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PETROL FİYATLARINDAKİ DEĞİŞİKLİKLERİN GEÇİŞ EKONOMİLERİ ÜZERİNDEKİ BOZUCU ETKİLERİ: AZERBEYCAN ÖRNEĞİ

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DİSTURBİNG EFFECTS OF OİL PRİCE CHANGES ON TRANSİTİON ECONOMİES: CASE OF AZERBAİJAN

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ABSTRACT

DİSTURBİNG EFFECTS OF OİL PRİCE CHANGES ON TRANSİTİON ECONOMİES: CASE OF AZERBAİJAN

HEYDEROV AZAD AZER

This thesis examines the role of oil industry in global economy and the result of changing oil price on economic variables in Azerbaijan. The research gives the detail information about structure of oil sector and the main things that effect on this industry. Azerbaijan is an oil producing country and we analyze this thesis in the case of Azerbaijan.

If we focus on Azerbaijan's overall economy, we can see that the oil industry plays a significant role in driving GDP growth, economic growth, a decline in the rate of unemployment, and a reduction in inflation. Therefore, the changing oil price has significant impact on Azerbaijan economy.

The country's economy faced some difficulties due to the fall in oil prices in international markets as a result of the oil crisis in 2015 and COVID-19 in 2019. In this paper, we demonstrate the macroeconomic and micro effects of these crises on the Azerbaijani economy. We carried out the econometric model for analyze the result of changing oil price, and have been checked which economic variable is effected more by changing oil price. We have taken the 25 Years of data from the World Bank and Azerbaijan State Statistical Committee, and analyze the dataset with using EVIEWS 10. In this econometric model, we analyzed the changing Brent crude oil price and its effect on Azerbaijan FDI, Export and Gross Saving. According to the test result, Gross Saving and Export are most affected by this changing.

Keywords: Azerbaijan Economy, GDP Growth, Oil Price, Oil Export, Gross Saving, FDI

ÖZ

PETROL FİYATLARINDAKİ DEĞİŞİKLİKLERİN GEÇİŞ EKONOMİLERİ ÜZERİNDEKİ BOZUCU ETKİLERİ: AZERBEYCAN ÖRNEĞİ

AZAD HEYDEROV AZER

Bu tez, petrol endüstrisinin küresel ekonomideki rolünü ve petrol fiyatlarındaki değişimin Azerbaycan'daki ekonomik değişkenler üzerindeki sonuçlarını incelemektedir. Araştırma, petrol sektörünün yapısı ve bu sektörü etkileyen başlıca unsurlar hakkında detaylı bilgiler vermektedir. Azerbaycan petrol üreten bir ülke ve biz bu tezi Azerbaycan örneğinde analiz ediyoruz.

Azerbaycan'ın genel ekonomisine odaklanırsak, petrol endüstrisinin GSYİH büyümesi, ekonomik büyüme, işsizlik oranındaki düşüş ve enflasyondaki düşüşte önemli bir rol oynadığını görebiliriz. Bu nedenle değişen petrol fiyatlarının Azerbaycan ekonomisi üzerinde önemli etkileri bulunmaktadır.

Küresel ve diğer petrol krizleri nedeniyle, uluslararası piyasalarda petrol fiyatlarının düşmesi sonucu ülke ekonomisi bir takım sıkıntılar yaşamıştır. Bu bildiride, bu krizlerin Azerbaycan ekonomisi üzerindeki makroekonomik ve mikro etkileri ortaya konmaktadır. Değişen petrol fiyatının sonucunu analiz etmek için ekonometrik modeli gerçekleştirdik ve değişen petrol fiyatından hangi ekonomik değişkenin daha fazla etkilendiği kontrol edildi. Dünya Bankası ve Azerbaycan Devlet İstatistik Komitesi'nden 25 yıllık verileri aldık ve veri setini EVIEWS 10 kullanarak analiz ettik. Bu ekonometrik modelde değişen Brent ham petrol fiyatını ve bunun Azerbaycan DYY, İhracat ve Brüt Tasarruf üzerindeki etkisini analiz ettik. Test sonucuna göre bu değişimden en çok Brüt Tasarruf ve İhracat etkileniyor.

Anahtar Kelimeler: Azerbaycan Ekonomisi, GSYİH Büyümesi, Petrol Fiyatı, Petrol İhracatı, Brüt Tasarruf, Doğrudan Yabancı Yatırım

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Azad Heydarov Azer

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LIST OF ABBREVIATIONS

EIA	: U.S. Energy Information Administration
BP	: British Petroleum
WTI	: West Texas Intermediate
OPEC	: The Organization of the Petroleum Exporting Countries
ICE	: Intercontinental Exchange
NYMEX	: New York Mercantile Exchange
CIA	: Central Intelligence Agency
NWF	: National Welfare Fund
OECD	: The Organisation for Economic Co-operation and Development
AIOC	: Azerbaijan International Oil Company
TNCs	: Transnational Companies
GDP	: Gross Domestic Product
IMF	: International Monetary Fund
OECD	: The Organisation for Economic Co-operation and Development
U.K.	: United Kingdom
U.S.	: United States
USAID	: United States Agency for International Development
UN	: United Nations
Vol.	: Volume

CHAPTER ONE

1. Introduction

This dissertation will investigate the importance of oil in developing nations that export oil and their effect on the economies of those states, and will pay special attention to Azerbaijan's economy.

The international economy has benefited immensely from the oil and gas reserves and most of oil exporting countries directly depend on this product. A key component in the development of political, economic, diplomatic, and military strength is regarded as being the presence of oil reserves. Oil is a vital component of the energy industry and has a main role in the creation of financial and economic resources today. Although the use of alternative and renewable energy sources is expanding around the world, the role of oil and gas in energy consumption is expected to continue for many years to meet the world's growing demand. Thus, in 2020, oil continues to hold the largest share of the energy mix (31.2%). While, the share of the renewables energy was 5.7%[1]. This proves that the role of oil in world energy consumption is still important.

In general, oil price changes have a considerable impact on the production costs and hence the price levels of oil importers, but in energy exporting nations, oil price movements primarily affect energy export income and government budget revenues. Therefore, this changing in global oil price can affect to world economic situation. While, developing countries which the main incomes are depend on oil and oil products, are more affected by these changes and have serious impact on their economic situation. The changes in oil prices play an important role in the incomes of the exporting countries and the expenditures of the importing countries.[2]

[1] International Energy Agency (2022). Oil Market Report. https://www.iea.org/topics/oil-market-report;

[2] "Crude Oil Price Forecast: 2017, 2018 and Long Term to 2030", IMF Brent Crude Oil Projections https://knoema.ru/yxptpab/crude-oil-price-forecast-2017-2018-and-long-term-to-2030;

The signing of the Contract of the Century on September 20, 1994, provided the basis for Azerbaijan's oil policy[3]. The agreement signed with the participation of 11 transnational oil companies of the world has made an important contribution to the development of Azerbaijan's oil strategy, economy, development and expansion of foreign economic relations. This new oil strategy, successfully implemented under the leadership of national leader Heydar Aliyev, has played an exceptional role in strengthening Azerbaijan's prestige and position in the international arena, as well as ensuring a high level of national security interests. The oil strategy successfully implemented after 1994 allowed Azerbaijan to jointly exploit and export hydrocarbon resources with foreign companies and accelerated the inflow of foreign currency into the country. Due to the inflow of oil revenues into the country, the process of renewing the infrastructure of the national economy and modernizing certain areas has been intensified. Taking advantage of this opportunity, the Republic of Azerbaijan has become the most stable and dynamically developing country in the region. Revenues from the oil sector have created ample opportunities for the development of both the oil and non-oil sectors of the country.

In Azerbaijan, oil and gas production and exports have steadily increased, and many critical oil and gas extraction projects, including as "Shafag-Asiman," "Shah Deniz," and "Azeri-Chirag Deepwater Gunashli," as well as pipeline projects like as BTC, TAP, TANAP, and others, have been completed. While the oil and gas sector's dominance in the economy poses a number of threats to the country's economy, one of which is Holland Syndrome. Azerbaijan has faced this problem because oil and gas sector has a significant share in country's economy. Therefore, after decline oil price in the world, country has faced with devaluation, inflation, budget deficit and other difficult economic situations[4]. Thus, we will show the result of this situation with using Azerbaijan case in this study.

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[3] Ibrahimov R. (2008), Azerbaijan-New Trend in Oil Strategy. Available at: http://www.turkishweekly.net/columnist/2556/azerbaijannew-trend-in-oil-strategy.html;

[4] Hasanov F. (2013) "Dutch disease and the Azerbaijan economy, Communist and Post-Communist Studies", Oxford Economic Papers 36, p.380;

1.1. Aims and Objectives of Study

In this study, the main aim is that to analyze the effect of crude oil price change on Azerbaijan economy. Our study aims to measure how changes in oil prices in Azerbaijan affect economic variables. In our topic, we will focus on the economy of Azerbaijan and examine the example of Azerbaijan as a transition economy. We 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. We have built VECM model according to Azerbaijan Statistic Datas, ana analyze effect of oil price on economic variables. With this analysis, we can understand which variables are more sensitive for changing. We give recommendations and advices to improve other sectors parallel with oil sector.

1.2. Research Question

There are two types of question about this research.

- The primary research question is:
  - Which economic metrics is effected most by changing oil price in Azerbaijan?
- Secondary research questions are:
  - What is the main reason for the Dutch syndrome in Azerbaijan? [5]
  - What are the main causes of crises in the oil sector?[6]
  - What are the consequences of the impact of oil on economic development?[7]

1.3. Research Database

For empirical analysis, I used secondary data and findings retrieved from the official documents of the Republic of Azerbaijan, oil documents signed by the President of the

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[5] Gasimov I. (2014). Resource Curse and Dutch Disease in Azerbaijan: Empirical Analysis. Doctoral dissertation, Eastern Mediterranean University (EMU)-Doğu Akdeniz Üniversitesi (DAÜ), Turkey;

[6] Hasanov F. (2013) "Dutch disease and the Azerbaijan economy, Communist and Post-Communist Studies", Oxford Economic Papers 36, p.380;

[7] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55;

Republic of Azerbaijan, the various literary publications, articles, including the mass media data and speeches of the President of the Republic of Azerbaijan, works of the national and foreign economists and data obtained from the State Statistical Committee, World Bank, OECD and OPEC data and articles.

1.4. Practical Value

This research will be useful for government agencies and organizations engaged in economic analysis and other researchers trying to conduct research on the impact of oil prices and its effect on the economy. This study provides useful information, recommendations and findings on the global oil sector and its structure, the role of oil in the Azerbaijani economy and the Dutch syndrome in Azerbaijan, and the oil factor in developing countries. Therefore, this dissertation includes useful content, theoretical and practical information that can be used by private enterprises engaged in business activities and also by government organization. Moreover, the theoretical and practical information in this dissertation can be used as an important topic for students and people working in the field of education. We try to make comprehensive analysis in our dissertation and use a lot of data and bibliography.

1.5. The Main Limitation of Study

The main limitation of the study was the difficulty of obtaining data on countries, as well as the lack of an adequate database of countries with transition economic countries. some countries do not share their data openly. Therefore, it took a long time to get information about them from sources of other authors.

As Azerbaijan has just gained independence, it has not been possible to obtain long-term data. Some of the economic indicators, I obtained from the Statistics Committee of Azerbaijan and the World Bank were longer and shorter, so I had to take a 25-year period to build the analysis.

Apart from that, the COVİD 19 epidemic that we are facing globally has caused delays in my thesis project. Thus, due to pandemic, we have limited access to universities, libraries and other institutions. Despite these limitations and difficulties, we were able to prepare this research topic.

1.6. The Structure of the Research

The research work consists of five chapters, table of content and bibliography. According to the accepted standards, the total volume is 84 pages and there are 7 tables, 4 graphs and diagrams in this dissertation. In this research, we are used 150 literatures.

The chapter begin with Introduction and in the second chapter, we will show the Literature Review part. In this chapter, we will show the structure of oil industry, global oil crisis, and its effect on developing countries. Apart from that, we explain oil price effect on Azerbaijan example in the second chapter. The third chapter is show general information about literature review and our methodology part.

The forth chapter related to methodology and we make our analysis in this chapter. Our methodological analysis is based on data from Azerbaijan. In this section, we have analyzed the VECM models.

In the conclusion section, we will show the general result of the analysis, the impact of oil in Azerbaijan. In this section, we will describe in detail the results, findings and recommendations of our research.

CHAPTER TWO

2. LITERATURE REVIEW

This topic analyzes the impact of changes in world oil prices on developing countries and the Azerbaijani economy, mainly on oil-exporting countries. As we know, oil is the main strategic and dominant product in the world, 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 there is the significant share of oil in the economy of Azerbaijan, it is affected by current and potential oil crises.

The purpose of this chapter is to evaluate and analyze the modern and current literature related to this study, and to find similarities and differences. In order to understand the effects of oil price on countries economy, especially on Azerbaijan, we give the detail information about the global oil sector and its structure, to identify the main factors affecting oil, to identify the states, companies and institutions that have the main advantage in the oil market and to study their impact on prices. It is also to determine the impact of changes in oil prices on the Azerbaijani economy.

The theoretical and methodological part of the research is based on dissertations written by experts, scientific works of well-known scientists, various articles and journals, statistical data, as well as dissertations and similar research papers and online sources. Apart from that, the government reports and presidential decrees is used in this part of research.

The chapter give the broad understanding about world oil market, and show the relationship between oil price and economic variables. In Azerbaijan part of the chapter demonstrate that Azerbaijan dependency from oil and its effect on countries economy during crisis. Therefore, the chapter explain the literature and show the answer to research question.

2.1. Structure of the Oil Industry and its Role in Economy of Countries

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 exploration and production operations[8]. 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 midstream sector can contain either downstream and upstream features due to its location. It's possible to add the purification facilities that raw natural gas goes through before entering a refinery.

The final stages of the process are processing, refining, and purification, which are referred to as the "downstream sector." The sale and distribution of goods connected to crude oil and natural gas are included in this sector. Petrochemicals such as gasoline, petroleum products, aviation fuel, lubricants, asphalt, heating oil, waxes, and other substances are all included in this 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,

[8] Karl T. (2007). The Paradox of Plenty: Oil Booms and Petro-States, Berkeley: University of California Press. p.35-47;

account for a considerable portion of the expenditures. Production and distribution 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[9].

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[10]. 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.

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[11]. 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

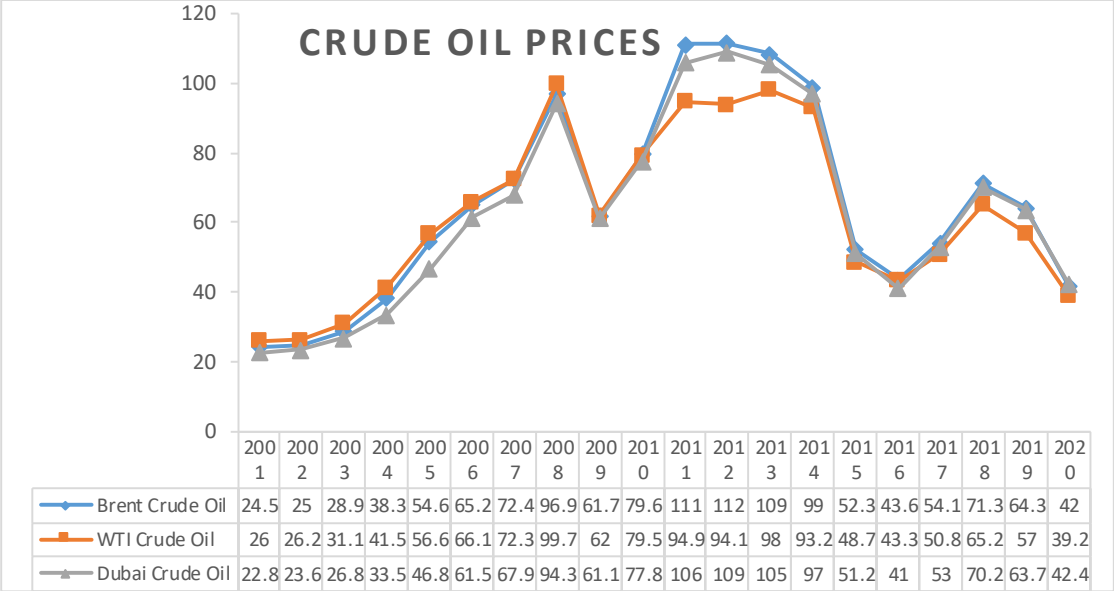
[9] Kleinberg, R.L.; Paltsev, S.; Ebinger, C.K.E.; Hobbs, D.A.; Boersma, T. (2017). Tight Oil Market Dynamics:Benchmarks, Breakeven Points, and Inelasticities. Energy Economics, 70, p.70–83;

[10] Horsnell, P. (2004). Why Oil Prices Have Moved Higher, Oxford Energy Forum, Oxford. p.403;

[11] Berument, M.H., Ceylan, N.B., Dogan, N. (2010) The impact of oil price shocks on the economic growth of selected MENA countries. Energy Jounral, p.149–176;

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.

Chart 1. Crude oil Prices in the World



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Brent Crude Oil	24.5	25	28.9	38.3	54.6	65.2	72.4	96.9	61.7	79.6	111	112	109	99	52.3	43.6	54.1	71.3	64.3	42
WTI Crude Oil	26	26.2	31.1	41.5	56.6	66.1	72.3	99.7	62	79.5	94.9	94.1	98	93.2	48.7	43.3	50.8	65.2	57	39.2
Dubai Crude Oil	22.8	23.6	26.8	33.5	46.8	61.5	67.9	94.3	61.1	77.8	106	109	105	97	51.2	41	53	70.2	63.7	42.4

Source: https://www.statista.com/topics/839/oil-prices/#topicHeader__wrapper;

Brent Crude is more widely used, and most oil prices are based on it. Because Brent Crude is produced near the coast, shipping expenses are much cheaper. West Texas Intermediate, on the other hand, is produced in landlocked locations, increasing transportation expenses. West Texas Intermediate is the major measurement and pricing technique in the United States. Brent is also somewhat "sweeter" and "lighter." The price of West Texas Intermediate (WTI) is somewhat lower than Brent. WTI was priced at roughly $68.50 per barrel on August 31, 2021, while Brent was trading around $72.85[12]. Geopolitical turmoil is another reason that might cause big disparities between Brent Crude and West Texas Intermediate. During times of crisis, the gap widens as political unrest causes Brent Crude

[12] International Energy Agency (2022). Oil Market Report. https://www.iea.org/topics/oil-market-report

prices to rise. Because it is headquartered in landlocked parts of the United States, West Texas Intermediate is less impacted.

Oil exporting firms exchange oil and oil products in two methods in oil trading. One is a futures contract, while the other is a spot oil contract. The price of the spot contract shows the current market price for oil, while the price of the futures contract indicates the price customer is willing to pay for oil on a future shipping date. The futures price is not guarantee that oil will really sell for that amount when that day comes. It's just the price that oil buyers are expecting at the time of the deal. The real price of oil at that time is determined by a number of factors. The majority of spot market commodity transactions comes into effect right away: money is exchanged, and the buyer takes delivery of the items. The demand for immediate delivery vs future delivery is limited in the case of oil, owing in part to the practicalities of delivering oil. The other is that spot contracts are only for a brief period of time. Experts estimate that spot contracts presently account for 50-55 percent of global oil and oil product trading[13].

A contract for the purchase or sale of a certain number of barrels of oil at a predetermined price on a predetermined date is known as an oil futures contract. When buying futures, the purchaser and the seller sign an agreement that is guaranteed by a margin payment that accounts for a portion of the overall contract value. Oil customers purchase futures to lock in a price; investors buy futures to make a prediction about the price in the future and profit if their predictions are accurate. Before being required to take delivery, they typically roll over or liquidate their futures positions.

It is hard for the parties to regulate the market condition in advance. However, in spot trading, transactions take place more logically and in the interests of the parties, since neither the producer nor the consumer can predict the price of the goods and the volume of transportation.

Because the oil business includes significant global investment, the companies here have significant economic clout and are able to enact strategic initiatives at both the national

[13] BP (2016). Outlook to 2035. In BP Energy Outlook, 2016 edition. British Petroleum: London, UK. p.115-130;

and international levels. 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 in worldwide. Saudi Aramco compant is expected to have the second-largest proven oil reserves in the world, thus, there is approximately 270 billion barrels[14]. 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.

Approximately averaged 95.5 million barrels (b/d) of oil and also other oil products were produced globally in 2021, based on the US Energy Information Administration[15]. 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[16]. With an average daily production of 18.6 million barrels of petroleum liquids, the United States was top all other countries in production by 2020, contributing 20% of the world's total output. It was the leader in the production of oil products and lease condensate in the world in 2020, producing 11.3 million b/d. Saudi Arabia generates 10.8 million barrels per day, around 11% of the world's whole production of petroleum liquids. Saudi Arabia has 15% of the world's oil funds and is the chief exporter of oil products. Saudi Arabia furthermore belongs to the Organization of the Petroleum Exporting (OPEC). According to the CIA World Factbook, the petroleum industry contributes around 42% of the nation's GDP, 90% of its export incomes and 87% of its budgetary income. Russia, on the other hand, is the leading oil producer among emerging countries. Although Russia has slid to third position in a list it topped until 2010, it remains one of the world's top oil producers, producing 10.5 million barrels per day on average in 2020, accounting for 11% of global output. Russian energy businesses have been restricted from accessing US

[14] Arab Monetary Fund (2005). Arab Financial Institutions and Development Financing and Investment in the Arab Countries (in Arabic), Abu Dhabi. p.233;

[15] U.S. Energy and Information Administration (2021) "WTI Spot Price FOB (Dollars per Barrel) http://www.eia.gov/dnav/pet/ hist/LeafHandler.ashx?n=PET&s=RWTC& f=D;

[16] Deloitte (2020) "The future of work in oil, gas and chemicals," https://www2.deloitte.com/uk/en/insights/industry/oil-and-gas/future-of-work-oil-and-gas-chemicals.html;

financing markets and shale drilling technology as a result of sanctions applied after Russia's infestation of Ukraine in 2014. Russia's petroleum industry was privatized after the dissolution of the Soviet Union, but since then, the government has pushed consolidation and requested extra power over the oil market[17]. Gazprom, Rosneft, and Lukoil are the three largest oil and gas producers in Russia. These three countries generated about 40 million barrels of oil daily in 2020. This is equivalent to 43% of all world output. Canada is a further significant producer, contributing 11% of the world's production in 2020 with output of oil products of 5.23 million b/d and 4.9 million b/d, respectively. The leading oil importer in the world in 2017 was China, surpassing the United States. The following table shows the top 10 oil producers worldwide as of 2020.

