtoe, an increase of 2.6 times since 1971. Oil's share of TES was 44 percent in 1971, therefore its dominance has dwindled to 32 percent now. The graph shows that oil and gas account for the majority of global energy, providing about 60% of the world's energy. In 2020, fossil fuels accounted for the great bulk of fuel supply investment, with about 84 percent going to oil and gas and just over 14.5 percent to coal (which is a much less capital-intensive sector).

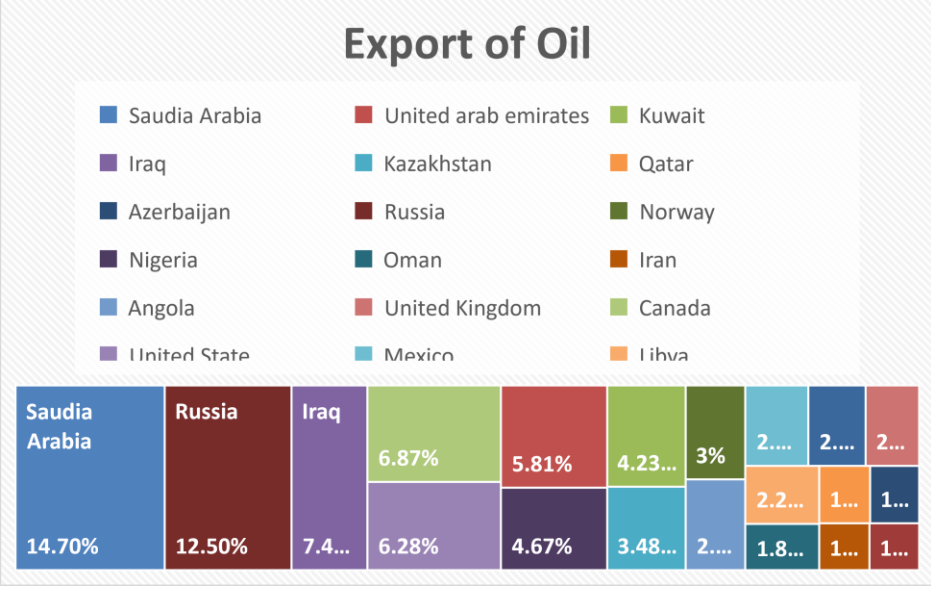
Diagram 1. Total World Energy Supply



Source: Data are based on the IEA World energy balances, 2020 (https://www.iea.org/topics/oil-market-report).

The Middle East accounts for 64.5 percent of OPEC's total oil reserves, and current estimates indicate that Member Countries of OPEC already have a large share of the world's proven oil reserves. OPEC was formed to safeguard the interests of oil-exporting nations and to regulate oil prices in the market, and its standing has risen since the 1960s as the market's need for oil has increased. According to BP, the world's proven oil reserves would drop by 2 billion barrels by the end of 2020, to 1732 billion barrels. The top three oil-producing nations are Venezuela (17.5% of global reserves), Saudi Arabia (17.2%), and Canada (9.7 percent).

Diagram 2. The Countries that Export the most Oil in the World



Source: OEC World: Trade, Complexity, and Rankings Updated to 2020, https://oec.world/en/rankings/eci/hs6/hs96

With a total trade value of $ 986 billion, crude petroleum was the world's most traded product. Crude Petroleum exports fell by -10.6 percent from $ 1.1 trillion to $ 986 billion between 2018 and 2019. Crude petroleum commerce accounts for 5.44 percent of total global trade. The top exporters of crude oil in 2019 were Saudi Arabia ($145 billion), Russia ($123 billion), Iraq ($73.8 billion), Canada ($67.8 billion), and the United States ($61.9 billion). China ($204 billion), the United States ($123 billion), India ($92.7 billion), South Korea ($67.4 billion), and Japan ($64 billion) were the top crude oil importers in the same year. (IEA Oil Market Report, 2020).

Table 2. The Volume of Foreign Direct Investment (US $ Million)

	2003	2004	2005	2006	2007	2008	2009
Total Foreign Investment	3371	4575.5	4893.2	5052.8	6674.3	6847.4	5468.6

Financial Loans	238.3	293	698.4	983.5	1576.6	2357.9	1438.3
Oil industry	2972.4	4088.1	3799.9	3422.3	4003.3	3350.7	2412.7
Oil bonus	58.6	21.6	1	17	68.2	3.5	1
Joint and foreign investment enterprises	45.4	104.2	104.2	368.4	439.1	439.1	624.4

Source: Azerbaijan State Statistical Committeeal Committee

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Oil exporting developing countries are projected to be particularly heavily impacted by global crisis. Many of these countries are extremely sensitive to market volatility as a result of their dependence on a single resource for exporting and income. Oil and gas make up the bulk (over 60 %) of the overall exports of goods in a few developing nations, such as Algeria, Iran, Iraq, Libya and Timor-Leste despite the fact that Sub-Saharan Africa has the biggest share of countries that depend on resources. Between 2011 ad 2013 the ten largest Sub-Saharan African oil exporting nations' revenues from crude oil sales made up more than half of their total government income and more than 70 % of their export earnings. Furthermore, over half of low and lower-middle-income nations that rely on oil and gas for revenue and exports are categorized as fragile.