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

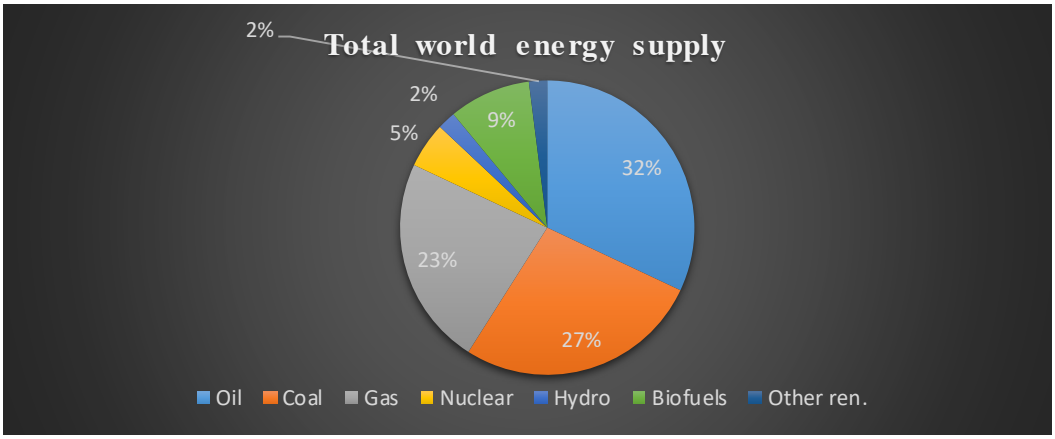
Country	Million barrels per day	Share of world total
United States	18.61	20%
Saudi Arabia	10.81	12%
Russia	10.50	11%
Canada	5.23	6%
China	4.86	5%
Iraq	4.16	4%
United Arab Emirates	3.78	4%
Brazil	3.77	4%
Iran	3.01	3%
Kuwait	2.75	3%

[17] John R. (2004). Pipeline Politics, The Caspian Policy, Energy and Security, ed. Shirin Akiner, Routledge Curzon, London, New York, p. 125;

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_adc_mbbl_m.htm).

We can see from the figure 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[18]. 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.

Diagram 1. The total world energy supply.



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

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). The oil and gas drilling industry will create more than $2.1 trillion in total revenues in 2021, due to IBISWorld. This industry includes companies that explore, develop, and operate oil and gas fields. The oil and gas investigation and manufacture industry, or simply E&P, is another name for it. OPEC estimates that from 2002 to 2025, global oil consumption would rise by 38 million barrels per day to 115 million barrels per day, or an average annual growth rate of 1.6 million barrels per day, or 1.7%[19]. The

[18] https://www.iea.org/topics/oil-market-report

[19] http://www.opec.org/opec_web/en/360.html

overwhelming percentage of oil consumption will continue to come from OECD countries. However, emerging nations will account for about three-quarters of the rise in demand between now and 2025, with consumption nearly doubling. With China and India in the lead, Asia will continue to be the region that is most responsible for the expansion of global demand.

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 increasedAccording 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).

The table below lists the nations with the largest global oil reserves. The Middle East is the location of the majority of the world's oil reserves. As a result, the majority of the world's oil reserves are owned by Oman, Iraq, Kuwait, Iran, Qatar, Saudi Arabia, and the United Arab Emirates.

Table 2. Global Proven Reserves of Crude Oil, by Nation

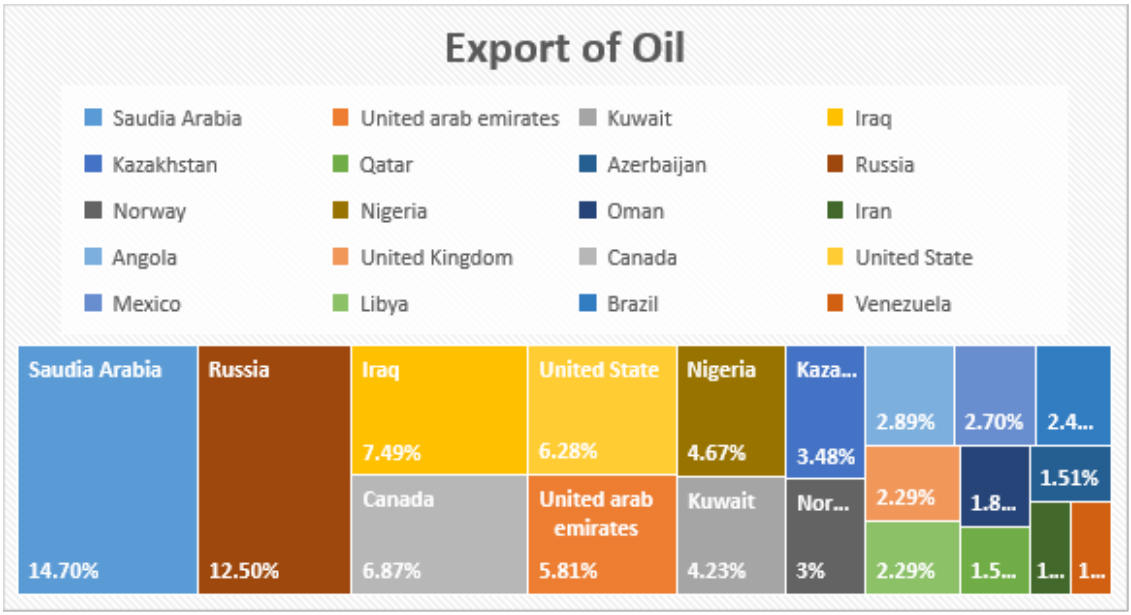
Country	2018	2019	% change 19/18
America			
North America	43.824.0	52.637.0	20.1
Brazil	12.835	13.239	3.1
Colombia	1.782	1.960	10.0
Ecuador	8.273	8.273	0
Mexico	6.427	5.786	-10
Venezuela	303.806	303.806	0
Eastern Europe and Euroasia			
Azerbaijan	7.000	7.000	0

Kazakhistan	30.000	30.000	0
Russia	80.000	80.000	0
Turkmenistan	600.0	600.0	0
Uzbekistan	594.0	594.0	0
Western Europe			
Norway	8645.0	8.817.0	2.0
United Kingdom	2.500.0	2.700.0	8.0
Middle East			
Iran	155.600.0	208.600.0	34.1
Iraq	145.019.0	145.019.0	0
Kuwait	101.500.0	101.500.0	0
Oman	5.373.0	5.373.0	0
Qatar	25.244.0	25.244.0	0
Saudi Arabia	267.026.0	258.600.0	-3.2
United Arab Emirates	97.800.0	97.800.0	0
Africa			
Algeria	12.200	12.200	0
Angola	8.160	7.783	-0.5
Libya	48.363	48.363	0
Nigeria	36.962.0	36.890.0	-0.2
Sudan	5000.0	5000.0	0
Asia and Pacific			
Australia	3.996.0	3.996.0	0
China	25.927.0	26.154.0	0.9
India	4.423.0	4.423.0	0
Malaysia	3.600.0	3.600.0	0
Indonesia	3.170.0	3.150.0	-0.6

Source: OPEC Annual statistical bulletin (https://www.opec.org/opec_webpublication.htm)

The IEA estimates that by 2026, the capacity of the world's oil output will increase by 5 million barrels per day.[20] A record 9 mb/d of spare production capacity has also been created as a consequence of the unprecedented decline in demand, which may allow for the short-term stability of the world markets. In the IEA report's basic model, supply must increase by 10 mb/d by 2026 to match the growth in oil demand. Half of that growth is likely to come from the Middle East, driven by Saudi Arabia, mostly from existing shut-in capacity. With a total trade value of $ 986 billion, crude petroleum was the world's most traded product[21]. 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. Most oil exporting and importing countries are expected to increase between 2019 and 2020, as shown in the diagrams below.

Diagram 2. The countries that export the most oil in the world

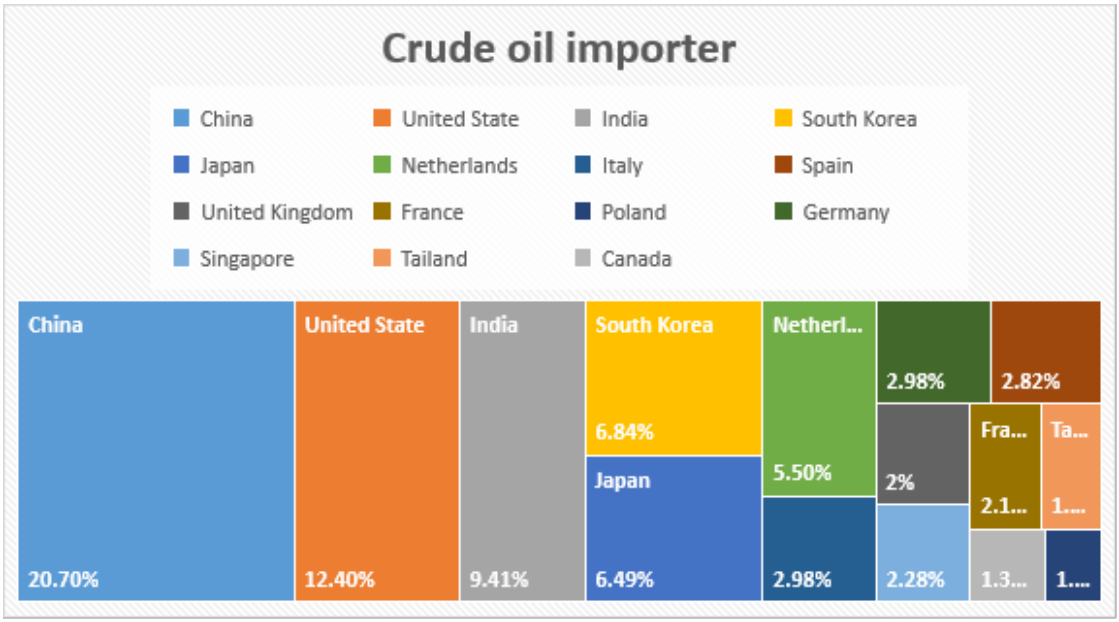


[20] U.S. Energy and Information Administration (2019). http://www.eia.gov/todayinenergy/detail.cfm?id=7630;

[21] OPEC (2022): Oil& Energy Ministries/NOCs., http://www.opec.org/opec_web/en/360.html

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

Diagram 3. The countries that import the most oil in the world



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

Following the outbreak of the Corona virus in 2019, oil consumption fell for the first time since 2009 in 2020, by a huge 9.1 million b/d. Both the OECD (-5.8 million b/d) and non-OECD (-3.3 million b/d) saw declines The European Union (-1.5 million b/d), the United States (-2.3 million b/d), and India (-480,000 b/d) have shown the largest drops in production[22]. In 2020, China was one of the few nations with increasing demand (220,000 b/d). The world oil output fell by 6.6 million b/d in 2020 as a result of both OPEC's (-4.3 million b/d) and non-(-2.3 OPEC's million b/d) actions. The largest OPEC losses occurred in Libya (-920,000 b/d) and Saudi Arabia (-790,000 b/d), while Russia and the United States led non-OPEC decreases (-1.0 million b/d and -600,000 b/d, respectively). Only a few countries, principally Brazil (150,000 b/d) and Norway (260,000 b/d), showed output growth. Oil commerce is expected to drop by 5.3 million barrels per day in 2020. (7.6 percent). The majority of this drop (3.3 million b/d) was in crude oil commerce, which

[22] Coronavirus: impact on the global economy. https://www.statista.com/topics/6139/covid-19-impact-on-the-global-economy;

was concentrated in Europe (1.6 million b/d) and the United States (920,000 b/d). China's crude oil imports increased by 970,000 b/d, owing to a quick economic rebound following the epidemic. Trade in oil products fell by 2.1 million b/d due to lockdowns and other coronavirus restrictions. This was concentrated in Europe (620,000 b/d), the United States (360,000 b/d) (indicating lower air and road transit), and Singapore (325,000 b/d), the world's most important commercial hub[23].

Oil-exporting developing countries are projected to be particularly heavily impacted by the present 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 and 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.'

The COVID-19 outbreak's containment attempts and economic difficulties have resulted in a worldwide decrease in production and transportation, which has significantly decreased global oil consumption. Consumption would be down 30% year over year in April, according to the International Energy Agency (IEA), hitting a level not seen since 1995[24].

On the supply side, agreements that formerly allowed oil-producing nations to respond collectively to reductions in demand have shown insufficient to restrict output, meaning that global measures have lost importance in recent years. In March 2020, as the global impact of the COVID-19 issue was starting to become apparent, the members of the OPEC+ alliance failed to extend their agreement to limit output. As a result, several producers, most notably Saudi Arabia and Russia, temporarily oversupplied the market.

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[23] bp.com/content/dam/bp/en/corporate/pdf/energy-economics/energy-outlook/bp-energy-outlook-2021.pdf ;

[24] International Energy Agency (2022). Oil Market Report. https://www.iea.org/topics/oil-market-report

OPEC+ finally decided to restrict output on April 12th, 2020, when oil consumption started to decline as lockdowns began to effect. The agreement was the biggest reduction in the producer cartel's history because it called for cutting these countries' total daily output by more than a fifth for the next two months. Many countries that produce oil have non-diversified, sector-dependent economies, with the majority of their exports and government revenue coming from the oil industry. According to the International Energy Agency (IEA), important oil-producing countries like Iraq, Nigeria, and Angola would have a 50–85% reduction in net revenue in 2020 compared to 2019[25].

2.2. The Main Factors Influencing the Changing of World Oil Prices

Carbon-based fuels are 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.

For instance, during the first few months of 2022, when oil prices were at seven-year peak levels above $90 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 the spring of 2020.[26].

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[25] International Energy Agency (2022). Oil Market Report. https://www.iea.org/topics/oil-market-report

[26] Coronavirus: impact on the global economy. https://www.statista.com/topics/6139/covid-19-impact-on-the-global-economy;

Just before expiration, the price of April West Texas Intermediate crude oil futures fell to -$37 a barrel, implying that traders were willing to pay that much to avoid having to accept shipment of about 42 gallons of oil.[27]. Due to public health restrictions, global travel and economic activity had plummeted, and the ensuing supply excess put a pressure on crude oil storage capacity.

Although the negative price was short-lived and brought to light several risks specific to futures markets, it showed how fast the forecast for oil may shift in response to changes in the underlying economic conditions. Some elements, as shown below, directly affect the price of oil on a worldwide scale.

1. The Production Costs

The cost of extracting oil from the ground is one of the primary variables influencing the price of oil. The cost of extracting oil from the ground is reducing as technology and production efficiencies improve.

2. The Transportation Costs

The price of oil is also heavily influenced by the location of the oil and the ease with which it may be delivered to the customer. The price of oil is frequently cheaper in areas where there are no pipelines or other effective means to transport it. One such example is Canadian oil, which frequently suffers from pipeline capacity constraints and is sold at a lower price than WTI.

3. The Type of Oil

In most cases, lighter oil will be sold at a higher price than heavier oil. API gravity is commonly used to classify oil density[28]. The API gravity of lighter oil is higher than that of heavier oil.Brent and WTI, for example, have API gravities of roughly 40, but Western Canadian Select has a gravity of 20.

[27] https://www.statista.com/topics/839/oil-prices/#topicHeader__wrapper;

[28] https://www.investopedia.com/oil-4689767;

API Gravity = (141.5/SG) -131.5

SG – specific gravity of oil = density of oil/density of water

Because a barrel of light oil can produce more gasoline and diesel than a barrel of heavy oil, it is more expensive. The sweetness or sourness of the oil is another aspect that influences its pricing. Sulfur is present in sour oil, which is sold at a discount. Because sour oil is more expensive to process than sweet oil, it is less expensive.

4. Demand

Oil demand differs from nation to country. First-world countries typically consume far more oil than poorer countries. Weather has an impact on the amount of oil utilized. More oil is utilized to warm or heat the dwellings during cold winters and hot summers.

Oil prices are also influenced by the status of the economy. Oil prices rise when the economy is thriving because manufacturing is active and needs a lot of oil to preserve the economy running[29]. During a recession, demand for oil falls, and so does its price. Renewable energy will almost certainly reduce the need for oil in the future, but it is not a substantial influence right now.

The biggest sources of oil demand for traders are China and the US. In the US, the Energy Information Agency releases monthly assessments. Demand rises during the summer driving period and falls during the winter driving season. While weather predictions are used in the winter, AAA travel predictions are used to predict likely fuel use in the summer. The oil price prediction has shown pricing volatility as a result of changes in oil output, the dollar price, OPEC's activities, and global demand.

5. Supply

When more oil is produced than is used by the world's industries, the price of oil falls. When there wasn't enough storage for all the oil, which happened in April 2020, the price

[29] Knoema N. (2016). Marginal Production Cost by Country 2014. 2016. Available at: http://knoema.com/vyronoe/cost-of-oil-production-by-country/;

of oil dropped to $0[30]. Because geopolitics may impact oil supply, it can also affect the price of oil. For example, if a conflict breaks out in an oil-producing country, or if there is concern that the conflict could disrupt oil supply due to damage to oil infrastructure such as pipelines or tankers, prices can spike quickly.

6. Speculation

To comprehend the significance of speculators in the oil market, one must first comprehend trading's history and how its growth has enhanced price volatility. Crude oil prices were mostly decided by the world's top oil firms in the early 1970s, collectively known as the "Seven Sisters." Many Middle Eastern oil resources were nationalized in the second part of the 1970s, giving rise to the Organization of Petroleum Exporting Countries, or OPEC ("OPEC"). Oil prices were regulated by OPEC from the mid 1970s to the mid 1980s, until decreased global demand and greater supply by non-OPEC countries led to a market-dominated pricing regime. The three components of the market-controlled pricing structure are term contracts, crude oil spot or cash markets, and crude oil futures markets[31].

Term contracts are agreements between two parties that encompass many transactions over a set period of time. The contracts stipulate the quantities to be supplied during the course of the contract, as well as a set mechanism for computing the oil price. Considering that term contracts aren't traded over the counter or on exchanges, but rather are negotiated between the buyer and seller.

West Texas Intermediary ("WTI"), Brent Crude, or Dubai are the three "benchmark" oil characteristics used to determine the price of oil in term contracts[32]. The benchmark price at the moment, the oil is being delivered to the buyer is used as the base price in the pricing calculations. Then, an adjustment is made depending on the quality of the oil to be supplied in relation to the standard. The "cash" market is another name for the spot

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[30] https://read.oecd-ilibrary.org/view/?ref=136_136801-aw9nps8afk&title=The-impact-of-Coronavirus-COVID-19-and-the-global-oil-price-shock-on-the-fiscal-position-of-oil-exporting-developing-countries ;

[31] https://www.investopedia.com/articles/economics/08/determining-oil-prices.asp;

[32] https://www.investopedia.com/ask/answers/0525/what-difference-between-brent-crude-and-west-texas-intermediate.asp;

market for crude oil.[33]. The spot market is not an exchange; similar to a term contract, it is an unofficial community of sellers and buyers. This market is significant because it allows for the sale or purchase of oil that is not covered by contractual agreements. Purchases and sales on the spot market reflect minor changes in oil supply and demand. While falling spot market prices reflect excess supply, increasing spot market prices suggest surplus demand. The cash market is less sensitive to price control and speculative behavior since it is based on actual supply and demand and is not traded over-the-counter or on an exchange. The two most common forms of oil delivery are term contracts and spot market transactions.

Contrary to term contracts and spot market transactions, oil delivery is not a part of the oil futures market. The futures market, as its name suggests, involves the buying and selling of commodities at a location, a price, and a time in the future. The futures market, spot market and term contracts are additional eminent by the fact that the contracts are standardized[34].

Only over-the-counter marketplaces or exchanges offer standardized contracts, which is crucial since only the price needs to be negotiated—not the amount or the date. Therefore, standardized commodity futures may be traded numerous times prior to the contract's expiration date, with each exchange resulting in a different price based on estimated supply and demand. The establishment of a clearinghouse is another advantage of trading commodities futures contracts on exchanges. Every transaction includes the clearinghouse as a party. This suggests that when a customer wants to purchase or sell a contract, they merely complete the transaction with the clearinghouse rather than having to locate a buyer or seller. Futures markets must maintain a balance between longs and shorts at any one time. A long is a buyer of a futures contract who permits distribution of a commodity to the holder, while a short is a holder of the contract who requires the holder to deliver the products at a future date. Speculators can thus join and depart the

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[33] Baffes, J.; Kose, M.A., Ohnsorge, F.; Stocker, M. (2015). The Great Plunge in Oil Prices: Causes, Consequences, and Policy Response; CAMA Working Paper 23/2015; TheWorld Bank Group: Washington, DC, USA, p.495-517;

[34] Fragouli, E. (2014). National Oil Companies &Energy Market: The Energy Matrix Change and Its Implications. International Journal Of Information, Business And Management, 3(6).

market at their leisure, with no impact on the physical supply of oil. However, the price of oil is significantly impacted by such action.

7. Political Instability

One of the causes pushing rising oil costs on the global market is political turmoil. The success or failure of bilateral connections will have a substantial influence on the international oil market; political changes in oil-producing nations have a significant impact on the global oil market[35]. Political instability has caused oil prices to rise, according to a sequence of evidence events.

When there is a war in the Middle East, it is also possible to notice price surges. Organizations such as OPEC (Organization of Petroleum Exporting Countries) may also influence the price of oil by intentionally reducing supply to raise prices, as they did in 2018[36]. OPEC is a collection of oil-producing nations that control around 40% of the international oil supply. OPEC establishes output limits for its member nations in order to effect oil prices by reducing or increasing oil supply.

Shale oil production in the United States climbed by a factor of five between January 2011 and December 2014, going from one million to around 4.8 million barrels per day (b/d)[37]. Because of this increase in production, there was an oil glut, which means that there was more oil available than there was the demand for it. Due to a rise in US oil production, the price of imported crude oil decreased to about $27 per barrel (/b) in February 2016. By the end of the year, shale oil output had surpassed 12 million barrels per day, with per-barrel oil prices averaging approximately $57. In 2020, the production

[35] Gylfason , T. (2001). Natural Resources, Education and Economic Development. European Economic Review, 45, p.847 – 859;

[36] Deloitte (2020) "The future of work in oil, gas and chemicals" https://www2.deloitte.com/uk/en/insights/industry/oil- and-gas/future-of-work-oil-and-gas-chemicals.html;

[37] U.S. Energy and Information Administration (2015). Today in Energy, "Crude Oil Prices Peaked Early in 2015". http:// www.eia.gov/todayinenergy/detail.cfid=7630;

of oil is expected to drop to 11.28 million b/d[38]. By the end of the year, output had dropped to 11.16 million b/d. Forecasts indicate that production will increase to 12.03 million b/d in 2022. The Short-Term Energy Outlook published by the US Department of Energy has contributed to West Texas Intermediate (WTI) oil prices in 2021 averaging close to $68.21/b. Prices are expected to be on approximately $101.17/b in 2022.