2. Structure of the Oil Industry and its Role on National Economies

Oil is a major source of energy that has a significant impact on people's lives. Every sector of the economy is dependent on oil, directly or indirectly. Therefore, any changes in the oil markets can create different effects on both the country and the world economy. One of the most crucial products for the nation and the world is the price of oil. Naturally, the impact of rising oil prices on the macro economy will be larger and longer. The economy of states that produce oil is severely affected by the decline in global oil prices.

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The price of oil is determined by a number of factors: Acquisition of required documents, exploration, research, development, production, refining, shipping, distribution, and storage are all included in these expenditures. Production and distribution expenses, which vary by geographical location, account for a considerable portion of the expenditures. Production and distribut io n expenses account for around one-third of total costs worldwide. The value of oil in certain Middle Eastern resources is less than $10 per barrel, but it increases to $53 in locations like the North Sea, where extraction is difficult (Kleinberg et. al., 2017, pp. 70-83).

2.1 The Main Factors Influencing the Changing of World Oil Prices

Carbon-based fuelsare necessary for industry, transportation and heating. Globalization has an impact on oil prices, but supply Dynamics influenced by political changes as well as advances in technology for crude extraction and other energy sources are also significant factors in the oil market. Crude oil is the commodity that is utilized and exchanged the most on a global scale. Oil and its products which are also used for heating and cooking in less developed nations, continue to fuel the majority of worldwide transportation. Because of the world's continued dependence on crude oil, the rate of economic growth has a substantial impact on the price of the commodity and on expectations of demand. The rate of economic growth can be impacted by changes in the price of oil since we depend on petroleum supplies for production, chemicals and transportation. Namely, during the first few months of 2022 when oil prices at seven-year-peak levels above 90 dollar per barrel, they were frequently viewed as an inflationary threat to growth. In contrast, the COVID-19 pandemic resulted in a significant drop in oil prices in spring of 2020 (Statista, 2022). Some elements as shown below, directly affect the price of oil on a worldwide scale are the production costs, the transportation costs, the type of oil and demand.

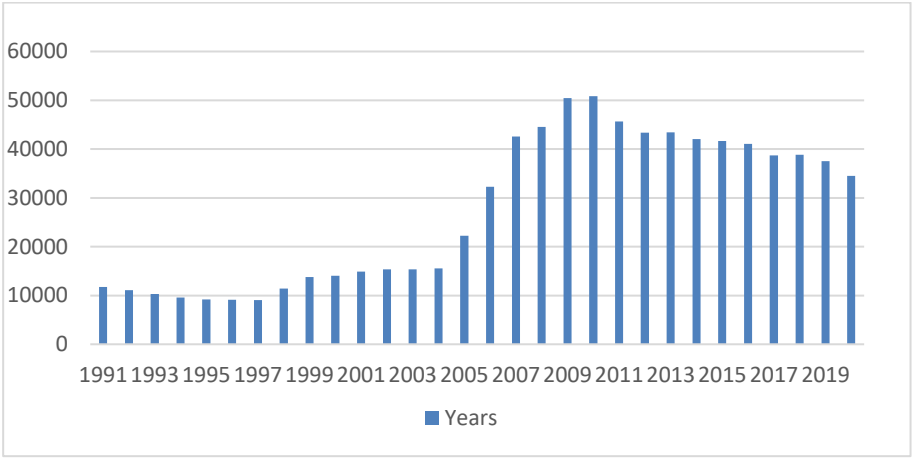
2.2 The Influence of Changing Oil Price on Macroeconomic Variables in Azerbaijan

Azerbaijan economy has made significant progress compared to other countries during the post-independence transition period. One of the former Soviet Republics with the fastest economic growth during the transition was Azerbaijan. The main driver of growth has been high foreign investment and export earnings in the energy sector. Despite the stability of the Azerbaijani economy in early 1999, investment in the oil and natural gas sectors continued to grow. However, development in other sectors remained low. After

independence, Azerbaijan's transition to a free market economy and opening its doors to foreign investment attracted the attention of investors.

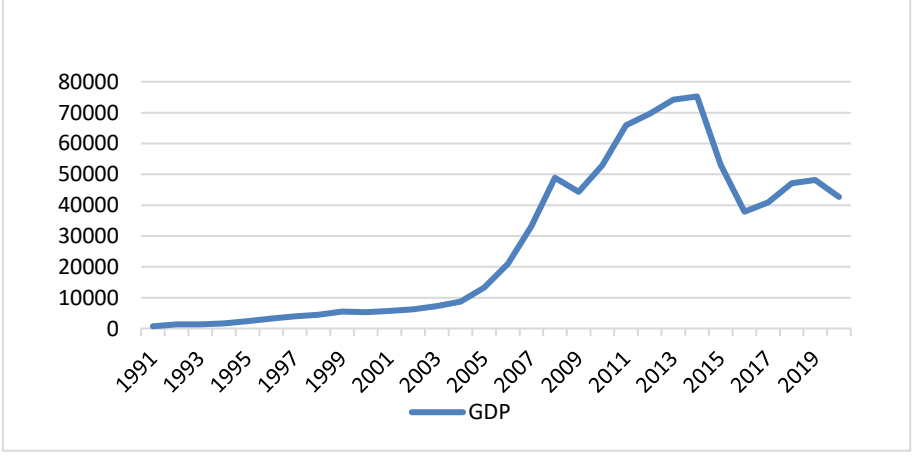
In 1994, foreign capital began flood into the Azerbaijani economy. A significant flow of foreign investment was recorded in 1994-1997 as a consequence of legislative and administrative adjustments undertaken to secure the entrance of foreign investment into the nation. The funds were mostly used to develop huge oil and natural gas reserves. The expansion of Azerbaijan's onshore and offshore oil deposits is directly linked to its economic prosperity. Azerbaijan's overall GDP, as well as oil-gas and non-oil GDP, rose significantly between 2001 and 2018. For Azerbaijan, export revenues from rising oil prices directly increase real national income. Therefore, on the other hand the sudden decline in oil price directly affect on country's economy.