The presence of oil reserves will determine the availability of future supplies. It considers both the Strategic Petroleum Reserves and the resources available in American refineries. If oil prices rise too much, natural disasters limit oil from entering the United States, or if there is a need for oil in any other way according to the criteria in the Energy Policy and Conservation Act of 1975, these reserves can be immediately accessible to raise oil supply.

Finally, technological advancements have the potential to greatly expand oil supplies. Hydraulic fracturing, for example, has greatly improved oil output from locations where it was previously not economically viable.

Oil, like the rest of the commodities, is influenced by market speculation. Oil prices may be driven in both ways by fears and rumors. It's improbable that the oil market will ever reach equilibrium. Oil is a traded commodity, not only a consumable item. Rather from attaining equilibrium, oil supply and demand fluctuate in lockstep with prices[39]. An increase in supply shows that sellers are ready to produce extra oil than consumers are willing to pay for at the present price. In theory, suppliers should cut their prices to increase demand and test if more customers are willing to pay the lower price. When supply falls, it indicates that consumers are eager to purchase at that price point. There may be potential for sellers to raise pricing in this circumstance. Traders who place bids on oil futures contracts on the commodities market based on their forecast of future oil supply and demand have a substantial impact on oil prices. Futures contracts and oil substitutes are traded every day, which affects the price of oil. As a result, the price of oil varies every day depending on how well trade performed that particular day. Traders

[38] IMF (2015).“Crude Oil Price Forecast: 2017, 2018 and Long Term to 2030”, Brent Crude Oil Projections https://knoema.ru/yxptpab/crude-oil-price-forecast-2017-2018-and-long-term-to-2030;

[39] Corden W.M. (1984). “Booming Sector and Dutch Disease Economics: Survey and Consolidation”, p,41;

place bids in accordance with their projections of supply and demand. By interfering with trade or by altering the amount of oil produced and stored, governments and OPEC have the power to affect traders' bid decisions.

Oil is often regarded as the most volatile of all commodities. If you're thinking about trading oil or oil derivatives, it's helpful to know what drives oil prices and how traders, governments, and consumers impact them.

8. Unexpected Events and Disasters

Natural and man-made calamities can have a significant influence on oil prices. In January 2020, numerous nations started restricting travel and shutting down businesses to fight the coronavirus epidemic. As a result, oil demand began to decline. The first quarter of 2020 saw a decline of 5.6 million barrels per day in oil consumption, to an average of 94.4 million barrels per day. The supply surplus exacerbated a reduction in demand. On March 6, 2020, Russia said that it will increase production in April 2020. In order to retain its market share, OPEC said that it will increase supply.[40]

Prices fell into negative territory as storage facilities were overcrowded. On April 12, 2020, OPEC and Russia decided to reduce production to raise prices. This wasn't enough to persuade traders that supply would not outstrip demand, and oil prices continued to fall. The price of a barrel of WTI at Cushing, Oklahoma has dropped to roughly -$37 by April 20, 2020[41].

By the first week of June 2020, WTI prices had climbed, reaching $39/b on June 5 and $40 in the final week of July. Crude oil prices were rising before Russia invaded Ukraine in early 2022. Prices significantly increased throughout 2020 and 2021, reaching a peak of $85.64/b on October 25, 2021, it was the highest price since October 2014. Globally, Brent crude oil prices averaged $42 billion in 2020 and $71 billion in 2021.

[40] OPEC (2020):http://www.opec.org/opec_web/en/154.html

[41] https://www.statista.com/topics/839/oil-prices/#topicHeader__wrapper;

Natural calamities have an impact on the oil market as well[42]. Flooding on the Mississippi River. Flooding along the Mississippi River in May 2011 cost at least $2 billion. Fears of shortages drove petrol prices up to $4.02 a gallon by the second week of the month, as commodity speculators worried the floods might harm oil refineries.

Hurricane Katrina

Storm Katrina, a Category 5 hurricane, made landfall in Louisiana on August 25, 2005. The average price of normal gasoline in the United States increased $0.46 to $3.07 per gallon from August 29 and September 5. It was the biggest weekly price increase in history[43].

In the US, 25% of the crude oil production was impacted by Hurricane Katrina. Between 10% and 15% of refinery size was shut down for the first several days after the hurricane. Hurricane Rita hit the Gulf states a month later. During the week ending Sept. 30, the combined effects of the two storms lowered crude oil refinery inputs by 11.7 million b/d. Since March 1987, this was the lowest average production.

Spills of oil. Interestingly, oil spills don't lead to greater prices. During the Exxon-Valdez oil disaster, 11 million gallons (262,000 barrels) of oil were leaked[44]. Despite the fact that this had a disastrous effect on the Alaskan shoreline, it did not pose a danger to global oil supplies or pricing.

The BP oil disaster blasted 12 times the amount of oil per barrel as the Exxon Valdez. Despite this, oil and gas prices scarcely moved. Why? First, due to a delayed recovery from the financial crisis of 2008, worldwide demand was down.

Second, regardless of the fact that over 134 million gallons or 3.2 million barrels of oil were lost, the spill occurred over a three-month period. Despite being a sizable amount

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[42] Corden W.M. (1984). "Booming Sector and Dutch Disease Economics: Survey and Consolidation", p,41;

[43] Shelburne, R.C. (2010). The global financial crisis and its impact on trade: The world and the European emerging economies. Industrija, Vol.28, No.7, p.102-131;

[44] Clo, A. (2000). Oil economics and policy. Boston: Kluwer Academic. p.124-127;

of oil, it is insignificant in comparison to the United States overall oil usage. The US Energy Information Administration estimates that the country's total oil consumption for 2019 was 7.5 billion barrels, or just over 20.5 million barrels a day, or the equal of over six BP oil spills. The United States utilized 18.12 million barrels per day of oil in 2020, the lowest level since 1995. Oil consumption in the United States was higher in 2021, at 19.78 million barrels per day.

2.2.1. Global Oil Crisis and Their Result on Economic Condition of Transition Economies

Oil is in high demand across the world as the world's population continues to expand. Despite the high price of oil, billions of rich people, particularly in China and India, will continue to exert pressure on the market. This is due to the fact that they require energy to run their industrial and transportation sectors. Due to the limitations of oil production, several oil-producing countries have had to limit their oil supply in order to satisfy market pressure. To manage market pressure, the price of oil must increase in the international oil market. As a result, there will be less demand for crude oil on the international market. Aside from that, additional external elements are adding to the global oil crisis' market pressure. For instance, Gulf Coast oil production and refining have been severely impacted by Hurricane Gustav on August 26, 2008. As a result, there is a little increase in the price of crude oil in the oil market[45]. Another reason of the global oil problem is the depletion of a natural resource. Many states throughout the world are now dealing with the "peak oil" dilemma.

Peak oil describes the time when oil output has hit its maximum and will finally start to decline. The North Sea reached its peak during the peak oil crisis in 1999, followed by Mexico in 2006 and the United States has faced this problem in 1971. This has not yet affected oil output in the Middle East or Russia, but it soon will.[46] A decline in the global

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[45] D. Hamilton, James, "Causes and Consequences of the Oil Shock of 2007–08", Brookings Papers on Economic Activity (2009), University of California, San Diego;

[46] Karl T. (2007). The Paradox of Plenty: Oil Booms and Petro-States, Berkeley: University of California Press.p.35-47;

oil supply could result in a rise in commodity prices and a slowdown in a country's economy because oil and gas supplies can increase a nation's income.

These three components will have a long-term effect on the market and lifestyles of all countries' populations. Rising oil prices would lead many individuals to suffer due to the increasing price of living. Prices of other items, especially transportation and food increased along with the rise in oil prices on the worldwide market. Food is necessary for human life, but delivering it to markets also requires transportation. As a result of the high cost of living in contemporary society, people also need transportation in order to conduct their businesses and generate income.

As a result of the crisis caused by the inflation of goods, people will have high living expenses in the next years. It will not be a problem for affluent countries with an average GDP (value of final goods) per capita of more than $30,000 to deal with the commodities inflation situation. However, impoverished nations with an average GDP per capita of less than $900 will take into account their experience with the financial crisis brought on by global commodity inflation.

The current instability is yet another dramatic episode in the history of oil, which has undergone enormous fluctuations in price over the last five decades. The First Gulf War in the early 1990s, the Arab oil embargo in the early 1970s, the Great Recession of 2007–2009, and eventually the 2020 crisis all contributed to some price fluctuations. We examine the major events that have impacted the oil markets since OPEC's establishment in 1960. The events illustrate that oil prices were very erratic throughout this time, despite governments' efforts to achieve steady and predictable economic development.

As mentioned above, the Organization of Petroleum Exporting Countries (OPEC) was founded in 1960. The stated objective of nations was to "control and coordinate oil policy among Member States in order to provide fair and consistent pricing for oil producers"[47]. To increase money from oil sales, 4 OPEC members work as a cartel, changing output according to regional and global economic conditions and demand.

[47] https://www.investopedia.com/articles/company-insights/082316/worlds-top-10-oil-exporters.asp;

Several worldwide crises have impacted oil prices across the world, and I have discussed some of them in my dissertation.

Arab Oil Embargo

OPEC put an embargo on the US in response to the US decision to resupply the Israeli army in the Arab-Israeli Conflict of 1973 to acquire strength and influence in the post-war peace process. Arab OPEC members also expanded the boycott to other countries that supported Israel, including the Netherlands, Portugal, and South Africa. Oil exports were prohibited under the embargo, and the targeted nations' oil production was constrained. The effects of the embargo were exacerbated by negotiations between oil-producing countries and oil companies, which already had destabilized a decades-old price structure. As a result, by early 1974, the price of crude oil had risen from around $24 to $56 per barrel[48].

Iranian Revolution

When Iran's pro-Western Shah left the country in January 1979, the Grand Ayatollah Ruhollah Khomeini emerged as the leader of the Islamist regime that had gained control. Because of the political unrest in Iran, crude oil prices have risen considerably more since the Arab oil embargo. From about $56 per barrel to over $125 per barrel, the price of oil has increased[49].

President Reagan signed an executive order eliminating restrictions on the price and distribution of domestic oil and gasoline. By mid-1986, the price of crude oil had dropped from approximately $113 per barrel in January 1981 to about $26.

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[48] Sachs , J. D. & Warner, A. M. (2001). The Curse of Natural Resources. European Economic Review. 45:4, p.827 – 838;

[49]

First Gulf War

Iraq invaded Kuwait in August 1990, sending oil prices rising from around $34 per barrel to over $77[50]. Early in 1991, a military coalition headed by the US was successful in ousting Saddam Hussein's Iraqi troops out of Kuwait, pushing the price down to about $37.

The 2008 Oil Shock

Besides the Western Balkans, where the EU membership application process supported the development, most countries in transition stopped after 2000.

Less developed nations in transition saw comparable progress in economic institutions, but more developed economies—particularly the new EU member states—saw severe criticism and a decline in support for market-oriented changes as a result of the recession and savings. After 2000, the GDP growth of transition economies exhibited their consistency and advancement. Two decades ago, the per capita incomes of many transitioning countries (except for the least developed states of the Western Balkans and Central Asia) ranged from 15% to 45% of the average purchasing power of the EU[51]. Most of these nations' relative income has improved by roughly 20%, and currently stands at between 35 and 65 percent of the EU average.

The goal of structural changes is to create a favorable business environment that will attract investments. Transitional economies are a great example because FDI helped them to finance their growth and convergence. The amount of FDI as a percentage of GDP in SEE (excluding Turkey) rose from 14 to 40 percent between 2000 and 2008. Foreign investments were substantial in the newly admitted EU members, accounting for 30–50% of GDP[52]. Prior to the global economic crisis, the value of FDI in the CIS was the same,

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[50] Heybey, B., & Murrell, P. (1999). The Relationship between Economic Growth and the Speed of Liberalization During Transition. Journal of Policy Reform, 3, p.121-137;

[51] Shelburne, R.C. (2010). The global financial crisis and its impact on trade: The world and the european emerging economies. Industrija, Vol.28, No.7, p.102-131;

[52] Mahrez G., Kaufmann D. (2009), "Liberalization,Transparency and Financial Crisis", NY, Pear Publication , p.21;

at 16 percent, but various values could be found in Georgia and Turkmenistan, at 50 percent, and in Uzbekistan, Belarus, and Russia, at roughly 10%.

Prior to the crisis, the nations in transition saw economic development as a result of numerous factors, including FDI and bank loans, domestic demand growth, and EU trade and financial integration. Foreign trade and financial flows liberalized in most transition economies that were not members of the EU as a result of EU membership. This, along with the fact that they were not exposed to riskier mortgages, kept them safe until 2008[53]. The indicators of the crisis, on the other hand, were seen in the fall of capital inflows through FDI and bank loans, as well as export income and remittances.

A combination of events in 2008 resulted in a steep drop in world output, resulting in a large increase in oil prices. Venezuela froze sales to Exxon Mobil as part of a legal dispute over the nationalization of the company's properties. Exports from Iraq had not recovered from the most recent tensions in the region, while employee strikes had reduced output in Nigeria and the UK's North Sea oil reserves. Oil pipelines and installations were destroyed by militants from Nigeria. The production of one of Mexico's biggest oil fields has reduced significantly.

Oil prices climbed from over $118 per barrel in December 2007 to over $165 per barrel by mid-2008. Since late 2001, when it reached a maximum of around $28 in the aftermath of the terrorist attacks on the Pentagon and the World Trade Center in New York, the price of oil has been continuously climbing.

A worsening economic slump was accompanied by a catastrophic financial crisis in the second half of 2008. By January 2009, oil had fallen to the low $50s per barrel, before rising to almost $95 by the end of the year as the global economy improved. Oil prices rise drastically when there are global crises in oil-producing countries, or when there is anxiety about crises. The reason for this is traders' worry that the crisis may limit oil supply, increasing demand and prices.

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[53] Berument, M.H., Ceylan, N.B., Dogan, N. (2010) The impact of oil price shocks on the economic growth of selected MENA countries. Energy Jounral, p.149–176;

Oil exporters suffered the greatest drop in terms of trade, as the price of energy dropped dramatically, affecting the energy-rich CIS[54].

Many nations, including seven CIS countries (Armenia, Belarus, Georgia, Kyrgyzstan, Moldova, Tajikistan, and Ukraine), four new EU member states, and two SEE members (Bosnia and Herzegovina, and Serbia), needed IMF assistance during the crisis (Hungary, Latvia, Poland, and Romania). The IMF recommended that extremely expansionary monetary and fiscal policies be used at the start of the global economic crisis.

The Russian fiscal expansion was significant due to a 30 percent rise in spending and a 30 percent decline in tax collections, with the difference paid from the country's reserve fund[55].

Iran

In January 2012, investigators made a similar discovery, indicating that Iran was moving closer to establishing nuclear weapons capability. Iran responded by attempting to blockade the Strait of Hormuz (a main oil shipping lane) after financial sanctions were introduced by the United States and the European Union. In consequence, the US declared that if needed, it would use military force to reopen the Strait of Hormuz.

In November 2011 and January 2012, Cushing, Oklahoma, witnessed WTI oil prices swing from $97 per barrel to $100 per barrel. In February 2012, the price of oil exceeded $108 per barrel and stayed there until April. Gas prices surpassed $3.50 per gallon in that month[56].

Arab Spring

Global instability also contributes to high energy costs. March 2011 saw investors uncomfortable due to several countries' instability, including Libya, Egypt, and Tunisia

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[54] Bureau of Labor Statistics (2012) Import/Export Price Indexes, "Measuring Price Change for Crude Oil, Gasoline, and Fuel Oil in the U.S. Import/Export Prices Indexes," https://www.bls.gov/mxp/crudefact.htm;

[55] https://www.nbr.org/publication/the-effects-of-lower-oil-prices-on-russia/

[56] Said S. and Faucon B. (2015), "Al-Naimi Likely to Remain Saudi Oil Minister Until Market Calms," The Wall Street Journal, 15(21), p.96;

(called the Arab Spring). Oil prices rose, as a result, surpassing $100 per barrel in early March and reaching a peak of almost $113 per barrel in late April[57]. Mid of 2006, oil prices increased once more as concerns about a conflict with Iran were raised by the Israel-Lebanon conflict. By mid-July, oil had soared to a new high of over $77 per barrel from about $71 per barrel in May.

Oil output in five countries (Libya, Syria, Yemen, Tunisia, and Sudan) has dropped by more than 2 million barrels per day as a result of unrest sparked by the Arab Spring, which began with protests in Tunisia in December 2010. The loss of this output has had a surprising lack of impact on global oil prices[58]. Syria, Yemen, and Tunisia were never large exporters, so their loss of output just means that their citizens would have less access to energy. Increased production in America has likely compensated for the loss of Libyan and Sudanese exports. Egypt's oil output has been unaffected by the country's upheaval.

Oil Shock after 2014

Globally, petrol prices started falling in the middle of June 2014, and they did so much more quickly until the end of January 2015. From $107.95 a barrel on June 20, 2014, to $44.08 a barrel on January 28, 2015, oil prices declined by 59.2 percent[59]. The dramatic decline in gasoline prices, predictably, had an impact on the cost of petroleum imports into the United States. In the fourth quarter of 2014, the decline in average prices was increased by an oversupply of oil on the global market.

The main factor behind the decline in global petroleum prices in 2014 was a surplus of petroleum compared to demand. Global supply has increased in recent years, largely as a result of increased production in the United States. Since its peak in 2005, the US has become less dependent on foreign oil. Despite robust demand and global uncertainty, US output surged to a 24-year high in 2013, keeping petroleum prices constant. In 2013,

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[57] Krauss C. (2015). "U.S. Oil Producers Cut Rigs as Prices Declines," The New York Times, 7(11), p.148;

[58] Friedman N. (2014), "Why the Drop in Oil Prices Caught So Many by Surprise," The Wall Street Journal, http:// online.wsj.com/articles/why-the-drop-in-oil-prices-caught-so-many-by-surprise-1414526075;

[59] U.S. Energy and Information Administration (2015) "Cushing, OK WTI Spot Price FOB (Dollars per Barrel) http://www.eia.gov/dnav/pet/ hist/LeafHandler.ashx?n=PET&s=RWTC& f=D;

national output mounted by 1.0 million barrels per day, superior US imports for the first time in 20 years. In 2014, the United States continued to produce at a high level. Advances in hydraulic fracturing and horizontal drilling technology, which continue to enhance the process of extracting petroleum from shale reservoirs, have resulted in a rapid growth in domestic petroleum output. According to the Energy Information Administration[60], petroleum output in the United States will climb to an average of 9.3 million barrels per day in 2015.

The Organization of Petroleum Producing Countries (OPEC), especially Saudi Arabia, have raised their production, which is another element in the high level of supply worldwide. In light of declining prices, OPEC agreed at the end of November to consider lowering oil production. The decision to retain current production levels surprised the petroleum markets after the summit. Some OPEC nations, including Venezuela, Ecuador, and Iran, have urged for output reductions and special meetings to urge dropping prices out of concern about the financial impact on their economies. In contrast hand, Saudi Arabia urged that OPEC should enable the market to stabilize and protect market share against producers outside of OPEC.

The greater supply of oil, particularly from the United States, has had the effect of reducing the impact of geopolitical considerations on pricing[61]. The sanctions against Russia and Iran declined the supply of crude oil, and there was determined volatility in and around a number of petroleum-producing countries, and petroleum prices continued to drop.

Another factor that affects demand is the value of the US dollar. Since petroleum is typically sold for dollars on the international market, changes in the value of other currencies relative to the dollar will have an impact on the price of oil. Instead of passing the entire price increase on to overseas consumers, manufacturers frequently cut the price of petroleum when the relative value of the dollar rises. Between June 2014 and January

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[60] U.S. Energy and Information Administration (2015). Today in Energy, "Crude Oil Prices Peaked Early in 2015". http:// www.eia.gov/todayinenergy/detail.cfid=7630;

[61] Fragouli, E. (2014). National Oil Companies &Energy Market: The Energy Matrix Change and Its Implications. International Journal Of Information, Business And Management, 3(6).

2015, the dollar's value increased 14.3 percent when compared to an average of currencies from the US's main trading partners. The rise in the dollar's value was considerably more pronounced versus several currencies. The dollar gained 15.9%, and 19.3% when compared to the euro.

The economy of countries that produce oil has been significantly impacted by this latest crisis. A worsening geopolitical situation and the introduction of economic sanctions against Russia in 2014 are closely related to the effect of declining global oil prices on the Russian economy. These factors have caused increased uncertainty, accelerate the economic downturn, and weaken the probability of future economic growth.

In 2015, the annual GDP may decrease by 4%–5% if oil prices remain low, at $45–$55 per barrel, according to predictions made by the Russian Ministry of Economic Development. Even if oil prices rise to $80 per barrel again, 2016–17 economic growth would still be negative, at a range of –0.5% to –1.5%. Our estimates show that the Russian economy can only grow positively if oil prices rise beyond $90 per barrel.

2.2.2. The Organization of the Petroleum Exporting Countries (OPEC) and Its Role in the Formation of World Oil Price

OPEC, one of the global organizations, was established to control crude oil prices and avoid unnecessary fluctuations in the global market. Thirteen nations that export more than half of the world's oil and natural gas. Organization of Petroleum Exporting Countries members include Iraq, Iran, Saudi Arabia, Kuwait, Venezuela, Indonesia, Qatar, Algeria, Nigeria, Libya, United Arab Emirates, Angola, and Ecuador (OPEC). Since 1965, the organization's headquarters have been in Vienna, Austria.

OPEC's objective is "to coordinate and supplement the petroleum regulations of its Member Nations and to maintain the stabilization of oil markets in order to create an economical, an effective, and consistent supply of oil to purchasers, a stable revenue for producers, and a just return on capital for those investing in the petroleum

industry". The company is committed to maintaining stability and preventing large swings in oil prices on the global market.

The organization is dedicated to ensuring that oil prices in the worldwide market remain stable and do not experience significant changes. It helps to safeguard the interests of member nations while ensuring that they continue to receive a consistent flow of income from the export of crude oil to other nations.

OPEC's establishing members are considered to be full members of organization. Any nation that desires to join and whose application is recognized by the organization is considered a full member. These countries must export a lot of crude oil. A vote of at least three-quarters of OPEC's full members is required before membership is granted. Countries with specific circumstances are also given associate membership[62].

Special Considerations

In the global petroleum market, OPEC's participation and oil prices are influenced by a diversity of variables. As a result of the development of new technologies especially fracking in the United States, the market dominance of OPEC has decreased. Due to the rise in global oil supply and subsequent price decline, OPEC is now in a precarious position.

As of mid-2016, OPEC planned to maintain high production levels and, as a result, low prices in order to force higher-cost suppliers out of the market and reclaim market dominance[63]. However, beginning in January 2019, OPEC lowered output by 1.2 million barrels per day for six months in response to concerns that an economic slowdown would result in a supply surplus, and in July 2019, the deal was extended for another nine months[64].

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[62] https://www.opec.org/opec_web/en/about_us/24.htm

[63] Filipović S. and Miljković M. (2018) Transition Economies During Global Economic Crisis: A Difference in Differences Approach. Industrija, Vol.42, No.3, p.23-39;

[64] OEC World (2021). Trade, Complexity, and Rankings Updated to 2020https://oec.world/en/rankings/eci/hs6/hs96

During the global crisis that started in 2020, demand for oil drop. As the world faced lockdowns reducing down demand, producers had an overflow of product with no place to keep it. In addition to a price war between Russia and Saudi Arabia, this led to a decline in oil prices. As a result, between May and July 2020, the organization agreed to reduce output by 9.7 million barrels per day. As a result of the continuous volatility in oil prices, OPEC decided to reduce output to 7.2 million barrels per day as of January 2021[65]. The prolonged instability in oil prices led OPEC to agree to cut production to 7.2 million barrels per day starting in January 2021.

For OPEC, innovation and new environmentally friendly technologies present serious challenges. Because of the high price of oil, several nations that import it are switching to unconventional and cleaner energy sources. Alternatives like shale extraction as an alternative energy source, as well as hybrid and electric automobiles that minimize reliance on petroleum goods, continue to exert pressure on the organization.

Oil-producing and exporting countries, as well as OPEC, confront a variety of obstacles, both short-term and long-term, internal (inside the organization as a whole or among member nations), and foreign. These include political and economic concerns connecting to the market and market-related, moreover variations in structures, operations, and technical breakthroughs of the global oil and energy industry. Issues in the areas of oil demand and supply, as well as short- and long-term international economic and political challenges, might be mentioned. Whatever the make-up of the difficulties under consideration, it's critical to remember that they're all connected. Long-term decisions are influenced by a collection of short-term concerns. Internal issues and conditions of producing countries, as well as their relationships with organizations and the policies they choose, have an impact on how they respond to external threats. Demand is influenced by global economic development and stability. Furthermore, political events in one or more producing regions have an influence on supply, just as in other instances of interconnection.

[65] OPEC (2022): Oil & Energy Ministries/NOCs., http://www.opec.org/opec_web/en/360.html;

Challenges to OPEC Member Countries.

In the near term, decision-makers in OPEC member nations confront the issue of coping with changes in oil revenue due to price and production fluctuations, as well as the impact these have on both public expenditure and economic performance. To address this difficulty, members take a variety of steps, such as cutting public spending – notably capital spending at a time when oil prices are low – or assuming conservative oil prices in budget predictions, as Saudi Arabia does[66]. Another option is to create a fund for oil income stabilization, where revenue that exceeds budget expectations is deposited and withdrawals are made when revenue falls short of forecasts - a mechanism that Venezuela and Iran, for example, have used.

Member nations will confront a long-term difficulty due to their economies' reliance on a single primary source of income. This situation necessitates directing investments toward the development of other productive sectors in order to diversify their economies' foundations and strike a balance between present and future generations' needs. OPEC members have implemented a variety of methods in this respect, including diverting investments – notably during periods of high oil prices – towards infrastructure development and the development of linked (petrochemicals) or unrelated sectors[67]. Another method is to establish savings funds, similar to Kuwait's Reserve Fund For Future Generations and Iran's, into which a percentage of oil earnings is placed for current and future generations.

The timing and manner of directing investments to increase production capacity are the second long-term concern facing OPEC producing and exporting members. Massive investments must be made in each OPEC nation's production capacity in order to meet the rising demand for OPEC oil and sustain each nation's market share. Member nations have used a range of initiatives in this regard. Those with strong national oil corporations, such as Saudi Arabia, have depended on them to expand

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[66] Arab Monetary Fund (2015). Arab Financial Institutions and Development Financing and Investment in the Arab Countries (in Arabic), Abu Dhabi. p.233;

[67] IMF (2015). World Economic Outlook—Adjusting to Lower Commodity Prices. Available at: https://www.imf.org/external/pubs/ft/w/2015/02/weodata/index.aspx;

production capacity, while others, such as Venezuela, Nigeria, and Algeria, have opened the door to foreign investment to expand production capacity. In any case, OPEC member countries and the group will be impacted by the timing of production capacity additions.

Challenges To OPEC From Within. The short-term difficulty for OPEC as an organization pertains to its capacity and efficacy in dealing with supply interruptions from its member countries for whatever cause, as well as the subsequent restoration of supplies. The organization's past is littered with instances of how to deal with such crises, whether effectively or otherwise[68]. The organization's ability to solve this issue is heavily dependent on some member countries having spare production capacity. In this regard, member nations differ in terms of available spare production capacity, which is determined by the size of their reserves and the degree of their production capacity – as well as their ability to maintain and grow them in a timely way. The cost (or advantage) of coping with supply interruptions and resumptions has traditionally fallen on a few member nations, most notably Saudi Arabia, which has been able to maintain or enhance its production capacity during the previous 30 years. After being practically out of the OPEC ceiling and quota system for the previous 13 years, the organization will face the question of Iraqi production returning in the future years and how it will be progressively absorbed into it.

The organization's capacity to establish market stability and balance is the organization's second short-term problem. Non-OPEC production does not follow the same seasonal pattern as non-OPEC consumption, notably in the Northern Hemisphere, where demand is stronger in the first and fourth quarters than in the second and third quarters. This means that the company must modify its production, potentially by boosting output during periods of strong demand and decreasing output during times of low demand. The correctness of its market evaluation is critical to its success[69]. Over the last five years, the organization has been mostly effective in acting

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[68] https://www.opec.org/opec_web/en/24.html;

[69] OPEC (2022). Annual statistical bulletin. Avaliable at:https://www.opec.org/opec_web/en/publications/202.htm;

at the right time to avoid a price crash or spike by modifying the output ceiling to keep prices within the agreed-upon range.

The organization's capacity to sustain its reference pricing band and quota structure in the long run will be a challenge. To put it another way, the company's commitment to keeping a price band by production reduction has kept prices within the band but decreased its market share in the most recent period, while the opposite occurred in the two previous periods. When OPEC establishes a price objective, it aims to do so with the least amount of negative influence on oil's market share, global demand, or oil's function in general. However, the company must actively observe market developments since, in the end, price levels have an impact on both demand and non-OPEC supplies. Prices changed as a result of changes in supply and demand caused by low prices in the 1960s and high prices in the 1970s, respectively. The dynamic of the oil market necessitates that the market leader maintain a close eye on it and even alter direction when necessary. Short-term profits have frequently overtaken long-term ambitions throughout the organization's existence.

Making the quota system operational is the organization's second long-term goal to maintain OPEC's cohesion and unity. The output quota system as it currently exists is the result of years of negotiations and is not based on established specifications, even though it indirectly reflects production capability and historical production from member countries. Because member nations' production capacity fluctuates for various causes, such as increased investment or decreased domestic conditions, quotas tend to depart from production capacities, weakening the production management system. The organization has tried and failed to agree on realistic quota distribution criteria on several occasions. The many of member nations now recognize that quotas must be based on oil-related considerations.

Advantages and Disadvantages of OPEC

There are many benefits to an organization like OPEC running the crude oil market[70]. First, it promotes cooperation among member nations, enabling them to

[70] https://www.opec.org/opec_web/en/12.html;

decrease political hostility. The major goal of organization is to maintain constant oil output and prices, therefore it may have some effect on production in other nations. The market influence of OPEC has been heavily questioned. The organization wields tremendous power in these markets since its member nations own the vast bulk of crude oil reserves. In order to maintain their market share, OPEC countries have a strong incentive to drive up oil prices as high as possible.

The top oil-producing countries are members of a cartel. In 2016, OPEC joined forces with other prominent non-OPEC oil exporting nations to establish OPEC+, or OPEC Plus, a more powerful group[71].

Non-OPEC countries (Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, Sudan, and South Sudan) collaborate closely with the group as part of the "OPEC Plus" agreement. The fundamental purpose of the OPEC Plus collaboration is to establish an agreement on global oil market demand and supply.

Azerbaijan's collaboration with OPEC grew more active when it was granted observer status at the organization's meetings. OPEC and non-OPEC oil-producing nations gathered on April 17, 2016, in Doha, Qatar, to discuss managing oil prices in the global energy market. The Doha summit was attended by the majority of OPEC countries, as well as delegates from Azerbaijan and Russia[72].

During this time, global energy discussions were crucial in removing the variables that influenced oil prices and taking steps to restore the supply-demand balance. The 23rd World Energy Congress and the 15th International Energy Forum gave OPEC and non-OPEC nations the opportunity to come together and achieve an agreement on freezing oil production at 32.5 to 33 million barrels in a day on September 28, 2016, at the informal meeting of OPEC member nations in Algeria[73].

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[71] https://www.investopedia.com/investing/worlds-top-oil-producers/;

[72] Shorokhov V.(2015). Energy Resources of Azerbaijan: Political Stability and Regional Stability, Caspian Regional Studies, Issue 31, No 1. p.47-58;

[73] https://www.opec.org/opec_web/en/press_room/3487.htm

Instead of quarterly or half-yearly meetings, OPEC began meeting monthly in 2021. During meetings, oil ministers decide on production quotas for each member, and the decision is then made public in a formal declaration. Discussions start weeks or months before the scheduled gathering.

The bulk of OPEC's oil and gas production comes from government oil corporations, making it easier for regulators to control output than in the United States, where businesses are the dominant power and make autonomous production choices. However, because there is no means to penalize offenders, OPEC nations are known for cheating on their quotas. As a result, other producers respond by defrauding their own customers.

In reality, OPEC works to prevent petroleum prices from dropping too low or increasing too high. Low oil prices can put OPEC countries' budgets in the negative because they rely primarily on oil sales to fund their governments. On the other hand, high oil prices may hurt sales by lowering demand. Due to the increased profitability of more expensive sources, such as shale oil in the United States, high oil prices also encourage non-OPEC nations to increase their oil production. High oil prices may encourage customers to develop local resources and switch to alternative energy sources to reduce their reliance on the commodity.

When OPEC reduces production, crude oil prices tend to climb. OPEC members generate over 40% of global crude oil supply, while the cartel's oil exports account for roughly 60% of all oil sold globally. OPEC's choices and policies have an impact on global crude oil prices because of its large market dominance. Oil prices are regularly affected by fluctuations in crude oil output, particularly for large producers such as Saudi Arabia[74].

Over 50% of the world's oil supplies and 90% of known oil reserves are under the control of OPEC+[75].

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[74] Arab Monetary Fund (2015). Arab Financial Institutions and Development Financing and Investment in the Arab Countries (in Arabic), Abu Dhabi. p.233;

[75] https://www.investopedia.com/investing/worlds-top-oil-producers/;

The association significantly affects oil prices, at least temporarily, due to its powerful position. Because individual governments have different goals than OPEC+ as a whole, their ability to have a long-term impact on the price of oil is reduced[76].

The amount of crude oil that is now available on the international market is directly impacted by the collective decision made by the OPEC+ member nations over how much oil to produce. Because of this, OPEC+ significantly influences the price of oil on the world market, which it wishes to keep relatively high to maximize earnings.

The best course of action for OPEC+ countries is cutting production, which will raise prices if they are dissatisfied with the oil price. However, limiting supply would reduce earnings, thus, no nation would wish to do. To increase revenue, they want the price of oil to rise as supply grows. However, it's not market dynamics. After OPEC+ commits to limiting production, the price of oil quickly increases. When neither supply nor demand is dramatically altered, the price eventually returns to a lower level.

On the other hand, OPEC+ can decide to boost supplies. For instance, on June 22, 2018, the cartel met in Vienna and announced that supply would be increased. The key reasons of this was to compensate for Venezuela's OPEC+ member's very low production.

Saudi Arabia and Russia, two of the world's major oil exporters with the potential to raise output, are strong proponents of raising supply since it will enhance income[77]. However, some countries might disagree to this since they are unable to increase output due to being at capacity or being prohibited from doing so.

Declarations from OPEC+ may temporarily change expectations and affect the price of oil, but ultimately supply and demand dynamics determine the price equilibrium. Expectations from OPEC+ are likely to change if its share of world oil

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[76] Arab Monetary Fund (2015). p.234;

[77] www.eia.gov/todayinenergy/detail.cfid=4630;

production declines and is replaced by new output from other countries like the United States and Canada.

Saudi Arabia and Russia failed to reach an agreement on cutting production to stabilize the price of oil in March 2020.

Saudi Arabia's response was a sharp increase in output. This unforeseen spike in supplies occurred at a time when global oil consumption was declining as the world struggle for the 2020 global crisis. As a result, the market, which is the final judge of price, overruled OPEC+'s goal to stabilize the price of oil at a higher level than the rules of supply and demand dictated.[78].

Aside from reiterating that market forces, especially in free markets, are stronger than cartels, this episode also supported the notion that national interests will prevail over cartel interests. Brent crude oil will cost roughly $30 per barrel in May 2020, the highest price since 2004[79]. Meanwhile, WTI crude oil fell to $17.5 per barrel, the lowest level since 2002.

2.3. Azerbaijan's Oil Industry and the Role of Oil in the Country's Economy

Azerbaijan is one of the world's oldest oil-producing areas. At present, the oil industry is one of the key sectors in the formation of Azerbaijan's revenues. The positive trends observed in the oil industry of the Republic of Azerbaijan over the past years have had a positive impact on the socio-economic life of the people. In the years before independence, oil revenues were distributed among CIS countries and the remaining funds for Azerbaijan were often not spent on the strategic program, and the profits were used to increase production. After gaining independence in 1991, the oil industry put the country's

[78] Arab Monetary Fund (2015). Arab Financial Institutions and Development Financing and Investment in the Arab Countries (in Arabic), Abu Dhabi. p.233;

[79] OPEC (2022). Annual statistical bulletin. Avaliable at:https://www.opec.org/opec_web/en/publications/202.htm;

economy on the path of development, while there was some difficulties for country[80]. Thus, After the collapse of the USSR, the economic structure of Azerbaijan has changed and lost common markets om CIS countries. At that time, management in enterprises was organized according to central planning by government, thus production in many organizations has stopped. The disappearance of economic ties between the countries of the USSR, as well as the severance of subsidies from Moscow, led to a decline in production. Karabakh war with Armenia and the problems between Russia and Chechnya have led to the closure of import routes for the country's industry.

The main problem was the beginning of the Karabakh war by the Armenian occupiers. The occupation of Armenia, which began in 1988, and has continued until May 12, 1994 when the ceasefire was signed. During those years, a large part of the state budget was spent on the war and Azerbaijan has lost 20% of its lands. In addition to occupation of Armenia, Azerbaijan has faced Russia's transport embargo, due to the war with the Chechen Republic at the initial period of indepence. The inability to use two important oil pipelines (Baku Supsa and Baku Novorossiysk) had a negative impact on the economic situation during the transition period. The period of 1991-1994 was the worst time of Azerbaijan, thus country faced all the social, political and economic problems and all of these have reached crisis levels[81]. During those years, the war absorbed a significant portion of the state budget. The crisis in the country has deepened as about 1 million people have become refugees from the occupied territories. Due to this unstable situation and the transition to a market economy, the country has experienced a major economic crisis. High unemployment and hyperinflation are now widespread in Azerbaijan. Economic growth has been hampered, particularly in important sectors like manufacturing and agriculture due to high inflation and an uncertain socio-political and economic climate. The worst situation in the economy occurred in 1992. Thus, GDP reduced to 48% of 1991. By 1994, GDP had shrunk by average 13-20% annually and to became $ 1,629.3

[80] John R. (2004). Pipeline Politics, The Caspian Policy, Energy and Security, ed. Shirin Akiner, Routledge Curzon, London, New York, p. 125;

[81] John R. (2004). Pipeline Politics, The Caspian Policy, Energy and Security, ed. Shirin Akiner, Routledge Curzon, London, New York, p. 125;

million dollar. GDP fell by 53% in 1994 compared to 1991, manufacturing fell by 62%, agriculture fell by 44%, consumption fell by 75%, and taxes fell by 45%. Thus, the real average wage decreased by 80%, while the quality of living decreased by 3.6 times[82].

As a result of wrong economic policies, serious problems have arisen in the banking and financial system and in foreign trade. In the period between 1991 and 1994, inflation rate sharply increase to four-digit numbers. In 1994, according to World Bank statistics, inflation reached 1386 percent. Problems and shortcomings in monetary policy did not allow stabilizing the situation. The economic crisis has resulted in decreased output, higher prices, and a significant deficit in the state budget. Due to the issues of the tax collection system, the revenue side of the state budget has sharply decreased. The uncontrolled use of large amounts of credit allocated from the state budget to enterprises and agriculture has further aggravated the economic situation. There has been a negative trend in foreign trade, and balance of payments deficits have widened[83]. The result was aggravated by the depreciation of the national currency. The situation has worsened with the depreciation of the national currency.

Despite all the problems during the years of independence, some reforms have been taken to stabilize the situation in the country. The country has implemented reforms in the private property, tax system, foreign investment and currency systems. In June 1991, the Private Property Law was adopted to improve entrepreneurship and support private property. In 1992, the value added tax was applied in the tax system, and in April, the Foreign Investment Law was accepted. In August of that year, the country's currency, the manat, began operating in the market. In January 1994, the government was decided that the manat would be the only unit of currency. In 1993-94, the reform process slowed down due to the ongoing war with Armenia. In short, despite the economic stuation was instable the period between 1991 and 1994, reforms were sought to improve trade and the market[84].

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[82] Fatih T. (2002), Türkiye-Türk Cumhuriyetleri Ticari ve Ekonomik İlişkileri Hakkında Değerlendirme, Dış Ticaret Dergisi, Special Number, s.1-15;

[83] https://minenergy.gov.az/en/neft/neft-senayesinin-inkisaf-tarixi

[84] Kornell S.E. (2016), Azerbaijan Since Independence, M.E. Sharpe, New York, p.24-31;

However, Azerbaijan is an oil-rich country, while the lack of sufficient financial budget at the periof of independence, did not allow to use rich oil and gas fields such as "Azeri", "Chirag", "Gunashli". Significant funds were needed to start production from these fields. Because of the current situation of that years, Azerbaijan could start its oil production after 15-20 years when its financial situation improves. It was necessary to invite foreign oil companies for begining the production. While, it was ardous to attract foreign investment to the country at that time, since the war and economic instability put the country on the list of high-risk countries for investment in the world. Under the slogan "Oil is the national wealth of Azerbaijan," President Heydar Aliyev was actively engaged in restoring and developing the nation's oil sector at the time. He had returned to the presidency of Azerbaijan at the people's request. Significant changes occurred in the Azerbaijani government after the election of Heydar Aliyev as President of Azerbaijan in the summer of 1993. The national leader of the Azerbaijan people invited the major foreign oil companies, and was quickly developed the "New Oil Strategy". Negotiations have begun with foreign companies to develop the Azeri-Chirag-Guneshli fields. The great leader Heydar Aliyev, who saved Azerbaijan from the catastrophe, began to take measures for its economic growth.

During the rule of Heydar Aliyev, oil contracts were signed with the world's leading oil companies, called the "Contract of the Century" and had the greate importance for the country. The AIOC was made up of 11 major multinational oil companies from six nations: the United Kingdom, Russia, Norway, the United States, Turkey, and Saudi Arabia (BP, Amoco, Unocal, Amoco, Statoil, Lukoil, Exxon, TPAO, Pennzoil, McDermott; ARAMCO; Delta Nimir). Among the companies that signed the agreement were SOCAR (25%), BP (30.7%), Chevron (9.57%), IMPEX (9.32%), Statoil (7.27%), ExxonMobil (6.79), TP (5.73%), ITOCHU (3.63), and ONGC Videsh Limited (2.31%)[85]. According to the completed production sharing agreement, which runs until 2050, BP will continue to operate as the project's operator. SOCAR's share increases from 11.6% to 25%, and 75% of profits remain in Azerbaijan. As a result of drilling, it was determined that the oil

[85] Polukhov E (2010). Contract of the century (Problem in historical retrospective) http://poli.vub.ac.be/publi/crs/eng/R02-005.html;

reserves was 640 million tons. The expected capital was $ 10 billion, with the majority of the foreign direct investment directed into oil production and extraction. After the signing of the "Contract of the Century" and the adoption of the Constitution of the Republic on November 12, 1995, the market economy accelerated and the country began to receive large amounts of foreign investment. Foreign investment has been critical to Azerbaijan's economic revival[86]. The development of the oil industry has maximized Azerbaijan's economic, political and cultural cooperation with various foreign countries. The establishment of socio-political stability in the country, the existence of rich oil and gas fields has further increased the interest of foreign investors in our country. 21 new oil agreements have been signed since the Contract of the Century[87]. The expected volume of foreign direct investment in Azerbaijan under the agreements was $ 60 billion. The signing of the "Contract of the Century" has resulted in the following economic gains for the republic[88]: the project's realization has enabled Azerbaijani oil to reach the European market, Azerbaijan has gained a more reliable position in the eyes of international investors and credit organizations, which provided the country with a privileged position in the implementation of strategic projects, conditions was created for larger capital investments in the oil sector, it gave opportunities for the republic to create foreign exchange reserves and pursue its own investment policy, it was accelerating of integration into the world economic community and the level of technological development of the country was growing.

The State Oil Fund was founded in 1999 in order to secure the earnings coming from the oil resources and direct them toward the economic and social development of the nation. The promotion of social and economic progress was one of the most important areas of government policy. The fund is managed by a special council led by the president,

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[86] https://bakuresearchinstitute.org/en/foreign-direct-investment-in-azerbaijans-economy-current-status-development-trends-and-challenges/;

[87] Aslanbayli, B. (2020). NATO's possible role in the protection of critical energy infrastructure in Azerbaijan. Caucasus International, 4(3-4), 133-142.http://cijournal.az/storage/posts/31/files/NATO%E2%80%99s%20 Possible%20Role%20in%20the%20Protection%20of%20Critical%20Energy%20Infrastructure%20in%20 Azerbaijan(1).pdf;

[88] https://minenergy.gov.az/en/neft/neft-senayesinin-inkisaf-tarixi;

which invests in the nation's oil and gas income for next generations. The fund has around $43.6 billion in assets as of January 2021[89]. SOFAZ is organized as an extra-budgetary fund and operates as a specific legal organization separate from the country's central bank. As of 2019, Europe and Asia accounted for over 68 percent of the oil fund's assets. The fund also indicated that around 25% of its assets were in North America, 0.7 percent in the Middle East, and 2% in Australia. Only 0.5% of its investments were made in South America[90].

The Azerlight brand, which is currently Azerbaijani petroleum, is transported to the global market through the Baku-Novorossiysk, Baku-Supsa, and Baku-Tbilisi-Ceyhan oil pipelines on three different routes by Heydar Aliyev's oil policy.

One of the successes of the oil strategy was the transportation of oil to the world market in various directions. This diversity has reduced Azerbaijan's dependence on the countries through which the pipeline passes, but also protected it from extreme situations and ensured the delivery of oil to the European market.