Graph 1. Oil production in Azerbaijan



Source: Azerbaijan State Statistics Committee

Graph 2. Gross Domestic Product in Azerbaijan between 1991 and 2020



Source: Azerbaijan State Statistical Committee

2.3 The Impact of Global Financial Crisis to Azerbaijan Economy

The last global financial crisis, which began in the United States in the second half of 2007 and spread to most countries around the world, led to a deepening financial crisis in the United States, Europe and emerging economies. Prior to the great economic meltdown, GDP growth rates in Azerbaijan were 26.4 percent in 2005, 34.5 percent in 2006, and 25 percent in 2007, but they only expanded by 10.8 percent in 2008 (Central Bank of the Republic of Azerbaijan, 2010, p.6). Azerbaijan's GDP growth rate in 2009 was completely unprecedented, according to the Central Bank, decreasing to -11.5 percent.

An analysis of economic growth since 2005 shows that while the country produced the same amount of oil, the products and services produced in the nation decreased as a result of the dropping oil prices. This proves that Azerbaijan's revenues are directly dependent on oil, and oil revenues are directly dependent on the price situation on the world market. Oil, which was $150 per barrel before the crisis, fell to $ 30-40 after the crisis. This reduction had a very negative impact on Azerbaijan's oil revenues. In general, the cheapening of oil, which accounts for 75% of the state budget due to the oil sector, and more than 90% of exports through oil and oil products, brings many problems for the development of the country's economy (Central Bank of the Republic of Azerbaijan, 2010, p.10).

Table 3. Azerbaijan GPD and Economic Growth.

	GDP	GDP Per Capital	Economic Growth
Years	Million Dollar	Dollar	
2000	5272.8	665.1	**11.1**
2001	5707.7	714.3	**9.9**
2002	6235.9	774.4	**10.6**
2003	7276	896.8	**11.2**
2004	8680.4	1060.3	**10.2**
2005	13238.7	1600.4	**26.4**
2006	20983	2508.5	**34.5**
2007	33050.3	3906.1	**25**
2008	46258.2	5403.9	**10.8**
2009	**42575.7**	**4874,1**	**-11.2**

Source: Central Bank of the Republic of Azerbaijan: "Financial indicators of the Republic of Azerbaijan for the years 2000-2009.

In contrast to previous years, the GDP decreased for the first time in 2009. The drop in oil prices is largely responsible for this, since the main share of total saving coming from oil income. The fluctuation in oil prices have a direct impact on the economy, thus devaluation and inflation in the country with falling oil prices have had a direct impact on reducing people's savings. The amount of economic transactions conducted by citizens and non-residents of the republic with 141 countries reached $54.9 billion in 2008. During this period, goods worth $ 47.8 billion were exported and goods worth $ 7.2 billion were imported. The export- import trade balance was $ 40.6 billion in the positive direction (Ibadoğlu, 2014, p.55) In 2009, Azerbaijan conducted commercia l transactions of $16.5

billio n with 136 nations. Altho u g h Azerbaijan has seen an increase in foreign trade since the crisis, we must not forget that ninety percent of exports are oil products.

Azerbaijan's economic revival has been supported by foreign direct investment. The incredibly high amount of investment has spurred economic growth, primarily as a result of foreign direct investment in the oil industry. One of the most important impacts of the global crisis on developing countries is the decline in direct foreign direct investment. Foreign investment into Azerbaijan has increased steadily since 1994, peaking at $ 1,472 million in 1998 (Baku Research Institute, 2017). Foreign enterprises spent almost $ 180 billion in the Azerbaijani economy between 1994 and 2016. Direct investments accounted for 77.2 percent, while credits accounted for 22.8 percent. The oil sector has received 73 percent of direct investments.

In terms of per capita foreign direct investment, Azerbaijan is one of the CIS leaders. Azerbaijan's $ 80 billion investments are the largest among Eastern European and CIS nations. In the Azerbaija ni economy, fore ig n investment has a significant influence on GDP. Foreign investment as a percentage of GDP climbed from 30% to 35-40% between 1996 and 2000 (Yunusov, 2011: 60-77). In a brief, Azerbaijan suffers from the "Dutch Syndrome" in the sense that, in the face of fast growth in one field, it faces a challenge that will emerge as a consequence of economic decline in other sectors (Baku Research Institute, 2017).