As a result of the implementation of these projects, new infrastructure has been established in our country, and new jobs have been created in the areas where the pipelines pass. With the discovery of the Shah Deniz gas condensate field in 1999, the oil strategy was also broadened. The government has contains more than 2.5 trillion cubic meters of natural gas reserves, according to government statistics[91]. The oil sector played a key role in Azerbaijan's recovery process.

Between 1995 and 2017, the nation's economy obtained a total of $ 125.5 billion in foreign investment, according to the State Statistics Council, of which 96.1% (or $ 120.6 billion) occurred between 2000 and 2017From a variety of different finance and credit organizations, the government of Azerbaijan and state-run and private businesses acquired $29.2 billion (24.2 percent) of the total foreign investments between 2000 and 2017.

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[89] State Satistics Commitee (2022). “Azerbaijan in figures”. Statistic journal..s.106;

[90] Center for Economic and Social Development (CESD) (2017). The Effect of Oil Price Fluctuations on the Exchange Rate of the National Currency of Azerbaijan: Assessment of the years 2014-2017. CESD PRESS, Baku, p.11-16;

[91] State Satistics Commitee (2019). “Azerbaijan in figures”. Statistic journal..s.114;

Direct investments accounted for $77.8 billion (64.5 percent), bonus payments under oil contracts accounted for $217.7 million (0.2 percent), and other investments accounted for the remaining $13.4 billion (11.1 percent) (mainly portfolio investments)[92]. Between 2000 and 2017, Azerbaijan's economy received $77.8 billion in FDI, with the oil industry receiving $66.8 billion, or 85.9 percent, and the non-oil sector receiving $19.9 billion (14.1 percent)[93].

Initial period, Azerbaijan export oil and oil product by the Baku-Novorossiysk and Baku-Supsa pipelines. In 2005, oil exports were 25 million tons after the launch of the BTC pipeline[94]. In 2009, Azerbaijan's total oil exports rose to 44 million tons. Investment increased by 59.1 percent between 1995 and 1998. Fixed capital accounted for 40.6 percent of GDP in 1998, more than tripling its percentage in 1995. While the share of total oil production from the Caspian Sea was 82.3% in 1995, this ratio increased to 89% in 1999 and 89% between 2000 and 2004. Since 2005, this ratio has been over 90%. In 2002, Azerbaijan's oil and oil products exports amounted to $ 1,927.4 million. Crude oil exports amounted to 8,793.6 million tons ($ 1,159.5 million)[95]. In return, imports of mineral fuels, oil and oil products amounted to $ 292.6 million (17.5% of total imports).

The first graph depicted Azerbaijan's total oil output from 1991 through 2020. It is clearle seen from the graph that after contruction BTC pipeline oil production increased significantly. The graph 1 showed the volume of oil production during the years. This graph shows the fact that Azerbaijan has gained financial independence using its natural oil reserves. If Azerbaijan did not have oil reserves, it would not be possible to revive its struggling economy in a short time. The availability of oil reserves has allowed Azerbaijan to attract foreign investment to the country and revive its economy.

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92 https://bakuresearchinstitute.org/en/foreign-direct-investment-in-azerbaijans-economy-current-status-development-trends-and-challenges/;

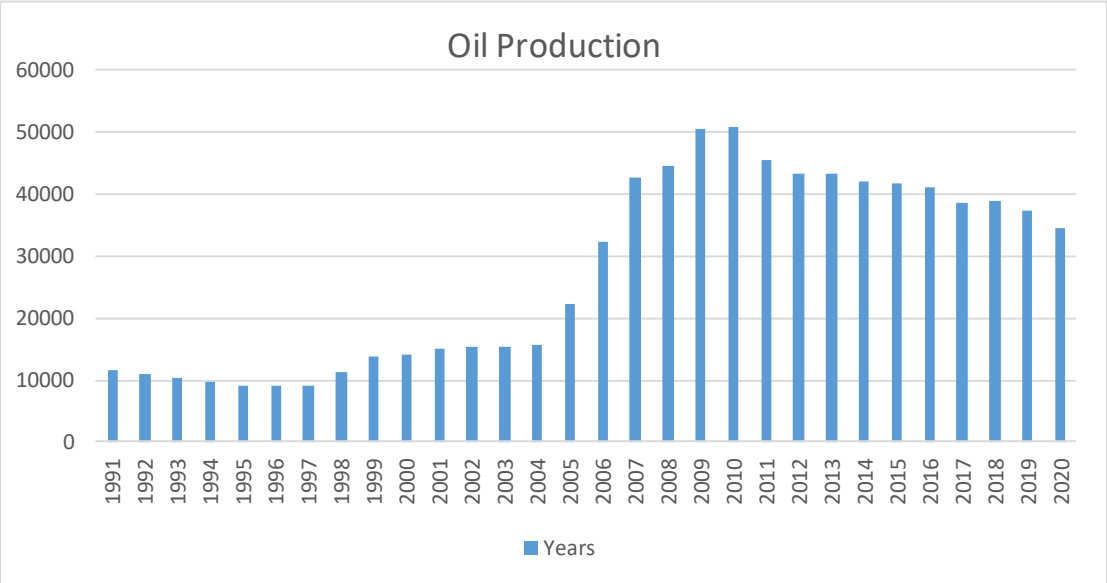
93 https://www.adb.org/countries/azerbaijan/results-adb-supported-operations;

94 J. Joseph (2010), "Pipeline Diplomacy, The Clinton Administration`s Fight for Baku- Ceyhan", WWS Case Study, 1/99, p.47;

95 Shorokhov V.(2015). Energy Resources of Azerbaijan: Political Stability and Regional Stability, Caspian Regional Studies, Issue 31, No 1. p.47-58;

With foreign investment in the country and the stabilization of the economic situation, oil production in 2002 was 2.5 million tons more than in 1990. Thus, the Contract of Centure was significantly effect to country's economy. After contract of century, Azerbaijan demonstrated showed high economic development[96]. The instruction of BTC pipeline was also positive effect to oil sector and country's economy. In 1994, the production of oil was 9.5 million tons, after 10 years this indicator sharply increased to 15.5 million tons and increased continuously.

Graph 1. Oil production in Azerbaijan



Source: Azerbaijan State Statistics Committee

The GDP of Azerbaijan was also increased from $ 1 mlrd to $ 8 mlrd in this period. In 2002, the likelihood of a US invasion of Iraq increased as well, and the price of oil surged to $ 32 per barrel. This has led to an increase in Azerbaijan's oil revenues. In the 2002 budget, the price of oil was estimated at $ 19 per barrel. In the 2003 state budget increased due to the price of oil was set at $ 19.5 per barrel and GDP was 7.2 billion dollar at that time. While the main problem was the most share of GDP was coming from oil production. Therefore, in 2008, world oil prices rose to their highest level since 1994, but then, as a

[96] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55;

result of the global crisis in the United States and spread around the world. As a result of the 2008 financial crisis, demand for oil started to fall. In the first two months of 2008, oil prices suddenly fell from $ 150 to $ 38[97]. As a result, a significant portion of the nation's income has resulted in a substantial fall in the amount of money the country receives from oil exports from nations like Azerbaijan.

The capability for producing oil in Azerbaijan and rising oil prices are the key factors contributing to the country's GDP growth. Azerbaijan's GDP increased by 26.4 percent in 2005, 34.5 percent in 2006, and 25 percent in 2007, but only 10.8 percent in 2008. The IMF reports that in 2009, Azerbaijan's rate of GDP growth fell to -11.5 percent for the first time. The production capacity of products and services as a result of the decline in oil prices is diminishing if economic growth is evaluated after 2005, even though oil production is maintained at the same level in the nation[98]. This proves that Azerbaijan's revenues are directly related to petroleum.

In 2012, the price of a barrel of crude oil was $ 128 and increased by 2014. While, after 2015, oil prices began to fall again for the reason of the increase in US oil production. The increase in oil production since the second half of 2014, the upper limit of demand over supply, has led to lower prices for crude oil and oil products. In 2015, uncertainty in the world economy increased, volatility in stock exchanges increased, economic growth weakened, and global risks were more visible in DDCs (developed countries) than DDCs (developing countries)[99]. In addition, it is characterized by an increase in political trends, weakening of the external economic environment, weakening of the banking sector and financial stability as a result of declining private and public sector revenues in the country's economy. In this situation, the downward trend in world commodity prices, including world oil prices, has intensified and accelerated the devaluation of some currencies. Complex economic processes taking place at the global and regional levels

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[97] Central Bank of the Republic of Azerbaijan, (2010) "Financial indicators of the Republic of Azerbaijan for the years 2000-2009. p.6;

[98] IMF (2015).“Crude Oil Price Forecast: 2017, 2018 and Long Term to 2030”, Brent Crude Oil Projections https://knoema.ru/yxptpab/crude-oil-price-forecast-2017-2018-and-long-term-to-2030;

[99] Karimov R. (2015). “Development of Non-Oil Sector in Azerbaijan: Tendencies and Opportunities”, Journal of Business & Economic Policy Vol. 2, No. 2; p.45-89;

have led to closer integration of the Azerbaijani economy into the world economy, leading to a reduction in foreign exchange earnings and a positive balance. For 20 years, from 1994 to 2014, the Azerbaijan's Manat has maintained its position as a stable currency. However, on February 21, 2015, the Central Bank announced that the exchange rate of the manat was 1.05. Compared to 0.78₼, the manat devalued by 34% and lost value. At the end of the year, the sparks of the second devaluation began to appear. On December 16, 2015, the US Federal Reserve System raised the base interest rate by 0.25% per annum, and the dollar began to appreciate, and the Manat devalued for the second time. A slowdown in economic growth in developing nations and the depreciation of national currencies have resulted from the tripled decline in oil prices since June 2014.

All of these have led to Dutch syndrome in Azerbaijan. Due to depend highly on oil price and resource based economy, Azerbaijan has faced this syndrome at that time[100]. A disproportionate increase will occur as a result of not paying enough attention to other development sectors outside the oil sector.

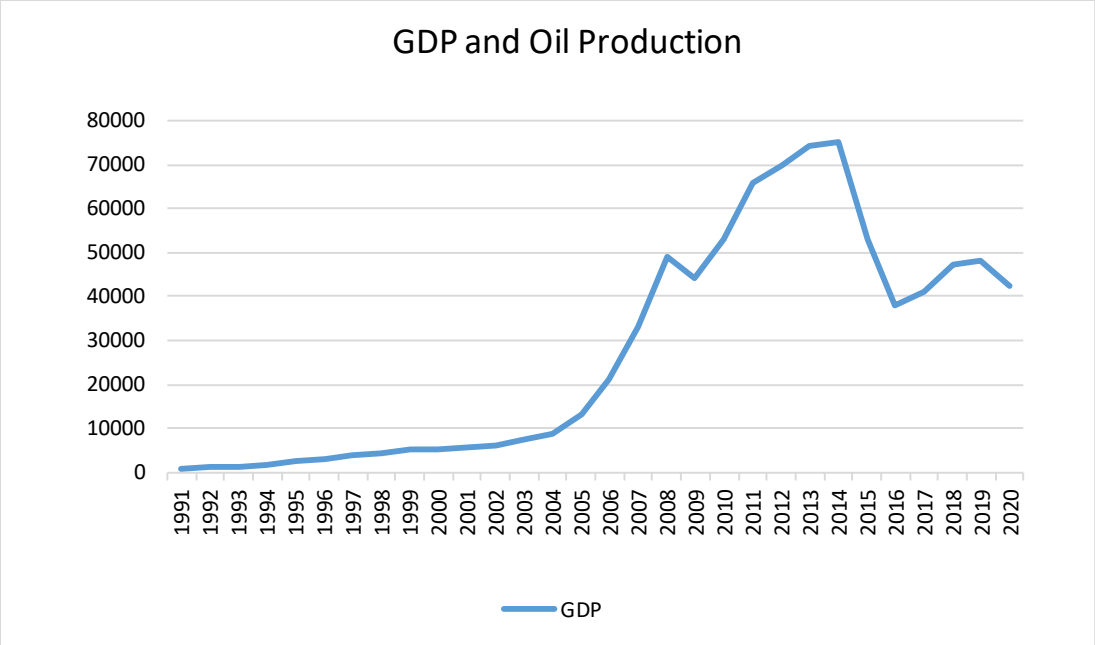
The beginning of the era of cheap oil prices has created significant challenges for the Azerbaijani economy. The country's external balance has been the most affected by low oil prices. According to the According to the State Statistics Authority, international trade turnover declined by 33.3 percent in 2015 to $ 20.7 billion, and by 24.9 percent in January-August 2016 to $ 11.3 billion, compared with the same period previous year. At the end of 2015, the foreign trade balance was 2.2 billion US dollars (a decrease of 5.7 times), and in January-August 2016 it was 250.3 million US dollars[101]. In 2015, for the first time since 2004, the country's balance of payments deficit amounted to $ 222 million. The main source of the deficit was the trade balance, which sharply decreased from $ 19 billion to $ 6 billion. According to the Central Bank, the country's total strategic foreign exchange reserves in 2015 decreased by 24.4 percent or $ 12.5 billion. In particular, the reserves of

[100] Dikkaya M., Doyar B.V. (2017) Causality Among Oil Prices, GDP and Exchange Rate: Evidence from Azerbaijan and Kazakhstan, Bilig, 83, pp. 79–98;

[101] Niftiyev I. (2018) : De-Industrialization Patterns of Azerbaijan: Potential Outcomes of Dutch Disease Syndrome, SSRN, Rochester, available at: http://dx.doi.org/10.2139/ssrn.3748107;

the Oil Fund decreased by 9.1 percent ($ 3.3 billion) and amounted to $ 33.6 billion by the end of the period.

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



Source: Azerbaijan State Statistical Committee[102]

The State Statistics Committee stated that the GDP in 2016 amounted to 37,862.8 million dollar, which is a decrease of 29% compared to previous years that can see from the graph 3 in detail[103]. The average annual inflation rate in 2016 was 12.44%[104]. According to State Statistics Committee, inflation was in the Consumer Price Index (CPI), ie 13.9% in food products, 13 % in non-food prices, and 11.7 % in services. Another negative impact of depreciation was the increase in the share of foreign debt in GDP in Azerbaijan. The first reason was the depreciation of the national currency after two sharp devaluations, and the second was the increase in the country's external debt demand due to reduced revenues from oil exports. The devaluation has increased the ratio of foreign debt to GDP for Azerbaijan. In December 2014, state revenues, including taxes, revenues from state

[102] State Satistics Commitee (2022). "Azerbaijan in figures". Statistic journal..s.91;

[103] State Satistics Commitee (2017). "Azerbaijan in figures". Statistic journal..s.75;

[104] https://www.statista.com/topics/149/inflation/#;

enterprises, customs duties, foreign aid and capital revenues, reached a maximum of 18,400.5 million manat. However, the situation has changed significantly since the devaluation. In 2016, state revenues and expenditures amounted to 17501.2 million manat and 17742.4 million manat respectively[105]. The budget deficit was 241.2 million manat. The devaluation is the depreciation of the country's currency, although it has had a positive impact on the Azerbaijani economy. Since the devaluation, there have been significant issues caused by the reliance on imports for daily consumer items, particularly for the raw materials needed to produce those commodities. Low global oil prices required the growth of the non-oil industries. Prior to the devaluation, Azerbaijan's economy was more reliant on the extraction of natural resources. This situation changed somewhat after the devaluation. In January-September 2016, the value of GDP was 60425.2 million manat, of which 38912.2 million manat came from the non-oil sector[106]. Although the non-oil sector has not developed as an oil sector. Consistent and purposeful measures taken to diversify the country's economy have led to the rapid development of the non-oil sector. During the reporting period, growth was observed in the mining industry in non-oil fields such as copper ores and concentrates, silver, salt, gypsum and anhydrite. As a result of fulfilling the tasks set for socio-economic development, food production increased by 4.3%. In addition, 2.7 times increase was observed in textiles, 34.6% in wood products, 12.7% in printing products, 2.6 times in electrical equipment, and 14.9% in computer and electronic products. The main priorities of the Azerbaijani state has been to minimize the negative impact of new economic realities on the national economy, to maintain macroeconomic stability by adjusting the external and internal balance.[107]

[105] http://iqtisadiislahat.org/store//media/documents/islahatlar_icmali/2018/dekabr/Islahat_avqust_eng.pdf;

[106] State Satistics Commitee (2017). "Azerbaijan in figures". Statistic journal..s.75;

[107] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70-76;

2.4. History of Azerbaijan Oil Industry and the Main Oil Contracts

The history of the Azerbaijani oil production is divided into numerous periods which had each their own peculiarities[108].

The first stage commenced in 1847 with the mechanical oil extraction from boreholes and continued until 1920. The early nineteenth century saw the first oil production from a manual well drilled 30 meters from the coast at Bibiheybat. The first production of industrial oil from drilled wells in Bibiheybat and subsequently Balakhany fields occurred in the years 1847-1848, and the development of Azerbaijan's petroleum industry began at that time[109]. The first oil refinery was established in Baku in 1859, during the early stages of oil history. The construction of a kerosene factory by Djavad Melikov in Baku in 1863 was one of the major events, and for the first time in the world, freezers were applied in oil refining. In 1863, Baku produced 5.4 thousand tons of oil, but then this figure increased to 63.2 thousand tons in 1873. Initial period of time, 15 oil refineries operated until 1867 [110]. Although transportation was one of the major issues the Baku oil producers were facing, oil production did increase at this time. Until the 1870s, oil and oil products were carried in goats or rams' leather bags that were placed onto camels or horses and caravanned large distances. The Nobel brothers were attempting to find a solution to the oil transportation issue while taking into account all of these challenges. As a result, the world's first tanker, known as Zoroaster, was created in 1877 to transport oil from Baku. The Nobel brothers visited Baku in 1873 and witnessed its economic growth. During this time, they held influence over numerous oil fields, oil tankers and refineries in the Caspian Sea, ships, trains, hotels, and other enterprises. The Nobel family financed 30 million rubles in Azerbaijan's oil sector. Apart from Nobel's proposal, the first 12-kilometer oil pipeline from the Balakhany oil fields to the oil refinery facility was built in 1878. In 1898, the total length of all lines connecting Baku oil refinery to oil fields was

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[108] https://minenergy.gov.az/en/neft/neft-senayesinin-inkisaf-tarixi

[109] Atakisiyev M. (2014). The role of Azerbaijan's oil strategy in the development of the national economy. "Tax" journal, Vol.5(119). p.78;

[110] C. Bulut (2004) Bilgi Toplumunda Yeni Ekonomi Anlayışı ve Bu Çerçevede Azerbaycan Değerlendirmesi Diyalog Azerbaycan Is Dinyası Dergisi, TÜSİAB Cemiyeti, Sayı:15 Baku, Şubat, ss. 38-39;

230 kilometers. Each year, these pipelines transmit one million tons of oilIn a single year, these pipelines carried 1 million tons of oil. The Caucasian Railway, which connected Baku and Batumi, was built in 1883 by the French business owners the Rothschilds. The Black Sea port received the export oil before sending full tankers to the marketplace. Moreover, the rate of oil production was rising, exceeding the production of the United States in 1898–1901. The world's first oil pipeline was subsequently constructed in 1907, running from Baku to Batumi[111].

Azerbaijan developed a national capitalism, and Baku became one of the world's industrial hubs. In the late nineteenth century, 49 (24.8 percent) of 167 oil traders were Azerbaijanis. At the time, oil millionaires significantly aided the development of the oil industry (Isa bey Hadjinsky, Murtuz Mukhtarov, Hadjy Zeynalabdin Taghiyev, Seyid Mirbabayev, Shamsi Asadullayev, and others). More than half of all oil produced globally in 1901 came from Azerbaijan, which at the time produced 11 million tons of oil. Prior to the privatisation of the oil sector, Azerbaijan had 270 petroleum companies, 49 small and medium sized corporations excavating oilfields, 25 firms refining petroleum, and over 100 technical bureaus, repair shops, and others[112]. During the last phase of that stage, the oil sector faced a difficult circumstances (war, revolution, and so on), and oil output fell.

After the nationalization of Azerbaijan's oil and gas sector in 1920, the second phase began at this time, and ended in 1949 with the exploitation of the offshore Oil Rocks field. In 1921, oil output dropped to 2.4 million tons. Due to the extension of exploration efforts during the second stage, a number of new oil fields (particularly Gala, Buzovna-Mashtagha, and others) were identified and commissioned. In 1941, oil output reached 23.6 million tons, accounting for 76% of total USSR oil production[113]. Azerbaijan produced 11,1 million tons of oil during the 1941–1945 war as a consequence of the transfer of oil workers and equipment to eastern countries (Tatarstan, Bashkortostan,

[111] John R. (2004). Pipeline Politics, The Caspian Policy, Energy and Security, ed. Shirin Akiner, Routledge Curzon, London, New York, p. 125;

[112] John R. (2004). 126;

[113] Corden W.M. (1984). "Booming Sector and Dutch Disease Economics: Survey and Consolidation", p,41;

Turkmenistan and others). Azerbaijan produced 75 million tons of oil between 1941 and 1945, accounting for 75% of total Soviet output.[114]

The third period began in 1950 with the opening of the Neft Dashlary and continued until 1969 with the growth the offshore oil sector of Azerbaijan. A number of oil and gas fields, including Bulla-Deniz, Gum-Deniz, Darwin Pitcher, Sangachal-Divanni-Deniz, and Khara-Zira Island, were found and established during this stage. Offshore drilling, hydrotechnological oil plant methodology and techniques, and offshore oil and gas production facilities were also developed. Several new onshore oil and gas reserves were identified and commissioned during this stage (Mishovdag, Kurovdag, Garabaghly, Kursanga, Garabagh, Galmaz, and others)[115].

That period was distinguished by the intense growth and operation of "Neft Dashlary" and other areas. For the first time in global practice, an offshore field was created on the Estacada in the deep waters. The implementation of engineering and technology and science methods contributed in the inflow of investment to the state, increased production via metal savings, and a fall in the cost of a ton of oil.

The fourth stage began in 1969 and is defined by the fast expansion of the oil and gas sector, which traces back to Heydar Aliyev's first administration. The development of offshore oil production has just entered a new phase. Azeri oil executives were given permission by the USSR Ministry of Oil Industry to carry out all geological, drilling, operational, and other operations in all Caspian Sea regions based on the knowledge of Azeri oilmen in the field when the company Khazardenizneft was established in 1970. There were certain challenges in the oil industry at this time. The maximum depth at which the Caspian Sea's technical equipment could function was 40 meters. Almost majority of the oil and gas finds in the Caspian Azeri region at the time were made at depths of 40 meters. The availability of more oil and gas deposits at lower depths contributed to the expansion in marine oil and gas production. As a consequence of Heydar Aliyev's strategy,

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[114] Atmaca , T. (2002). Azerbaycan Petrolleri Hazarın Statüse ve Güç Dengesi. Strategic Research File. 3:12, 1 – 19;

[115] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70;

Azerbaijan was provided with nearly 400 of 75 different kinds of passenger, seismic, load-lifting boats and other vessels as a consequence[116]. In the Caspian Sea, an Azerbaijani crane ship with a capacity of 2,500 tons began to operate. Additionally, the introduction of a drilling plant of the Khazar and Shelf versions, each capable of operating at a depth of 200 meters in the water, allowed for the investigation of oil and gas reserves in the deeper parts. The late 1960s saw the development of eight new oil and gas fields, which resulted in a 2% increase in oil reserves and a 3% increase in gas reserves. The combined production of oil and natural gas in 1975 was 27.1 million tons. Drilling facilities reached a peak of 11 in the 1980s, and as a result of their activity, oil-rich fields (Azeri-Chirag-Gunashli) were discovered at depths of 80 to 350 meters in the Azeri region of the Caspian Sea[117].

The collapse of the USSR, the creation of a new oil strategy covering the period of independence, and the creation of a new history for Azerbaijan are the three key events that characterize the fifth stage. More financial resources and new technology were required to begin the development of Azerbaijan's deep-water oil deposits. It was necessary to tempt major Western energy companies to contribute their knowledge and expertise in this area. Negotiations with large corporations began before the collapse of Soviet Union. Azerbaijan SSR claimed the right to establish direct economic relations with Western companies after announcing its independence on September 23, 1989.

This was mainly about their contributions to the development of the Guneshli, Azeri and Chirag oil resources. Negotiations with corporations including Statoil, British Petroleum, Amoco, and Unocal have already commenced. By early 1991, these businesses had already taken significant initiatives to create the environment for early oil production[118]. It was determined on January 18, 1991, to conduct a tender to explore and develop a deep water Azerbaijani field. Amoco was chosen the winner of the tender in

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[116] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55;

[117] Ibrahimov R. (2010). Azerbaijan: Happiness is the Availability of Export Corridors, Available at: http://www.turkishweekly.net/columnist/2536/azerbaijan-happiness-is-the-availability-ofexport-corridors.html;

[118] Kornell S.E. (2016), Azerbaijan Since Independence, M.E. Sharpe, New York, p.31;

June 1991. However, this decision was never implemented, and discussions with the firms have continued since Azerbaijan's independence. However, the negotiations started from the beginnings of 90's years, the main decision was given after the Contract of Century. On September 20, 1994, Azerbaijan signed a Century Contract to develop the offshore Azeri, Guneshli, and Chirag oil resources. On the initiative of Heydar Aliyev, an agreement in the form of a Production Sharing Contract was signed. The government of Azerbaijan should get up to 80% of revenue from oil sales, with the remaining 20% divided among corporations. The contract was signed for a period of 30 years. The following companies were initially invited to participate in a signing ceremony: British Petroleum (UK) 17.127 %, SOCAR (Azerbaijan) 20 %, Lukoil (Russia) 10 %, Amoco (US) 17.01 %, Pennzoil (US) 9.82 %, Statoil (Norway) 8.563 %, Unocal (US) 9.52 %, McDermott International (US) 2.45 %, Turkish State Oil Company (Turkey) 1.75 %.

The ranks of consortium members and their proportion of involvement have altered over time. In brief, Azerbaijan's SOCAR corporation transferred 5% of its share to the Turkish organization TPAO. Another 5% will be passed on by the Azerbaijani government to the Iranian oil firm and an agreement signed in Baku in November 1994. President Aliyev's central objective was to balance significant regional dynamics by establishing fair treatment for all stakeholders. Meanwhile, the US administration has disagreed to the Azerbaijani government's intention, emphasizing the difficulties of American corporations working together with Iran in accordance with existing regulations. As a consequence, Iran has been excluded. This five percent was assigned to ExxonMobil in April 1995. Initially, crude oil reserves at the Azeri, Guneshli and Chirag area were projected to be 511 million tons, but it was later discovered that they account for 640 million tons. In June 2007, it was expected that reserves to be total 900 million tons. The quality of the Azeri oil sold underneath the "Azeri light" brand on international markets had a favorable impact on the nation's revenue. The crude oil product sold under the "Azeri light" brand is among the lightest in the world and has one of the highest levels of quality.

The average API gravity of Azeri oil is 36.7, which is lower than that of Saudi Arabian crude's average API gravity of 34.2[119].

However, completing the consortium's "Contract of the Century" was just one component of the plan. It was required to build transportation systems in order to export Azerbaijani oil to global markets. The primary problem for Azerbaijan in this scenario is that it lacks access to the open seas. As a result, Azerbaijan is dependent on transit routes that cross through other nations' borders. In this case, Azerbaijan's relationships with possible transit nations have played a significant role. This element had a significant impact in establishing the pipeline route for transporting crude oil from Azerbaijan to global markets. The Baku-Novorossiysk pipeline was planned as one of two transit corridors for exporting "early oil." Russia claimed that there was already a pipeline between the Baku-Novorossiysk port and that it was the only way to do so, both cheaply and quickly. Russia was not satisfied with this, and agreed with Chechnya that the pipeline would pass through Chechnya. Later, Azerbaijan, Russia and Chechnya signed an agreement on the Baku-Grozny-Tikhorotesk-Novorossiysk pipeline. The pipeline is 1,347 kilometers long and has a capacity of approximately to 6 million tons of oil annually[120]. Oil is delivered by tanker from Novorossiysk to the ports of the Mediterranean Sea through the Black Sea and the Turkish Straits. The other route was the Baku-Supsa oil pipeline, which stretches 917 kilometers and has a capacity of 5.5-6 million tons annually. Oil tankers should have been transported across the Black Sea from Supsa and Novorossiysk to ports in the Mediterranean Sea.

Although there were a few issues with the transfer of gas and oil to the global energy market. Therefore, it became necessary to construct the main pipeline due to the rise in oil output from Azeri, Chirag, and Gunashli. One issue is that the two currently operating pipelines have low volume capacities; as a result, the combined annual capacity of the Baku-Supsa and Baku-Novorossiysk pipelines is just 12 million tons. However, starting

[119]https://www.investopedia.com/articles/economics/08/determining-oil-prices.asp;

[120] B. Algieri.(2004). "Price and Income Elasticities of Russian Exports". Università della Calabria & Universität Bonn, The European Journal of Comparative Economics Vol. 1, n. 2, pp. 175-193;

in 2005, Azerbaijan was required to deliver at least 20 million tons of oil annually[121]. Furthermore, the United States heavily insisted the development of a new export route. The US wanted to reduce Russia's dominance over the creation of energy projects in Azerbaijan and the region around the Caspian Sea[122]. Azerbaijan was not opposed to this plan since it has had a difficult relationship with Russia till achieving independence, thus it was accusing Moscow of supporting Armenia in the Nagorno-Karabakh war. Another reason is that oil tankers from Novorossiysk and Supsa are carried across the Turkish straits of Bosporus and Dardanelles, where tanker access is restricted to Turkey due to security concerns. The movement of commercial vessels from all countries through them was free under the Monteux Convention, which was signed on July 20, 1936, and Turkey's right to regulate the movement of vessels was restricted. Istanbul had a population of more than 10 million in this strait. The intensity of transportation significantly increased the hazards for this metropolis. The yearly amount of oil that might pass across the Straits was estimated to be in the range of 200 million tons. Approximately 50,000 boats cross through these straits each year, including many oil tankers. Turkey made a fresh plan for the security of the straits in January 1994 and presented it to the UN Committee on Safety at Sea International Maritime Organization[123]. The Turkish recommendations were approved in May 1994 after the Committee analyzed a number of standards. As a consequence, a new pipeline was required to bypass the Straits and provide access to the Mediterranean.

As a result of the Baku-Tbilisi-Ceyhan pipeline's construction, nations in the Caspian region now have access to an alternative route for delivering oil to global markets. Additionally, this pipeline will provide EU nations with an option for Middle Eastern and Russian oil imports. Kazakh oil was delivered through the Baku-Tbilisi-Ceyhan pipeline at the end of October 2008, while Turkmen oil shipment started in June 2010. Oil from

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[121] Bildirici , M, E., & Kayıkçı , F. (2013). Effects of Oil Production on Economic Growth in Eurasian countries: Panel ARDL Approach. Energy Journal, 49, 156 – 161;

[122] J. Joseph (2010), "Pipeline Diplomacy, The Clinton Administration`s Fight for Baku- Ceyhan", WWS Case Study, 1/99, p.47;

[123] C. Bulut (2004) Bilgi Toplumunda Yeni Ekonomi Anlayışı ve Bu Çerçevede Azerbaycan Değerlendirmesi Diyalog Azerbaycan Is Dinyası Dergisi, TÜSİAB Cemiyeti, Sayı:15 Baku, Şubat, s.39;

Kazakhstan's Tengiz oil field, which is run by the business Tengiz Chevroil, was being transported via the Baku-Tbilisi-Ceyhan oil pipeline. It was simple to build the Baku-Tbilisi-Erzurum gas pipeline along the same path as it was to build the Baku-Tbilisi-Ceyhan oil pipeline. Azerbaijani gas from the Shah-Deniz field is transported by pipeline to markets in Georgia and Turkey. The construction of this network was one of Azerbaijan's most reachable projects in history. The Baku-Tbilisi-Ceyhan pipeline delivers oil from Azerbaijan's deepwater Azeri-Chirag-Guneshli field across a distance of 1768 kilometers. Oil from the ACG is transported to the Sangachal terminal, and it is sent to the Ceyhan port through the Caspian port. Turkey is the project's largest donor, with a 1076-kilometer pipeline running across its borders. British representation BP operates the BTC commercially in Azerbaijan and Georgia, while Turkish representation BOTA runs the pipeline's Turkish side. The pipeline's construction cost $3.6 billion, not including the price of oil to fill the pipes[124]. The Baku-Tbilisi-Ceyhan route has benefited the Azerbaijani economy in favorable ways ever since it was built in 2006. In its first year of operation, the BTC will deliver 25 million tons of oil to the port of Ceyhan, then 45,000 million tons every year since 2007. The Baku-Tbilisi-Ceyhan pipeline was strategically vital. The US state offers political support to Azerbaijan, which was critical in the project's completion. Members of the pipeline construction consortium and their shares were allocated as follows: SOCAR (25%), BP (34.76%), Itochu (3.40%), Unocal (8.90%), Statoil (8.71%), TPAO (6.87%), Total Fina Elf (5%), ENI (5%), and Amerada Hess (2.36%)[125]. Due to large income from oil exports, Azerbaijan's GDP has increased significantly throughout this time period. For example, GDP increased by 26.4 percent in 2005, 32.5 percent in 2006, 25 percent in 2007, and 10.8 percent in 2008.

Since the signing of the contracts on the Azeri-Chirag-Guneshli and Shah-Deniz fields, Azerbaijan has signed more than 30 contracts. The trends that have affected this procedure can be seen if we examine all the contracts. The Azerbaijani government and

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[124] Bildirici , M, E., & Kayıkçı , F. (2013). Effects of Oil Production on Economic Growth in Eurasian countries: Panel ARDL Approach. Energy Journal, 49, 156 – 161;

[125] Gojayev, V. (2010). Resource Nationalism Trends in Azerbaijan, 2004 – 2009. RUSSCASP Working Paper , March

SOCAR signed as many as five PSAs in 1997 using their prior agreements as a guide[126]. Azerbaijan took involved in the establishment of six further consortiums between 1998 and 2000 to improve offshore resources in the Azerbaijani section of the Caspian Sea.[127]. All of the agreements that Azerbaijan signed in 2000, were only applied to fields along the shoreline. Many agreements did not have the same impact as the Shah-Deniz sector and the "Contract of the Century." After the first wells were drilled, several issues surfaced, causing the development of numerous contracts to be immediately suspended. These wells did not prove the existence of hydrocarbon reserves that would be profitable commercially. Another issue was that many wells' exploratory work was done at a period when global oil prices were at their lowest, about $8-12 per barrel. Exploration and production of hydrocarbons offshore reserves were not an economically attractive business under such conditions. The attractiveness of these fields received an attention again with the rise in oil prices on the global markets. However, after SOCAR became financially stronger and experienced organization in this sphere, preferred to conduct exploration and development independently. Therefore, SOCAR rejected offers from several companies to participate in the development of shallow Gunashli field[128].

The undetermined legal status of the Caspian Sea and its separation, in addition to the low oil prices, was another factor in the early suspension of offshore exploration and development. The Caspian Sea's border was shared by four distinct new states—Russia, Kazakhstan, Azerbaijan, and Turkmenistan, thus this caused the Caspian Sea's status problem. Due to their interest in the quick development of hydrocarbon deposits beneath the sea, Azerbaijan and Kazakhstan argued in favor of dividing the Caspian Sea into diverse sectors. Because their main energy reserves are located away from the Caspian Sea, Russia and Iran are more worried about security challenges. Additionally, both nations opposed the presence of third nations, particularly the United States, in the Caspian Sea. To prevent foreign corporations from participating, they blocked the exploitation of offshore fields of oil and gas till the status of the Caspian Sea was

[126] SOCAR Trading (2022). http://www.socartrading.com/about-us/history;

[127] Mehdiyeva, N. (2011). Power games in the Caucasus. London: I.B. Tauris. p.99;

[128] SOCAR Trading (2022). http://www.socartrading.com/about-us/history;

established. On August 22, 2001, Azerbaijan and Iran had another argument over the Caspian Sea. An Iranian military vessel stopped a BP research ship from carrying out an investigation in the southern part of the Azerbaijani region of the Caspian Sea and ordered the ship to leave[129]. Every day, Iranian aircraft flew over Azerbaijani territory and violated the air border of Azerbaijan. Iran only ceased operations after Russia and Western nations supported Azerbaijan and 10 Turkish military fighter aircraft F-5 participated in a parade in Baku. Despite these challenges, Azerbaijan still can produce and utilize its energy reserves. There are 231 potential structures discovered both on the surface and offshore that are ready for drilling and exploration, with 38.1% of them on land and 61.9% of them in the Azerbaijani section of the Caspian Sea. Deep drilling research found that 25.1% of resources have a high potential, and Azerbaijan has already discovered 69 hydrocarbon fields, including 42 onshore and 27 offshore[130]. Apart from that these oil contact, Azerbaijan made larger investment in Turkey. Therefore, one of the main foreign investment was the STAR refinary project between Azerbaijan and Turkey. With a capacity of 10 million tons of oil processing per year, the STAR Refinery will meet a significant part of the local industry's crude oil demand. SOCAR's $6.3 billion STAR Refinery, one of Turkey's greatest investment projects, was officially opened on October 19, 2018 near Aliaga, Izmir. The STAR Refinery will aid in the reduction of Turkey's existing trade deficit in the petrochemical industry, which is one of Europe's, the Middle East's, and Africa's main oil users. It will produce naphtha, xylene, diesel, airplane fuel, and LPG, among other petroleum products. The project's shareholders are SOCAR (60%) and Azerbaijan's Ministry of Economy (40%) [131].

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[129] Polukhov E (2010).Contract of the century (Problem in historical retrospective) http://poli.vub.ac.be/publi/crs/eng/R02-005.html;

[130] Ibrahimov R. (2008), Azerbaijan-New Trend in Oil Strategy. Available at: http://www.turkishweekly.net/columnist/2556/azerbaijannew-trend-in-oil-strategy.html

[131] State Oil Company of Azerbaijan Republic (2010): Transition from National to Transnational Company or Demand of Time, p.18;

2.5. The Influence of Changing Oil Price on Macroeconomic Variables in Azerbaijan

Azerbaijani 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. Nevertheless, according to the existing scenario, foreign investment inflows into the nation were quite low in 1991-1993. Investment in the nation is dangerous due to the economic crisis and the country's uncertain political situation. In 1994, foreign capital began flood into the Azerbaijani economy[132]. A significant flow of foreign investment was recorded in 1994-97 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, the sudden decline in oil price directly effect on country's economy.

2.5.1. The Impact of Global Financial Crisis to Azerbaijan Economy

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,

[132] https://bakuresearchinstitute.org/en/foreign-direct-investment-in-azerbaijans-economy-current-status-development-trends-and-challenges/

and Asia in 2008-2009[133]. The inability to anticipate the growing threat of a real estate crisis and uncertainty between states has exacerbated the global crisis. As a result of the deepening crisis, the world's leading industrial enterprises and automobile companies have sharply reduced or stopped production, shaken the financial and banking systems of developed countries, bankrupted major banks and in some countries nationalized banks. The global financial crisis has had a significant effect on the economy of developed countries, resulting in a slowdown in economic growth and, as a result, a drop in performance in global economic growth.

In 2008, the growth and development of the world economy in previous years began to decline. None of the countries that decided the fate of the world economy (USA, Japan, China, Great Britain, India, Germany, France, Italy, Russia) was able to escape the effects of the global crisis. About 80% of world GDP is formed in these countries[134]. The world's average annual growth rate has dropped from 5% in 2007 to 2.5 percent[135]. From the first months of 2008, banks began to return mortgaged homes to the resale market. Already in June, 4 million apartments worth more than $ 1 trillion began to look for customers in the market.

As a result of falling property prices, the US housing market has reportedly lost $ 4 trillion. In the aftermath of the crisis, some 1,000 leading banks and financial institutions in the United States and Europe declared bankruptcy or partially insured themselves against bankruptcy with government assistance. Azerbaijan has been affected by the crisis since it is a component of the global economy[136]. It is known that the growth of GDP in Azerbaijan depends more on the country's oil production and rising oil prices.

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[133] Berument, M.H., Ceylan, N.B., Dogan, N. (2010) The impact of oil price shocks on the economic growth of selected MENA countries. Energy Jounral, p.149–176;

[134] Hasanov, F., Mikayilov J., Bulut, C.(2017): The role of oil prices in exchange rate movements: The CIS oil exporters, Economies, MDPI, Basel, Vol. 5, Iss. 2, p. 1-18;

[135] IMF (2015). World Economic Outlook—Adjusting to Lower Commodity Prices. Available at: https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx;

[136] Shorokhov V.(2015). Energy Resources of Azerbaijan: Political Stability and Regional Stability, Caspian Regional Studies, Issue 31, No 1. p.47-58;

Impact on GDP

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[137]. 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 a 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[138]. Reduced energy costs may have detrimental effects on economy as well as the social life.

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**

[137] Central Bank of the Republic of Azerbaijan (2010) "Financial indicators of the Republic of Azerbaijan for the years 2000-2009. p.6;

[138] Central Bank of the Republic of Azerbaijan (2010). p.10;

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.

Impact on trade

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[139]. In 2009, Azerbaijan conducted commercial transactions of $16.5 billion with 136 nations. Although Azerbaijan has seen an increase in foreign trade since the crisis, we must not forget that ninety percent of exports are oil products.

Impact on GDP

The Republic of Azerbaijan's state budget is expected to bring in 12 billion 177 million manats in 2009, while expenditure was 12 billion 355 million manats[140]. Direct oil revenues were predicted to make up 62.4 percent of state budget revenues in 2008, but by 2009 they had increased to 65.4 percent.

In 2009, direct revenues from the oil sector amounted to 7595 mln. manat, including direct tax payments on the oil sector in the amount of 2680 million manat, transfers from SOFAZ

[139] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55;

[140] https://www.finanz.ru/novosti/aktsii/inflyaciya-v-azerbaydzhane-1013021505;

in the amount of 4915 million manat (40.4% of budget revenues)[141]. 74% of the increase in budget revenues in 2009 was due to the increase in payments to the oil sector. Additionally, the non-oil budget deficit has increased, which is a result of the budget's increasing reliance on oil earnings. Compared to the GDP created in the non-oil sector, the state budget deficit for non-oil-related expenditures climbed from 32% in 2007 to 42.5% in 2009. Due to the economic crisis, oil prices had a high annual variation in 2008. As a result, during the year, the price of Brent oil changed from $ 144.9 to $ 38.1. A $10 decline in oil prices results in losses for Azerbaijan of $ 2.2 billion[142]. Along with the crisis, falling oil prices are creating several problems in the formation of budget revenues. An example of this is the first reduction in both revenues and expenditures of the 2010 state budget.

Influence of Azerbaijan on foreign public debt

Azerbaijan's external state debt rose during the recession by 22.9% in 2008, reaching $ 3 billion by the first of 2009. The proportion of external debt to GDP decreased from 8.2% to 6.4% over the previous year. On the contrary, the amount of foreign debt per capita increased from $ 283.8 to $ 344.9. The Republic of Azerbaijan's external public debt stood at 6,730.9 million US dollars (7,054.0 million manats) as of October 1, 2015, with a GDP to external public debt ratio of 12.4%[143].

The World Bank (WB) predicted that the current account balance in Azerbaijan will reach 41.6% of GDP in 2008 and 30.7% in 2009[144].

It is worth noting that Azerbaijan is first in Eastern Europe and Central Asia. Azerbaijan is anticipated to maintain its position as a leader in 2009 and 2010. Most nations in the

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[141] Ackermann R. (2014), Gas Crisis (2014): 2006, 2009….2015?, http://budapesttimes.hu/2014/07/18/gas-crisis-2006-2009-2015/;

[142] Central Bank of the Republic of Azerbaijan, (2010) "Financial indicators of the Republic of Azerbaijan for the years 2000-2009. p.6;

[143] Kornell S.E. (2016), Azerbaijan Since Independence, M.E. Sharpe, New York, p.30;

[144] Baffes, John, Kose, M. Ayhan, Stocker, M. (2011), "The Great Plunge in Oil Prices: Causes, Consequences, and Policy Responses", Policy Research Note, World Bank Group, 1-61;

region, on the whole, have negative current account balances, which also represent a negative proportion of GDP.

While the share of Azerbaijan's foreign debt in GDP is not a dangerous one, it is also alarming that the rapid growth trend of foreign debt is observed. Thus, it is a serious signal that the share of external debt in GDP in the last 6 months is increased to 2 times. In addition, such a sharp growth rate coincides with the time when Azerbaijan's financial capabilities have diminished significantly compared to previous years.

Foreign investment

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. Direct foreign investment in the country's economy has dropped slightly in 2008, in return for the growth of investment in infrastructure projects, mainly in the framework of the state investment program in Azerbaijan. Foreign investment into Azerbaijan has increased steadily since 1994, peaking at $ 1,472 million in 1998[145]. 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 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 Azerbaijani economy, foreign investment has a significant influence on GDP. Foreign investment as a percentage of GDP climbed from 30% to 35-40% between 1996 and 2000[146]. Changes in the legislation, such as partial reductions in tax rates, customs and protection of foreign investment, and governmental actions in this regard, have boosted foreign investment growth. The volume

[145] https://bakuresearchinstitute.org/en/foreign-direct-investment-in-azerbaijans-economy-current-status-development-trends-and-challenges/

[146] Yunusov , A. (2011). Twenty Years of Independence in Azerbaijan , South Caucasus 20 Years of Independence, Friedrich – Ebert – Stifhung, p.60 – 77;

of foreign investments in Azerbaijan was greater than in Russia, Poland, Hungary and the Czech Republic.