2. The Decline in Oil Impact on Azerbaijan's Economy in 2014

Since the start of the twenty-first century, Azerbaijan's economy has experienced tremendous growth after the signing of the "Contract of the Century" (Ibadoğlu, 2014). Oil production and trade have exploded in recent years, transforming the industry into a major economic force. Increased oil extraction and exportation leads to massive inflows of foreign exchange into country, and it has generated boundless opportunities for execution of important infrastructure and social projects assisting to socioeconomic development of the country. However, the growth of the oil industry has been accompanied by certain unfavorable economic trends. The strengthening of the national currency had a detrimental effect on the economy's competitiveness and the growth of non-oil industries. The inflow of oil earnings into the foreign exchange market caused the national currency to appreciate (World Bank, 2016). This led to an increase in general price levels, a decline in the non- oil sector's proportion of GDP and total exports, and a strengthening of the real effective exchange rate.

In modern economic history, one of the biggest decreses in oil prices has been experienced mid-2014 to early 2016. During that time, prices dropped by 70 % which was one of the three biggest declines after World War II (U.S. Energy and Information Administration, 2015). In 2015, uncertainties in the world economy and instability in global financial markets increased, economic growth weakened in a number of developing and large economies and global risks increased. In this context, the process of reducing world commodity prices, including oil prices has intensified and the depreciation of a number currencies, including the national currencies of commodity-exporting countries, has accelerated. (Aslanbaylı, 2020, p. 133-142).

The sharp drop in oil prices has led to a significant reduction in foreign exchange earnings and the balance of payments surplus. In this regard, the calls to strenghten the resilince

of the national economy have become more relevant and in accordance with these challenges adequate maneuvers have been implemented in fiscal and monetary policy. The main components of domestic demand, which is a key factor in economic growth in the non-oil sector have begun to change significantly. At the same time, a series of devaluations in partner countries has created serious risks to the international competitiveness of the national economy.

3.1 Dutch Disease Effect on Azerbaijan Economy after 2014

Most resource-rich nations expand at a slower rate than non-resource-rich countries, and their economies face a variety of macroeconomic issues that are directly related to the booming sector (Karl, 1997, p. 223; Sachs and Warner, 2001, p. 827-838). The "resource curse" was originally used to describe this phenomenon (Corden, 1984, p. 41).

The first comprehensive model of Dutch disease was created by Corden to illustrate the impacts and fundamental changes of boom-generated economic expansion, but the Dutch Disease idea is the standard way to addressing the resource curse. Nevertheless, Azerbaijan attempts to reduce its reliance on oil and oil profits by growing non-oil industries and diversifying its economy. While oil revenues still account for a sizable portion of real GDP. After crude oil was first transported to the global market, the price of oil significantly increased, which resulted in an increase in revenue for Azerbaijan. Of course the rapid increase in oil revenues affects economic performance in Azerbaijan. Thus, in 2006, Azerbaijan was a leader country in the world as GDP growth rate was 34.5% and also the money supply rose two times before financial depression in the world economy (Bulut, et. al., 2017, p. 90).

It is known that the increase in GDP in Azerbaijan depends on the country's oil production capacity and rising oil prices. Prior to the crisis, Azerbaijan's GDP grew at a pace of 26.4 percent in 2005; although it grew at 34.5 percent in 2006 and 25 percent in 2007, it grew at a rate of 10.8 percent in 2008. According to ADB data, there was a decrease of 11.5% in Azerbaijan's GDP for the first time in 2009. After 2005, despite the same level of oil production in the country, it is observed that the real rate of increase on GDP has decreased as a result of the decrease in oil prices.

This demonstrates that Azerbaijan's earnings are reliant on oil, and oil revenues are reliant on global market prices. Like other oil producing countries, Azerbaijan has also suffered great losses due to the decrease in oil prices in the world markets. Before the crisis, oil price was around 150 dollars per barrel and it decreased to 40-60 dollars after 2014. Azerbaijan's oil income suffered as a result of this. The crisis forced the Azerbaijani government to delay the development of numerous significant infrastructure projects for some years (Center for Economic and Social Development-CESD, 2017, p.11).

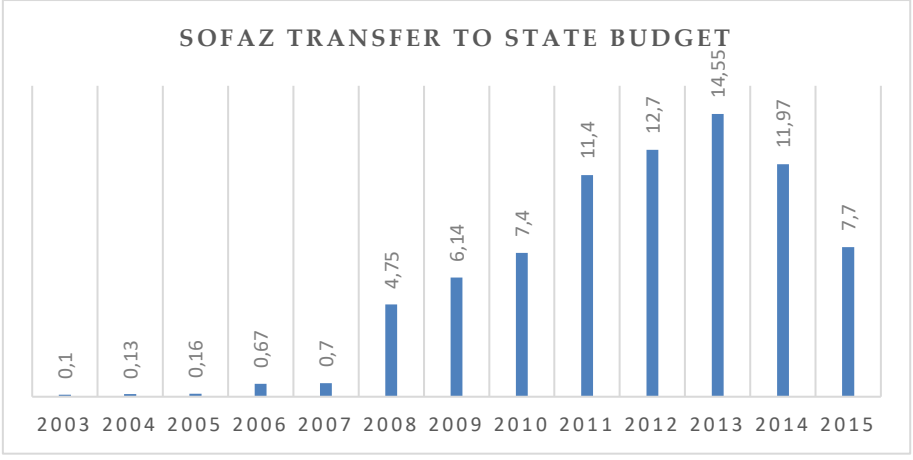
The country's major financial source comes from large regional projects such as Baku-Tbilisi-Ceyhan, the Baku-Tbilisi-Gars railway, TAP, TANAP, and the Southern Gas Corridor, all of which were funded by withdrawals from SOFAZ-the State Oil Fund of Azerbaijan (CESD, 2017, p.13). The oil and gas sector's dominance in the country cause a number of hazards to the nation's economy, one of them is process of ***de-industrialization***. Therefore, Azerbaijan has faced Dutch Disease Symptom in 2015 and faced difficult situation after this year. In order to show a framework of the independency

of the economy from the oil and oil products, it is useful to highlight some economic indicators.