Table 4. The volume of investment to Azerbaijan economy.

Volume of investments							
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Investment							
million manat	4249.2	5820.4	6733.4	7415.6	10353.9	12481.8	10475.0
million dollar	4326.4	5922.7	7118.5	8300.4	12066.1	15192.1	13033.5
Foreign investments:							
million manat	3310.9	4496.4	4628.5	4514.2	5727.2	5625.8	4395.1
million dollar	3371	4575.5	4893.2	5052.8	6674.3	6847.4	5468.6
Domestic Investments:							
million manat	938.3	1324	2104.9	2901.4	4626.7	6856	6079.9
million dollar	955.4	1347.2	2225.3	3247.6	5391.8	8344.7	7564.9

Source: Azerbaijan State Statistical Committee[147]

It is concerning that increasing investments are being placed in the oil industry in Azerbaijan, and that oil profits account for the majority of GDP. Because of the oil sector's one-sided growth, price movements in global markets cause fluctuations in GDP. This was clearly seen in the 1998 Russian crisis. According to given table, the volume of investment began to decrease in 2008 as a result of crisis.

[147] The State Statistical Committee of the Republic of Azerbaijan (2010). Investment, https://www.stat.gov.az/source/system_nat_accounts/en/00_en.xls;

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[148].

Foreign investment in fixed assets from international sources was 2.2 billion manat ($ 2.75 billion) in 2008, down 16.3 percent from the same time the last year. If in previous years the decline was mostly due to the transition of petroleum and gas projects to the stage of investment repatriation, in 2008 it is necessary to add the impact of global economic crisis. The United Kingdom has the largest share of foreign investment in Azerbaijan in 2008 among foreign countries and international organizations. Furthermore, compared to the previous year, the investment amount of British investors was about 202 million. manat or decreased by 16.5%[149]. Aside from the United Kingdom, the top five foreign investors in the Azerbaijani economy might include residents from the United States, Japan, Turkey, and Norway. These four nations' investors contributed around 941.3 million manat, accounting for 42.3 percent of the total[150]. Let us recall that Azerbaijan's economic and social growth in 2008 reached around 9 billion manat, or 34.3% more investment than in 2007. In addition, the amount of different imported items sold in the nation has decreased. In 2008, for example, sales volume for certain car brands decreased by 40%.

Table 5. The volume of Foreign Direct Investment

Foreign 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

[148] Baku Research Institute (2017) https://bakuresearchinstitute.org/analysis-of-main-problems-facing-azerbaijans-non-oil-exports/;

[149] CESD (2015a). Devaluation of Azerbaijani National Currency; Causes and Consequences. CESD Press, Baku. p.14;

[150] CESD (2015a). p.15

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 Committee

Effect on macro and microeconomic environment

The main issue that can create a serious problem is the impact of the crisis on the revenues of the State Oil Fund of Azerbaijan (SOFAZ). The price of Azeri Light has fallen below the most critical psychological level of $ 50 per barrel over the past three years. Given that in 2009 the price of oil in the state budget was lower than the forecast price.

Azerbaijan trade turnover has been impacted deeply by the crisis. Official data showed that crude oil makes up the majority of the nation's exports (93.80 percent)[151]. At the same time, the crisis has led to a delay in foreign investment in the country's economy, which will slow economic growth and lower economic growth than expected by the end of the year. Decrease in oil revenues impact on socio-economic project that the investment projects have been postponed due to lower revenue. By the end of the year, economic growth will be lower than predicted, and economic entities' operations will be weakened as a consequence of decreasing demand.

The weakest sector of Azerbaijan's financial system against the crisis is the banking sector[152]. During the crisis, the National Bank of Azerbaijan applied other banks to halve interest rates and pursue a prudent policy by assessing all elements of the market situation, and it was recommended that loans be given to less risky entrepreneurs. One of the anti-

[151] The State Statistical Committee (2010). https://www.stat.gov.az/source/system_nat_accounts/en/00_en.xls;

[152] Ackermann R. (2014), Gas Crisis (2014): 2006, 2009….2015? http://budapesttimes.hu/2014/07/18/gas-crisis-2006-2009-2015/;

crisis measures was the tax exemption of the part of insurance companies aimed at increasing the capitalization of profits for a period of three years as evidence of the government's financial support. To decrease the effect of the crisis on insurance industry, it is vital to cut unneeded expenses, increase customer counts, and create new products for the market during this time. At the end of 2008, the government took an important step by exempting both insurance companies and banks from income tax[153]. In early 2009, the National Bank eased monetary policy as a precautionary monetary measure. The Central Bank reduced the discount rate to 5% from February 2, 2009 by the decision of the Board. The interest rate ceiling has been decreased from 13% to 10%. Mandatory reserve ratio in manat and foreign currency was reduced from 6% to 3%.

2.5.2 The Decline in Oil Impact on Azerbaijan's Economy in 2014

With the announcement of independence, Azerbaijan's economy is required to implement the transition from a centrally planned economy to a market economy. Since the start of the twenty-first century, Azerbaijan's economy has experienced tremendous growth after the signing of the "Contract of the Century"[154]. Azerbaijan has demonstrated a substantial economic growth sourcing from oil boom over the last several years. 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[155]. This led to an increase in general price levels, a decline in the non-

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[153] Central Bank of the Republic of Azerbaijan, (2010) "Financial indicators of the Republic of Azerbaijan for the years 2000-2009. p.6;

[154] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55;

[155] World Bank (2016). Ease of Doing Business in Azerbaijan.http://www.doingbusiness.org/data/exploreeconomi es/azerbaijan/

oil sector's proportion of GDP and total exports, and a strengthening of the real effective exchange rate.

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[156].

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 of currencies, including the national currencies of commodity-exporting countries, has accelerated. Meanwhile, this oil decline effected other oil producing countries in the world. Azerbaijan is also significantly affected from this oil decline[157].

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 strengthen the resilience 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. The new situation has necessitated a review of the exchange rate regime. Taking into account the intensification of long-term external economic shocks, the Central Bank decided to move to a "floating exchange rate regime" in order to balance the balance of payments, protect the country's foreign exchange reserves at a critical level and ensure the competitiveness of the national economy[158].

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[156] U.S. Energy and Information Administration (2015) "Cushing, OK WTI Spot Price FOB (Dollars per Barrel) http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RWTC& f=D;

[157] Aslanbayli, B. (2020). NATO's possible role in the protection of critical energy infrastructure in Azerbaijan. Caucasus International, 4(3-4), 133-142.

[158] Center for Economic and Social Development (CESD) (2016). The Economy of Azerbaijan in 2015: Independent View. CESD PRESS, Baku, Azerbaijan. p.3-25;

This transition was tactically a macroeconomic maneuver, and strategically aimed at supporting the strategy of diversification of the national economy.

2.5.3. 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 [159][160]. The "resource curse" was originally used to describe this phenomenon. The first comprehensive model of Dutch disease was created by Corden[161] 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[162].

When we look at the country's economy in general, it is seen that the GDP has increased, the inflation rate has decreased, unemployment has decreased and other positive economic development indicators have increased since 2003. 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

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[159] Karl, T.L. (1997). The Paradox of Plenty: Oil Booms, Venezuela, and Other Petro-States. Berkeley, CA.p.223;

[160] Sachs , J. D. & Warner, A. M. (2001). The Curse of Natural Resources. European Economic Review. 45:4, p.827 – 838;

[161] Corden W.M. (1984). "Booming Sector and Dutch Disease Economics: Survey and Consolidation", p,41;

[162] C. Bulut, E. Suleymanov, F. Hasanov. (2017). "The Impact of the Oil Price Fluctuations on the Economic Policies in the Oil-Exporting Countries of the Former Soviet", Alatoo Academic Studies, No. 1, p.90;

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[163]. 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[164]. In particular, the construction of new train (metro) stations, bridges over the Caspian Sea and the construction of many stations were postponed until after the crisis.

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 the State Oil Fund of Azerbaijan (SOFAZ)[165]. In addition, the Agreement of the New Contract of the Century's extension until 2050 shows how significant the oil and gas sector is to the Azerbaijani economy. 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.

Table 6. Commodity structure of exports (specific weight of crude oil in exports)

Years	Export of Mineral Products Share in percent	Oil products export share in percent	Crude oil (including gas condensate) extraction
1995	58.6	58.4	9161

[163] https://www.adb.org/countries/azerbaijan/results-adb-supported-operations;

[164] Center for Economic and Social Development (CESD) (2017). The Effect of Oil Price Fluctuations on the Exchange Rate of the National Currency of Azerbaijan: Assessment of the years 2014-2017. CESD PRESS, Baku, p.11;

[165] Center for Economic and Social Development (CESD) (2017). p.13;

1996	66.8	66.4	9100
1997	61.7	61.4	9071
1998	69.1	68.9	11424
1999	78.6	78.6	13807
2000	85.1	85.1	14017
2001	91.5	91.4	14909
2002	88.9	88.9	15334
2003	86.0	86.0	15381
2004	82.2	82.2	15549
2005	76.8	76.8	22214
2006	84.6	84.6	32268
2007	81.5	81.4	42598
2008	97.1	97.1	44514
2009	92.8	92.8	50416
2010	94.2	94.1	50838
2011	94.5	94.5	45626
2012	93.2	93.1	43375
2013	92.8	92.7	43457
2014	92.5	92.4	42076
2015	88.0	87.8	41628
2016	91.4	91.2	41050
2017	90.8	90.5	38688
2018	92.0	91.7	38814
2019	90.9	90.6	37501
2020	87.5	87.2	34465

Source: State Statistic Committee of Azerbaijan

In order to show a framework of the independency of the economy from the oil and oil products, we need to highlight some economic indicators. In the table 6, indicates the share of oil products in Azerbaijan's export over the different years. As a result, starting in the early 2000s, the oil industry started to have a significant impact on national output and revenue. Table 6 shows that after 2000, the weight of oil exports increased over the years.

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-Asiman," "Shah Deniz," and "Azeri-Chirag-Gunashli."[166]

After 2014, the production of oil and gas decreased until now as a result of crisis in 2015[167]. 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[168].

Table 7. Azerbaijan Monthly Oil Export in 2014

Month	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015
Oil export	1.99	1.73	2.03	2.41	1.91	2.20	2.07	2.27	2.00	1.98	1.27	2.45	2.12

Source: State Satistics Commitee

Although Azerbaijan's oil exports decreased in January 2015 compared to the previous month, the export volume last month was higher than the average monthly export volume in 2014. It demonstrates that the Azerbaijan International Oil Company (AIOC) is focused

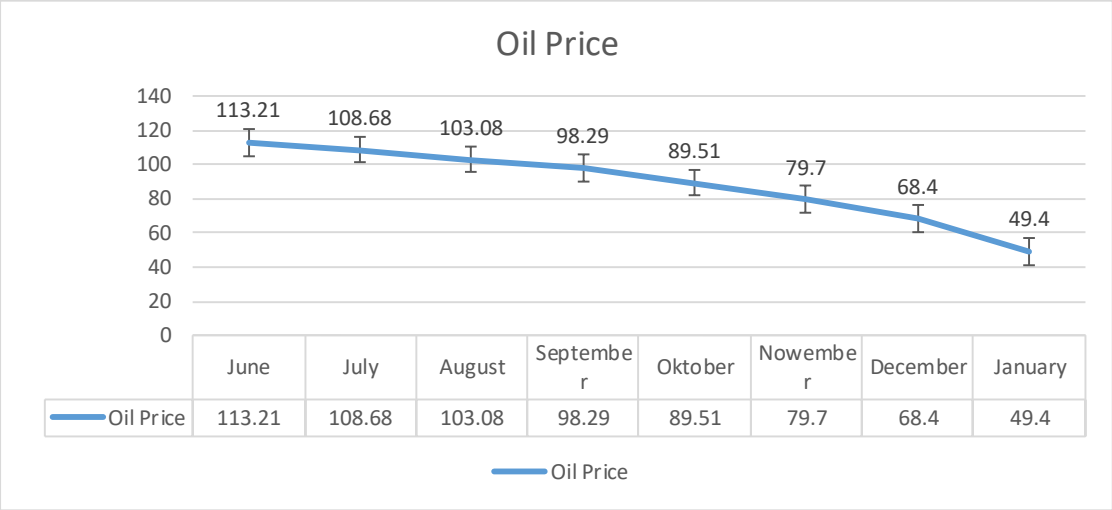
[166] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70-76;

[167] Center for Economic and Social Development (CESD) (2017). The Effect of Oil Price Fluctuations on the Exchange Rate of the National Currency of Azerbaijan: Assessment of the years 2014-2017. CESD PRESS, Baku, p.13;

[168] State Satistics Commitee (20157). "Azerbaijan in figures". Statistic journal..s.51

on maintaining fixed investments, including maintenance expenditures, even if oil prices remain low in the global market.

Graph 3. Oil Price decline in 7 Months.



Source: State Satistics Commitee

According to the graph, 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. Because 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[169].

Dutch Diseases Impact on Exchange Rate and Inflation

Exchange rate.

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

[169] Center for Economic and Social Development (CESD) (2016). The Economy of Azerbaijan in 2015: Independent View. CESD PRESS, Baku, Azerbaijan. p.15;

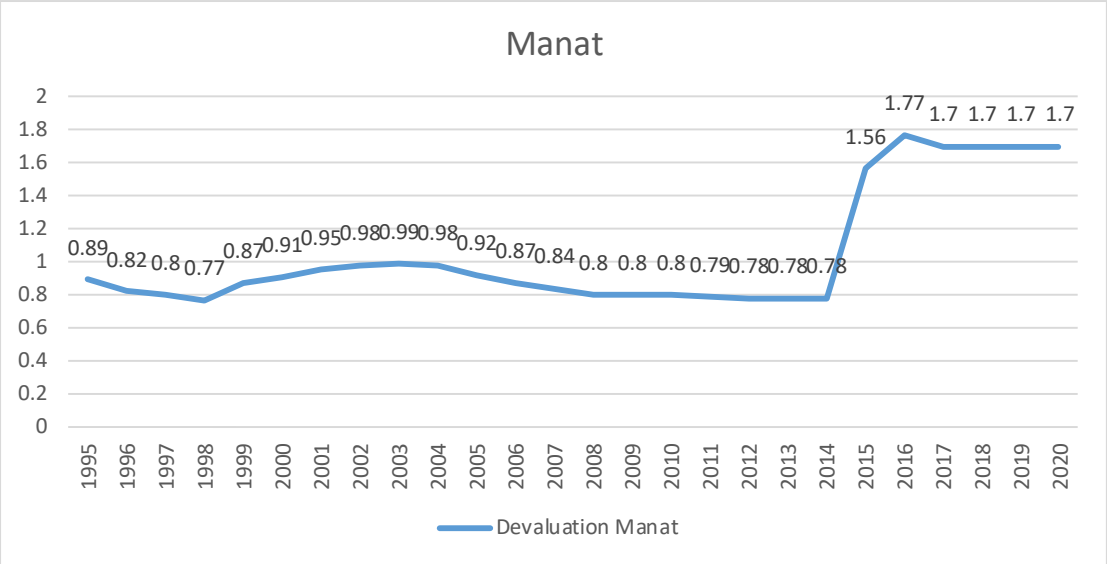
2006[170]. In order to reduce the financial risks connected with the massive inflow of foreign currency between 2005 and 2014, the CBAR implemented a fixed exchange rate policy. The primary buyer was CBAR since households and businesses had little need for foreign cash. Transnational Companies having direct interactions in the oil sector were required to convert foreign currencies into local currency to pay taxes and royalties. Low demand and large supply of foreign currency led to a rise in CBAR reserves. In an effort to increase the value of the Manat, the CBAR implemented a fixed exchange rate system. The Central Bank 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 in 2014–2015[171]. The Central Bank's gold and foreign currency reserves fell by $1,435 billion dollars from August to December 2014, to $13,758 billion dollars. The CBAR spent approximately $1,077 billion US in January 2015 to maintain the MANAT's exchange rate, decreasing the CBAR's reserves to their lowest point since the spring of 2013.

According to graph 2, the national currency of Azerbaijan has always keep their stable level and sometimes fluctuated between 1999 and 2007. While, due to sharp decline in oil price has disturbing effect on Azerbaijan national currency MANAT and then, MANAT has begun to lose value against the dollar.

[170] Central Bank of the Republic of Azerbaijan, (2010) "Financial indicators of the Republic of Azerbaijan for the years 2000-2009. p.6;

[171] Center for Economic and Social Development (CESD) (2016). The Economy of Azerbaijan in 2015: Independent View. CESD PRESS, Baku, Azerbaijan. p.3-25;

Graph 4. Official exchange rate of manat against foreign currencies



Source: Azerbaijan State Statistical Committee

The Central Bank stated that it was unable to control the actual situation and it would convert to a floating exchange rate system. According to the Central Bank's report, the initial devaluation was adjusted to the price of oil at 50-55 USD. The Central Bank declared a new fixed exchange rate of 1.05 AZN for USD to AZN (Statement of the Central Bank, 2015) on February 21, 2015, implying a % depreciation of the country's currency for the year. The depreciation reduced public trust in the national currency. This element accelerated the dollarization process. Domestic and commercial savings and deposits, as well as lending, were all transferred to and processed in foreign currency. The exchange reserves fell by 43.2 percent, or 4.76 billion dollars, in the ten months after the initial devaluation.

Secondary, on December 31, 2015, the Central Bank imposed "a floating exchange rate" and a following devaluation, with 1 USD = 1.5610 AZN[172]. According to the Central Bank of Azerbaijan, this decision gave the government more flexibility in adjusting the national currency's value in reaction to oil prices. However, fifteen banks failed after that year because they were unable to achieve the required funds. Since the reduction in the

[172] Central Bank of the Republic of Azerbaijan (2015). Statement on the main directions of monetary and financial stability policy for 2016. https://www.cbar.az/page-14/main-directions-of-the-monetary-policy ;

international oil price, the Central Bank's currency reserves have fallen to $12.681 billion US in early February 2015. Indeed, since the Central Bank announced the Manat's probable depreciation in the middle of February 2015, demand for US dollars has rapidly increased in the region. As a consequence of the anxiety between all of borrowers, a substantial number of deposits were withdrawn from banks, resulting in a credit constraint.

Due to the depreciation, $3 billion in US dollars has been purchased in that period. During the second week of February 2015, daily dollar demand reached $500 million US. During this time, the share of manat deposits in total deposits fell from 63.0% to 45.0%[173].

The national currency continued to deteriorate with the second devaluation, and the real conversion rate was 1 USD=1.85 AZN due to the Central Bank's restricted engagement in currency markets. For a long time, the real sector had been operating under a stable currency rate environment, and it was not prepared for devaluations in 2015. As a consequence, the real sector was burdened with debt, consumers met higher prices as their earnings declined than rose, and the banking sector was threatened with default[174].

Inflation.

The economy of Azerbaijan was severely impacted by sharp declines in price of oil in 2014-2015. Weak macroeconomic underpinnings and the economy's reliance on oil had an immediate impact on the financial sector, resulting in double-digit inflation, reduced oil income, and a drop in industrial production[175]. 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 manat's value adjustment will raise import prices, resulting in a dramatic increase in inflation. The Central Bank has been trying to raise inflation in order to encourage domestic and international investment

[173] Center for Economic and Social Development (CESD) (2016). The Economy of Azerbaijan in 2015: Independent View. CESD PRESS, Baku, Azerbaijan. p.17;

[174] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70-76;

[175] Ibadoglu, G. (2014). Azerbaijan's Economic Model and it's Development Since Independence. http://azerireport.com/index.php?option=com_content&task=view&id=2981&Itemid=55

in the country's economy. CESD expects a 14.0 percent inflation rate for 2015, taking into account the amount of depreciation[176].

Inflation in Azerbaijan has risen as a result of the devaluation and increasing import prices. Food prices increased by 6.6 percent in a month, while non-food products and services prices increased by 3.1 percent and 1.3 percent, respectively.

The number of salaried workers decreased by 0.8 percent in December 2015, to 1 million 504 thousand, according to official data. This drop was observed in both the public and private sectors. Azerbaijan lost its "middle income economy" rank in 2015. Due to deteriorating macroeconomic environment and a severe depreciation of the national currency, entrepreneurs faced high borrowing costs. Some business owners have declared bankruptcy, while others have reduced their workforce. Observations show that the unemployment rate has increased recently, although there are no official figures on the number of enterprises that have closed in recent years. Nevertheless, the government reported a 13.2 % inflation rate in 2016. According to the Azerbaijan State Statistics Committee, the inflation rate in 2017 was 12.5 percent higher than the same period in 2016. Inflation was 8.9% compared to the beginning of the year in September 2016[177].

Prices for non-food items increased by 10.4% percent from the start of the year, food costs increased by 10.9 percent (an average yearly rate of 12.7%), and prices for services increased by 5.1 percent (an average annual rate of 5.2 percent). The increase in inflation dynamics was mainly due to the exchange rate factor.

The Azerbaijani economy experienced growth trend in 2017 as oil prices rose to more attractive levels[178]. GDP climbed by 0.1 percent in 2017 compared to the previous year, and it is predicted to expand by 1.5 percent in 2018[179]. However, the government reported that the inflation rate remained around 13.2 percent. However, as the government reported,

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[176] Center for Economic and Social Development (CESD) (2017). p.20;

[177] State Satistics Commitee (2017). "Azerbaijan in figures". Statistic journal..s.75;

[178] https://www.finanz.ru/novosti/aktsii/inflyaciya-v-azerbaydzhane-v-2017-godu-sostavila-12-9percent-goskomstat-1013021505;

[179] State Satistics Commitee (2019). "Azerbaijan in figures". Statistic journal..s.42;

the inflation rate stayed at 13.2%. Food product inflation in 2017 was 16.9%, the non-food product was 11.6%, and service was 9.3%.

Crisis Effect on Export and Trade

Azerbaijan's oil exports fell by 326 thousand tons (13.4 percent) 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% from the previous year[180]. 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 USD in 2015. The dramatic decline in worldwide oil prices is the primary cause of this drop. In comparison to the first 11 months of 2014, the amount of oil and oil products, and gas exports diminished by 53.8 percent 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 USD[181].

Azerbaijan exported 1,697,768 tons of oil over the BTC pipeline in January 2015, according to SOCAR official statistics based on CESD. 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[182].