Between 2004 and 2011, the oil and gas sector's output and exports increased steadily as a consequence of many important oil and gas extraction projects, including as "Shafag-166 Asiman," "Shah Deniz," and "Azeri-Chirag-Gunashli" (Yusufzade, 2016, p. 70-76). After 2014, the production of oil and gas decreased until now as a result of crisis in 2015. While, the main important projects have completed during the period of high oil price. The existing income flow to the state budget has begun to fall due to the severe drop in oil prices. Oil exports from Azerbaijan decreased by 326 thousand tons (13.4 percent) in January 2015 compared to the prior month as a result of a severe decline in oil prices around the world in 2014. As oil prices fell on the international market, Azerbaijan started to feel the effects of a sharp decline in oil revenues. The country produced 41,9 million tons of crude oil in 2014. With 43.5 million tons produced in 2013, oil production dropped by 3.7 percent in 2014 compared to 2013 (State Statistics Committee, 2015, p. 51)

Although the price of Azeri oil has decreased 2.29 times during the last seven months of 2015, the price of Azeri oil has never dropped much since the first oil was transported via BTC in 2005. Since oil is Azerbaijan's principal export commodity, the drop in international oil prices has resulted in a decrease in the country's main source of revenue. As a result, CBAR was forced to sell currency in order to keep the MANAT's exchange rate stable (CESD, 2016, p.15).

Diagram 3. Transfer from the SOFAZ to State Budget (Million Manat)



Source: The State Oil Fund of the Republic of Azerbaijan, 2016

3.2 Dutch Diseases Impact on Exchange Rate and Inflation

Azerbaijan's economy has demonstrated a substantial economic growth sourcing from oil boom over the last several years after the signing of the "Contract of the Century" (Ibadoglu, 2014). Oil production and trade have exploded in recent years, transforming the industry into a major economic force. Increased oil extraction and exportation leads to massive inflows of foreign exchange into country, and it has generated boundless opportunities for execution of important infrastructure and social projects assisting to socioeconomic development of the country.

However, the growth of the oil industry in Azerbaijan has been accompanied by certain unfavorable economic trends such as an increase in general price levels, a decline in the non-oil sector's proportion of GDP and total exports, and a strengthening of the real effective exchange rate. The strengthening of the national currency had a detrimental effect on the economy's competitiveness and the growth of non-oil industries.
The inflow of oil earnings into the foreign exchange market caused the national currency to appreciate (World Bank, 2016). The function of REER in the Dutch disease model is critical, and it has an influence on the industrial sector's competitiveness. Hasanov and Hasanli (2011) conduct research to assess the money market approach's long-term irrelevance in Azerbaijan and highlight the significance of resource reliance in terms of the value of the national currency. The appreciated of AZN beginning from 2003-2004 and accelerated of this growth after 2006 (Central Bank of Azerbaijan, 2010, p. 6). In order to reduce the financial risks connected with the massive inflow of foreign currency between 2005 and 2014, the CBAR implemented a fixed exchange rate policy.

The economy of Azerbaijan was severely impacted by sharp declines in price of oil

Mid-2014 to early 2016 experienced one of the biggest decreases in oil prices in modern economic history. During that time, prices dropped by 70% which was one of the three biggest declines after World War II (USA EIA, 2015). Azerbaijan's Central Bank had lost 27.6% of foreign exchange reserves in a short period as a result of the anticipated depreciation after the significant drop in oil prices. (CESD, 2016, p.3-25). The MANAT saw two significant depreciations between 2014 and 2017; the first being in february and the second depreciation is in December, 2015. Since it is a gradual process, the sharp decline in oil prices in 2014 didn't have any significant effects until the beginning of 2015. At that point, it adversely damaged the manat's exchange rate and contributed to volatility until 2017.

Weak macroeconomic underpinnings and the economy's reliance on oil had an immediate impact on the financial sector, resulting in double-digit inflation, reduced 175 oil income, and a drop in industrial production. Government spending accounted for a greater proportion of GDP (between 31.1 and 38.4%) during the era of strong MANAT (mostly 2008–2014), despite there was low foreign debt. The Azerbaijani economy experienced growth trend in 2017 as oil prices rose to more attractive levels. GDP climbed by 0.1 percent in 2017 compared to the previous year (State Statistics Committee, 2019: 42).

3.3 Impact on Gross Domestic Product

Azerbaijan's GDP expanded more than 14 times between 2000 and 2014, from 5.27 billion dollars in 2000 to 75.24 billion dollars in 2015. But, owing to a reduction in global oil prices, Azerbaijan's GDP dropped to 53.07 billion dollars (World Bank, 2016). The Azerbaijani economy was badly impacted by low global oil prices from 2014 to 2016, resulting in the depreciation of the national currency in 2015, severe inflation in 2016-2017, and the bankruptcy of many banks (International Trade Administration, 2019).

According to official statistics, real GDP growth in 2015 was 1.1 percent (2.8 percent in 2014), including 1.1 percent in the non-oil sector (7 percent in 2014), and an increase of 1.2 percent in the sector of oil (a decrease of 2.9 percent in 2014) was observed. In January-August 2016, GDP decreased by 3.1% in real terms, including a decrease of 5.8% in the

non-oil sector and an increase of 2.5% in the oil sector (State Satistics Commitee, 2017: 75). The GDP per capita in 2015 was 3657 USD, over two times less (54.2%) than the previous year and relatively same with 2007. During the decade 2005-2014, however, GDP per capital rose fivefold due to oil income. Budget expenditure reductions were one of the most significant barriers to development in 2015. While, budget expenditure was predicted to be 13.53 billion dollars (based on the end-of-year exchange rate of 1 USD=1.5594), it was 15.7 percent lower, and had been 11.4 billion dollars (FinanzRu, 2017). As a result, a 2.13 billion USD decrease has been made, taking into account the financial consequences.

The price of oil has been continuously increasing since late 2016, hitting a high of 65 dollars at the end of 2017 and the beginning of 2018. The rise in the price of oil to 65 dollars enabled the Azerbaijani economy to retrieve earnings and reserves, which might have a negative impact on the overall economy by the end of 2017. The average oil price, which was about 57 dollars, enabled the nation to maintain economic balance with rising oil income and helped prevent a recession, with the GDP rising by 1% in 2017 compared to the previous year (Yusifzade, 2016, p. 70-76).

During this time, the Brent oil price increased by 23.2 percent to 69.55 dollars. Azerbaijan's real GDP increased by 1.4 percent in 2018 as oil prices improved. (2019, Export.gov). The link between oil prices and GDP in Azerbaijan indicates that GDP grew at the same pace as oil prices in 2017. Oil prices fluctuation has direct effect on GDP growth, while the negative effects of these situation have been increased because the non-oil sector is reliance on the oil industry, generating a domino effect for Azerbaijan's economy. As a consequence, oil price swings will have a short- term impact on the country's economy.

3.4 Crisis Effect on Export and Trade

Azerbaijan’s oil exports fell by 326 thousand tons (13.4 %) in january 2015, after a sharp decrease in global oil prices in 2014. Furthermore, Azerbaijan suffered from diminishing export revenue throughout this time period. Total exports declined by 9% due to a 9% drop in oil exports. Non-oil exports declined by 5.4 percent in 2014, with the decline being worsened by a decline in the manat’s (AZN) competitiveness in real terms as trading partners’ currencies depreciated. In 2015, foreign trade turnover was 20.6 billion dollars, down 33.4 percent from the previous year (Central Bank of Azerbaijan, 2015).

It is important that this considerable decrease in foreign trade turnover was caused by a decrease in exports. In other words, the value of exports fell by 48.7 percent to 10.6 billion dolar in 2015. The primary cause of this drop is the dramatic decline in worldwide oil prices. In comparison to the first 11 months of 2014, the amount of oil and oil proıducts and gas exports diminished by 53.8 % in 2015, totaling 9.1 billion USD (2014, 19.77 billion USD, SCCRA). Imports increased in comparison to exports. That is, imports increased by 1% year on year during the first eleven months of 2015, totaling $8.2 billion (CESD, 2017, p. 17). According to SOCAR official statistics based on CESD, Azerbaijan exported 1,697,768 tons of oil over the BTC pipeline in January 2015. In contrast to 2014, the country exported 507.169 thousand tons of crude oil between Baku and Novorossiysk and 254,107 thousand tons through the Baku-Supsa pipeline during a specific period in 2015. Azerbaijan exported 2.122 million tons of oil to global markets in January 2015 (Mukhtarov et. al., 2020, p.72-80).

Table 5. Annual Trade of Azerbaijan

Year	Million USD			
	Trade Turnover	**Import**	**Export**	**Trade Balance**
2005	8 558.4	4 211.2	4 347.2	136.0
2006	11 638.9	5 226.7	6 372.2	1 105.5
2007	11 771.7	5 713.5	6 058.2	344.7
2008	54 926.0	7 170.0	47 756.0	40 586.0
2009	20 824.5	6 123.1	14 701.4	8 578.3
2010	27 960.8	6 600.6	21 360.2	14 759.6
2011	36 326.9	9 756.0	26 570.9	16 814.9
2012	33 560.9	9 652.9	23 908.0	14 255.1
2013	34 687.9	10 712.5	23 975.4	13 262.9
2014	31 016.3	9 187.7	21 828.6	12 640.9
2015	20645.9	9 221.4	11 424.5	2 203.1

Source: State Statistical Committee of the Republic of Azerbaijan, 2016.

The table shows that in 2015, falling oil prices in global markets were reflected in macroeconomic indicators. The trade balance was 2.2 billion USD, a decline of 6 times in the year of 2015. The new economic conditions created by the cheap oil era also affected the state's finances. Therefore, the revenues of SOFAZ, an important link of state's finance, decreased by 38% or 4.9 billion manat in 2015.

Also there is a significant effect of oil prices on savings of people within the country. The growth rate of nominal household income was ranging from 7.4 to 22.2 percent between 2005 and 2013. The period's low inflation rate also led to real income growth rates varying from 5% to 12.6%. Nevertheless, since the second half of 2014, the dramatic drop in oil prices has had a detrimental impact on economic variables, particularly real household income in Azerbaijan, which is overly dependent on natural resources. According to government stats from 2014, the real and nominal household income growth rates were the worst in the past ten years, with nominal income growing at 5.1 percent and real income growing at 3.7 percent. In 2016-2017, real income began to decline for the first time in almost 20 years, as yearly inflation reached double digits and exceeded growth rate of nominal household income.

As a consequence of the high inflation rate (12.5-13%) compared to the nominal income rise of 8.3-8.7%, real household income fell by 3.7 and 4.7 percent in 2016 and 2017, respectively. Saving is directly related to household income level, thus sharp decline in oil price and devaluation of national currency in 2015 has disturbing effect on people's saving in Azerbaijan (FinanzRu).

4. Data and Methodology

The primary export of Azerbaijan economy is crude oil, and its value is greatly influenced by changes in oil prices. As it was stated at the beginning, main research goal is to examine how the oil price fluctuations affect Azerbaijan's macroeconomic metrics.

There are two types of question about this research. The primary research question is: ''Which economic metrics is affected most by changing oil price in Azerbaijan?''

Secondary research questions are: ''What is the main reason for the Dutch syndrome in Azerbaijan?'', ''what are the main causes of crises in the oil sector? and what are the consequences of the impact of oil on economic development?''. The direct and indirect relationships between these factors are causing a lot of discussion. Depending on whether a country exports or imports oil, the effects of oil price shocks vary from one economy to another. According to Horsnell, the degree of a direct impact of a specific oil price increase relies on the proportion of the cost of oil in the country's revenue, the degree of reliance on imported oil, and the capacity of end-users to lower their usage and transition to other fuels (Horsnell, 2004: 403).

4.1 Econometric Model of Azerbaijan's FDI, Growth Saving and Export

The methods for evaluating both long and short-term economic factors using the vector error correction model. These tests' results serve as an example of the study's "Empirical Results" section

In this research, twenty five years of data (from 1994 to 2020) was used to analyze the result of oil price fluctuations. Necessary data is collected from the world bank sources, Azerbaijan State Statistical Committee and Statista.com website. With this data it is aimed to analize how price changes at world oil market affect other economic variables in Azerbaijan economy. For getting dataset, it has used World Bank and Azerbaijan State Statistical Committee open data set which contains data of economic variables of the member countries in the world and official data set of Azerbaijan. It considers as one of the most reliable source of the data. This model considers the influence of oil price changes on such macroeconomic variables: ''Foreign Direct Investment, Gross Saving US$ million, Export US$ million.''

Foreign Direct Investment (FDI): One of the most significant economic factors is foreign direct investment (FDI) since it is correlated with a number of other macroeconomic variables. So, it was decided to use FDI in the model. Variable contains Azerbaijan FDI at the given year and over the 25 years. After gaining independence, FDI can play an important role in Azerbaijan's economic development. Therefore, this variable is important for our research.

Gross savings (% of GDP): The main purpose of choosing this variable is to understand how crude oil affects people's ability to save. Gross Saving is expressed as a share of GDP (Gross Domestic Product). People save less during times of crisis, which causes the percentage of savings in the GDP to fall.

Goods Exports: The top three exports from Azerbaijan are crude oil ($9.3 billion), petroleum gas ($2.2 billion and refined petroleum $292 million) making exported goods another significant factor in our analysis. (State Statistics Committee, 2022, p. 94-100). Therefore, unexpected change in crude oil price can directly effect on this variable.

Brent Crude Oil Price: One of the two globally recognized crude oil types that serve as benchmarks for crude oil pricing is known by the term Brent blend. The North Sea-produced Brent Blend is regarded as a light, sweet crude oil. Since Brent blend makes up more than half of all crude oil sold worldwide, it makes sense for it to serve as the standard for pricing crude oil. In our research, we take 25 years of Brent crude oil price data from Statista.com to analyze the effect of crude oil changes.

The model was set up by using 25 years of data of economic variables which are ''Brent Oil Price per Barrel, Export (US$), FDI Net Inflows (US$), Gross Savings (US$)''. The given data is collected from Azerbaijan Statistical Committee and World Bank.

5. Conclusion

Here, it would present the general results of the research and the acceptance or rejection of the hypotheses made in the analysis. The role of oil in transition economies, as well as in Azerbaijan, its impact on the economy, as well as the results of the analysis will be presented. Also, it will highlight the importance of this research, key findings, and recommendations for future generations.

This study has examined how the negative effects of oil prices affected transition economies, basically countries whose revenues come from the sale of oil and oil products. Due to the transition of Azerbaijan from socialism to capitalism after the collapse of the Soviet Union and the dependence of its economy on oil, the study has focused on changes in the Azerbaijani economy.

After gaining independence, Azerbaijan began to work closely with countries around the world to rebuild its economy. Foreign countries had great interests in the oil resources of Azerbaijan. Therefore, an agreement was reached between Western countries and Azerbaijan in the field of oil production and export. Russia, Iran, Ukraine, Turkey, the United States, Britain, France, Italy, the Netherlands, Poland, Japan, China and many other countries were seriously interested in the oil and gas resources of the Caspian Sea and its Azerbaijani sector (Ibrahimov, 2010).

5.1 Findings

The main findings indicate that Azerbaijan's economy is strongly dependent on resource exports, which produce high growth rates when commodity prices are favorable but lower macroeconomic performance when oil prices fall. Huge amounts of foreign currency were injected into the economy during the oil boom period, which caused the local currency to appreciate, the manufacturing sector's competitiveness to decline, and the tertiary sector to grow as a result of government spending, all of which point to the first indication of Dutch disease.

During times of high oil prices, countries often have a positive trade balance, a rise in foreign reserves, and currency appreciation. It is very difficult to develop appropriate monetary and exchange rate policies to preserve inflation and exchange rate stability due to the above mentioned macroeconomic features of resource-rich countries. As a result, the most important problem in the macroeconomic structure of resource-rich nations may be seen in the link between oil prices and the currency rate.

Sharply declining oil prices have been a problem for many economies since 2014, and Azerbaijan was no exception. As a consequence, the manat lost a significant amount of value when compared to the dollar. Due to the fact that oil and gas sales account for the majority of Azerbaijan's income, a drop in oil prices resulted in a negative balance of payments, which lowered the value of the manat. In actuality, the Azerbaijani economy's susceptibility to outside shocks, such as a drop in oil prices, highlighted the nation's challenges with economic diversification or the "resource curse."

Government spending was reduced as a result of the state budget declining and at the end of the year 2015, the budget's revenue side had decreased by 11.8%. All of this affected to income of population, thus, inflation and devaluation of manat influence on real income level of people. The national average monthly salary fell by 48% during this time. The labor market was badly impacted by the economic downturn as well. In other words, the overall amount of investment inflows decreased by 28.3 percent in 2015, with domestic investment decreasing by 38.3 percent and international investment falling by 14.5 percent, respectively.

5.2 The Result of Analysis

As Azerbaijan has gained independence for more than 30 years, it has been very difficult to find data, and twenty five years of data have been more accurate in terms of data accuracy. So, dataset contains twenty five years annual interval between 1995 and 2020. In the methodology part, many economic variables have been used for empirical analysis. Due to the variables is non-stationary, VECM analysis has been utilised. Beginning with descriptive statistics of the variables; export, foreign direct investment, the price of oil, and gross savings are all normally distributed. Next, the Augmented Dickey-Fuller Unit Root Test was applied to determine whether or not the data is stationary. At the level, the data were not stationary; according to the correlation test, all variables have a positive connection with each other. After that, it has utilized the Johansen test to determine whether the data are cointegrated. apply the VEC (Vector Error Correction) Model in this situation. The Granger Causality Test is then used to examine the short-term causal impact of FDI, exports, and gross savings on the price of oil. At the same time diagnostic testing, which includes examining heteroscedasticity, normality and autocorrelation was performed. As a result of it, it was found that at 95% significance level, there is a causal association between variables in the VEC model in both the long run and the short run.

According to the Granger Causality Test, FDI and export have no causal relationship with gross saving in the short term, but the price of oil has. This implies that in the short term, gross savings depend on oil prices or follow them. Diagnostic analysis reveals that our VEC model is significant, with the exception of a minor heteroskedasticity issue. Finally, it has been performed a regression analysis and created an overall savings formula. This formula allows us to predict the total savings with the given variables. The study has analyzed that *the most influencing variable in gross saving* is *oil price.*

Oil revenues are crucial to the economic growth of nations with abundant resources. In this sense, the establishment of SOFAZ in Azerbaijan might be seen as a constructive step. However, the high level of budgetary transfers from oil funds poses a significant risk for Azerbaijan. Regions are a key element in avoiding resource curse risks. Only a few large cities, most notably the capital Baku, are significant economic hubs in Azerbaijan.

Actually, the Azerbaijani economy's susceptibility to outside shocks, such as a drop in oil prices, highlighted the nation's challenges with economic diversification. In order to avoid increasing overdependence on oil earnings, diversifying the economy should be a top priority. This objective may be accomplished through developing efficient management systems, implementing relevant laws, developing human capital, facilitating access to financing to businesses in non-resources industries, and encouraging investment in tradable, non-oil sectors. The other problem links with FDI. It is clear that investment inflows help the economy to develop.

Encouraging the development of Small and Medium-sized Organizations by improving the legal structure and putting new appealing policies into place. Since SMEs are delivering changes to the market that would result in a good situation for Azerbaijan in the long run, the diversification of the economy might be developed with a bottom-up strategy. Furthermore, Azerbaijan should spend extensively in education and academics to improve the effects of allocating its actual economic resources. In order to achieve an effective economic situation, more earnings from the oil industry should be given to the development of human capital. However, this is unlikely to occur until structural changes are put into place for the benefit of economic sectors, with a focus primarily on education, since it is the common ground and the real worth of an economy without inherent and monetary value.

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