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[180] Central Bank of the Republic of Azerbaijan (2015). Statement on the main directions of monetary and financial stability policy for 2016. https://www.cbar.az/page-14/main-directions-of-the-monetary-policy ;

[181] Center for Economic and Social Development (CESD) (2017).p.17;

[182] Mukhtarov, S., Aliyev, S., and Zeynalov, J. (2020). The Effects of oil prices on macroeconomic variables: evidence from Azerbaijan. International Journal of Energy Economics and Policy, 10(1): p.72-80;

Table 8. 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, the trade balance was 2.2 billion USD, a decline of 6 times. 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. However, the national currency's correction has made it possible to save foreign exchange reserves in the form of transfers to the government budget. The country's total strategic foreign currency reserves fell by 24.4 percent, or 12.5 billion US dollars, to 38.9 billion US dollars in 2015, according to the Central Bank[183]. In particular, the reserves of the Oil Fund decreased by 9.1 percent ($ 3.3 billion) and amounted to $ 33.6 billion by the end of the period.

As seen in the table 8, the foreign trade balance fell dramatically in 2015 compared to 2014. The entire balance of trade was USD 12,640.9 billion in 2014, however it fell to USD 2 203.1 billion in 2015.

[183] Ibadoghlu, G. (2020). Retrospective Analysis of the Initial Results of Economic Reforms in Azerbaijan: Qualitative and Quantitative Assessments. Available at: https://ssrn.com/abstract=3514310;

Investment Environment During Crisis

The World Bank did not alter Azerbaijan's position in the "Doing Business" index even though the country entered a period of stagnation in the second half of 2015. (ranking 63rd out of 189 countries)[184]. According to the research, although loan availability, power access, tax collections, customs processes, and property registration have all declined, there has been an improvement in launching a business, acquiring building permits, and, most importantly, protecting foreign investments. It's worth noting that international credit rating organizations like "Fitch Ratings" and "Standard & Poor's" gave Azerbaijan a "BBB -" rating. However, there is a considerable risk of downgrade in the near future, which might affect foreign investment flows.

The president indicated that the country's investment totaled $20 billion USD, with foreign investments accounting for 50% of the total. As a result, the amount of investment in the economy fell by 28.3 percent (or 7.9 billion USD), to 27.91 billion USD in 2014[185]. During the crisis, both international and domestic investments fell significantly, by 14.5 percent and 38.3 percent, respectively. The fundamental cause of the decline in domestic investments was the depreciation of the national currency. Moreover, increasing risks have a detrimental influence on economic activities, which may be seen as the second factor for lower investment.

According to estimates, the oil industry received around 39% of total investments in 2015, or $8 billion USD. This indicates an 18.8% rise over the prior year (6.73 billion USD, 2014, SSCRA). The main source of capital in the petroleum industry is from outside (Note: 14.9% of foreign investments were in non-oil sector)[186]. To put it another way, like in previous years, foreign investments were mostly channeled toward the oil industry.

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[184] World Bank (2016). Ease of Doing Business in Azerbaijan. http://www.doingbusiness.org/data/exploreeconomies/azerbaijan/;

[185] CESD (2015a). Devaluation of Azerbaijani National Currency; Causes and Consequences. CESD Press, Baku. p.14;;

[186] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70-76;

The Azerbaijani government made an effort to bring in foreign investment and integrate the nation into the world economy between 2015 and 2018. By implementing economic reforms and setting the stage for future economic growth, the government has diversified the nation's economy. However, oil and gas production, which generates roughly 91% of Azerbaijan's export revenues, continue to play a key role in the country's economy[187]. . The energy sector has been a major driver of foreign direct investment to western countries in Azerbaijan in recent years

The State Oil Fund of the Republic of Azerbaijan in 2015

Based on an average yearly price of 90 USD per barrel, the State Oil Fund of the Republic of Azerbaijan projected revenues of 13.06 billion USD and expenses of 15.06 billion USD for 2015. (at the official exchange rate on December 30, 2014). Nevertheless, the average annual oil price in 2015 was 53.4 USD, resulting in a significant decrease in the Fund's income. As a result, spending was reduced in order to lower the budget deficit and preserve the Oil Fund's reserves[188].

The Fund's income was 5.25 billion USD for the first nine months of 2015, while its costs were 6.06 billion. During this time, the Fund sent 5.35 billion USD to the state budget (converted at 1 USD=1.05 AZN since the Oil Fund had finished its yearly payments to the state budget before the second devaluation)[189]. As a result, the Fund's expected revenue and expenses were severely reduced. The Fund's contributions to the state budget in 2015 were 7.7 billion dollars, which is 41.8 percent less than what was anticipated, according to the Ministry of Finance. The devaluation that took place in February 2015 lessened the financial pressure on the Oil Fund, but for the first time, the Oil Fund was unable to fulfill its obligations before the state budget. As a result, state budget receipts decreased by 11.8 percent. As a result, compared to 2014, the transfers to the state budget were reduced by $4.27 billion, or 35.2%.

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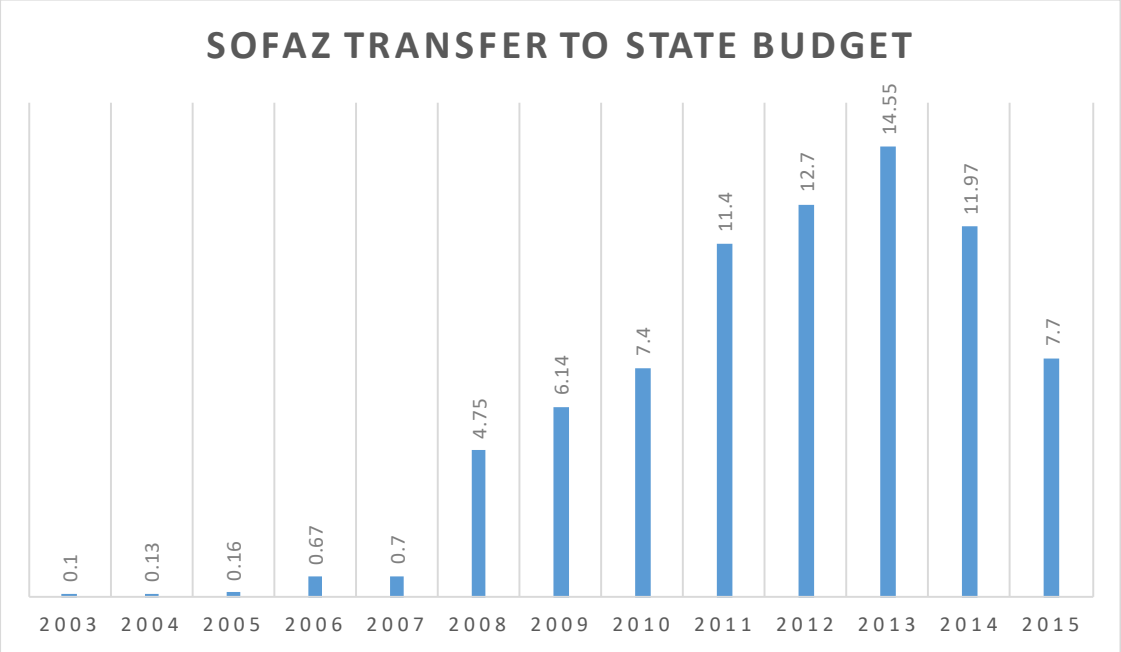
[187] International Energy Agency (2022). Oil Market Report. https://www.iea.org/topics/oil-market-report

[188] Center for Economic and Social Development (CESD) (2016). The Economy of Azerbaijan in 2015: Independent View. CESD PRESS, Baku, Azerbaijan. p.3-25;

[189] https://oilfund.az/report-and-statistics/recent-figures;

Diagram 4. Transfer from the SOFAZ to State Budget (Million Manat)



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

As seen in Diagram 6, the amount of payments from the Fund to the state budget increased quickly beginning in 2006 and peaked in 2013. In other words, the number of transfers grew 91 times between 2005 and 2013. In 2014, the government lowered the quantity of transfers in order to save money. Nonetheless, the reduction was required by the dramatic drop in gasoline costs in 2015.

The Fund's assets decreased by 6.38 percent in 2015, totaling 34.7 billion USD, according to data accessible on October 1, 2015. (01.01.2015, 37.1 billion USD, SOFAZ, 2016)[190]. Considering that only payments to the state budget from the Fund totaled 2.35 billion USD in the fourth quarter of the year, asset decline continued in this quarter as well.

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

[190] https://oilfund.az/report-and-statistics/recent-figures;

prices, Azerbaijan's GDP dropped to 53.07 billion dollars[191]. 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[192].

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[193]. 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

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[191] World Bank (2016). Ease of Doing Business in Azerbaijan http://www.doingbusiness.org/data/explore economies/ azerbaijan/;

[192] State Satistics Commitee (2017). "Azerbaijan in figures". Statistic journal..s.75;

[193] https://www.finanz.ru/novosti/aktsii/inflyaciya-v-azerbaydzhane-v-2017-godu-sostavila-12-9percent-goskomstat-101505;

to the previous year[194]. 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. il 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.

Oil price effect on saving of people

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[195]. 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.

[194] Yusifzade K.B. (2016). Status and prospects for the development of oil and gas production in Azerbaijan, journal "Azerbaijan Oil Industry", No. 11-12, p.70-76;

[195] https://www.finanz.ru/novosti/aktsii/inflyaciya-v-azerbaydzhane-v-2017-godu-sostavila-12-9percent-goskomstat-101505;

2.5.4. Impact of Covid 19 to Azerbaijan Economy

A coronavirus known as COVID-19 produces an infectious disease. The virus was initially discovered in Wuhan city, and has spread to over 200 nations across the globe[196]. When COVID-19 spread outside of China, the World Health Organization (WHO) declared a global emergency.

Even though Azerbaijan took all necessary precautions to prevent the coronavirus from spreading widely, the economic downturn and other negative consequences were unavoidable. This disaster showed the need of making preparations for recovery, preserving vulnerable members of society, and strengthening health systems. The epidemic has severely hampered corporate activity and the growth of several economic sectors. Meanwhile, the circumstance created the conditions of unemployment and potential financial concerns. Infections with the coronavirus (COVID-19) started to appear in Azerbaijan in February, with the first case being recorded on February 28. The main source of infection is likely to be travelers from Iran who entered Azerbaijan. Governments attempted a number of actions to prevent the virus from spreading extensively, the first decision to close international borders.

In regard to the distribution of resources from the state budget, the Cabinet of Ministers presented an Action Plan[197]. According to Action Plan, fund to be allocated to certain regions in order to reduce the effects of the epidemic while also promoting economic development and entrepreneurship. The state budget allocated 69 million 119 thousand manats ($40 million 658,235) to pay the salaries of employees operating in pandemic-affected areas. A total of 55 million 637 thousand manats ($32 million 727,647) was allocated to help small company owners at the same time. According to official figures from the Republic of Azerbaijan's Ministry of Finance, 35 million manats ($20,58 million) were allocated to the Entrepreneurship Development Fund to provide state subsidies for

[196] Coronavirus: impact on the global economy. https://www.statista.com/topics/6139/covid-19-impact-on-the-global-economy;

[197] http://iqtisadiislahat.org/store//media/documents/islahatlar_icmali/2020/dekabr/Islahat_avqust_eng.pdf

bank loans and lower interest rates. On the Ministry of Economy's decision, a total of 159 million 757.000 manat ($ 93 million 974,705) was paid in these sectors[198].

Without a doubt, the economic situation in Azerbaijan has been severely impacted by COVID-19 and the drop in oil prices. On April 9, 2020, 23 OPEC+ member countries discussed the coronavirus problem and resolved to cut output by 9,7 million barrels per day starting on May 1, 2020[199]. The goal of the negotiations was to achieve a worldwide market equilibrium between supply and demand.

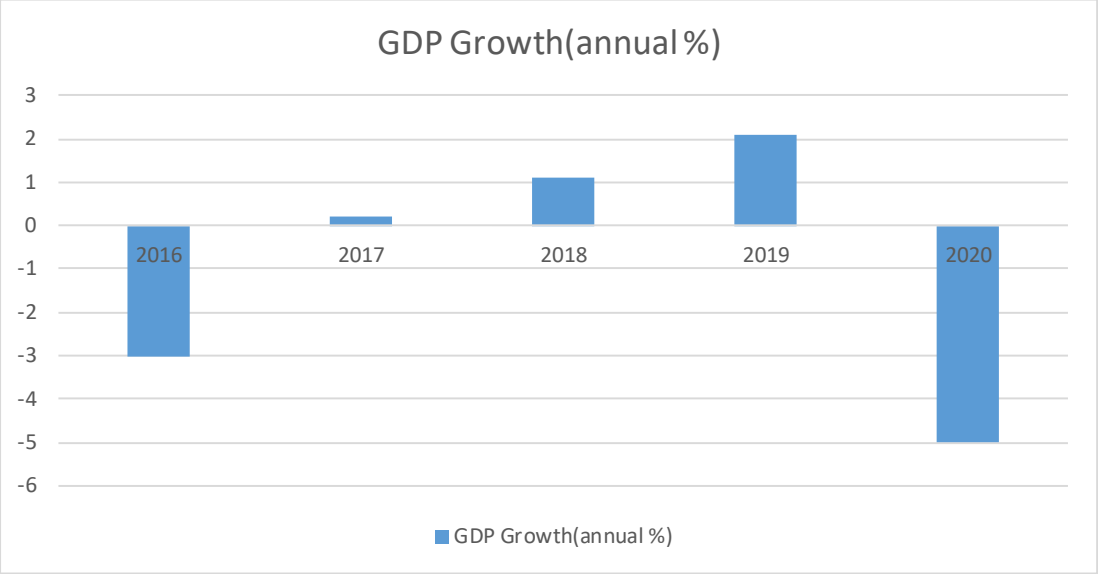
Along with other members, the Republic of Azerbaijan determined to decrease production in this way. The contract states that Azerbaijan's daily output was limited to no more than 620,000 barrels between January and April 2021 and 554,000 barrels between May and June 2020. The country's gross domestic product (GDP) for the six months ending in June 2020 was 33,803.9 million manats ($19 million 884,647), a decrease of 2.7% from the corresponding period in 2019. The oil and gas industry's value-added fell by 2.9 percent, while the economy's non-oil and gas sector fell by 2.5 percent. The dynamics of GDP growth over the prior five years are shown in the graph below.

We may notice a significant variation in the data. The predicted indication for 2020 is a -5 percent decrease. As a result, we can conclude that the projection for 2020 shows the greatest reduction when compared to last year's data.

[198] Center for Economic and Social Development (CESD) (2020). A preliminary assessment of the impact of the COVID-19 pandemic on Azerbaijani economy. CESD PRESS, Baku, Azerbaijan. p.8.

[199] OPEC (2022).Annual statistical bulletin. Available at: https://www.opec.org/opec_web/publications/202.htm;

Graph 5: GDP Growth (annual %)



Source: Azerbaijan State Statistical Committee

In this sector, industrial companies and business owners produced a total of 18.4 billion manats ($10.82 billion) in goods and services in 2018, a 1.5% decrease from 2020[200]. When making comparisons to the first half of the last year, we can see that non-oil output climbed by 11.2 percent, while oil and gas industrial production decreased by 2.8 percent. The overall value of mining sector output was 11.3 billion manat ($ 6.64 billion), down 3.0% from the first quarter of the previous season. Natural gas generated 13.8 billion cubic meters, compared to 17.8 million tons of crude oil production. As a result, gas production increased by 14.9% while oil output decreased by 4.9 percent.

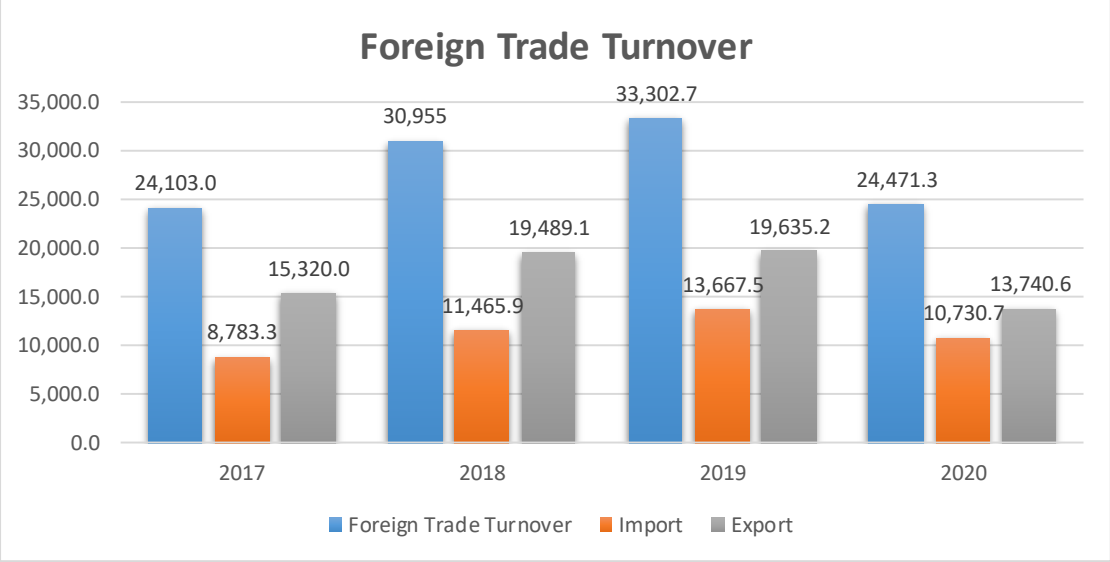
Azerbaijan's foreign trade turnover in the first quarter of 2020 was $ 6695.3 million. Exports accounted for $ 4058.3 million (60.6 percent of total trade turnover), while imports accounted for $ 2637.0 million (39.4%), resulting in a $ 1421.3 million positive balance.

According to State Customs Committee of the Republic of Azerbaijan, the foreign trade turnover in the first half of 2020 was $ 12675.8 million, a fall of 25.4 percent from the

[200] State Satistics Commitee (2022). "Azerbaijan in figures". Statistic journal..s.102;

previous year (Graph 3)[201]. In addition, taking into consideration the positive saldo ($ 2696.7 million) recorded in the first half of 2020, a reduction in export and import volumes was seen. The amount of exports has reduced by 23%. The recession might be caused by a drop in oil output and a drop in oil prices on the global market. The main part of Azerbaijan's exports is about 43.5% to Italy, 8.3% to Turkey, 6.0 % to Israel, 4.5 % towards Greece, 3.4 % to the Czech Republic, 4.0 % to India, and 3.3 % to Russia. As can be seen in Graph 3, the indices of foreign trade declined dramatically in the first half of 2020 as a consequence of the pandemic-related limitations.

Graph 6 . Foreign trade turnover



Source: Azerbaijan State Statistical Committee

Despite the fact that Azerbaijan has set aside the biggest proportion of GDP to address the economic damage caused by the epidemic, the effect of the new issues has required a budget adjustment. The growing requirements of the health sector, government assistance of enterprises and people impacted by the epidemic, and other public needs created a need for fundamentally new methods and policies[202]. The mentioned factors provided

[201] State Satistics Commitee (2022). p.104;

[202] Maksimov V.A., Anoshin V.V., Chernov I.L. (2021) Research of the markets of the main energy carriers. Ufa: BSU, 523 p;

additional problems in terms of rising state budget spending. As a result, it becomes evident that extra financial resources are required to meet all necessary costs. To overcome economic challenges and balance budget income and expenditures, modifications to the state budget were indicated, based on a soft countercyclical fiscal strategy for the present year. However, the amount of spending increases caused to increase the deficit.

When compared to the same period in 2019, the state's revenues climbed by 16.9%, reaching 10,580.25 million manats, according to a review of the state budget for the period from January to May 2020. Along with extra difficulties, an increase in state budget spending of 1371.5 million manats ($806,76 million) is predicted. The state budget must be balanced with a financial provision of 2299.0 million manat ($1352.35 million) due to decreasing revenue and rising expenses.

It is important to note that the State Oil Fund of the Republic of Azerbaijan has maintained its actions relating to the protection and sustainability of macroeconomic and fiscal balance, including the fulfillment of obligations to the state budget, despite a dramatic decrease in crude oil prices. As a result, 5,675.0 million manat ($3,338,235) was transferred to the state budget. The Fund's assets under management rose by $ 1 873.8 million to $ 43 223.3 million as of June 30, 2020. On the basis of the information provided about the reassessment of the government budget's criteria, it is suggested that SOFAZ transfers be increased from 850 million manats ($500 million) to 12200 million manats ($7176.47 million)[203]. Meanwhile, the quantity of SOFAZ income is predicted to fall by more than 40%.

Based on the information given before, we may determine that the pandemic had a devastating impact on companies and specific sectors of the economy. Thus, the pandemic was a significant component to the 2.9 percent drop in GDP in the first half of 2020, with a predicted 5 percent drop by the end of the year. Additionally, depending on data and information provided by the State Customs Committee of the Republic of Azerbaijan, we saw a considerable decrease in export and import volumes. As consumer concern grew, demand for foreign currencies steadily increased.

[203] State Satistics Commitee (2022). "Azerbaijan in figures". Statistic journal..s.106;

Without a doubt, the government has to take certain actions to stabilize and maintain the economy. Thus, the government's assistance packages were designed to aid and contribute to the economic recovery. However, it is difficult to overlook the fact that response measures should also promote economic growth in the post-pandemic phase. Because the coronavirus sickness and its consequences spread suddenly, the chances of a detailed estimation of the potential consequences seems minimal.

CHAPTER THREE

3. RESEARCH DESIGN

The previous chapter was primarily concerned with evaluating the literature related to this thesis, emphasizing existing theories and connections to the key research issues, and coming to a conclusion by outlining the broad research questions this thesis wants to address. In academic study, the effort to assess any selected theory by matching it with suitable empirical models, whether as a whole or as a collection of various but related analyses. Quantitative or qualitative methods, or a mixture of the two, can be used to conduct empirical studies. Quantitative methods are commonly accepted in the fields of finance and economics. The most appropriate strategy for addressing any empirical research topic will depend on many variables, including empirical theory, research questions, the availability of data, and the adequacy of the model, all of which fall under the general purview of the quantitative approach. The best way to address any empirical research issue will depend on a number of variables, including the empirical theory, the research objectives, the data that is available, and the applicability of the model, all of which commonly includes the scope of the quantitative approach.

This chapter provides the basis for model specification in the empirical analysis by presenting the empirical models used to address the research questions as supported by the applicable theories. To make each instrument in the system of analysis complimentary, models were either chosen separately or collectively. The validity of the analysis and the trustworthiness of the conclusions are increased when multiple models are used in a single investigation. As a result, similar models are detailed together, highlighting their possible significance in each scenario, in the model descriptions and specifications that are offered in the following sections.

Since oil is the primary global commodity with an impact on countries' economies, it has been crucial to the growth of both developed and developing nations[204]. The importance of oil and its impact on nations' economies, particularly in Azerbaijan, are discussed in

[204] Kitous, A.; Saveyn, B., Vandyck, T.; Santos, R.L. (2016). Impact of Low Oil Prices on Oil Exporting Countries; JRC Science Policy Report; Publications Office of the European Union: Luxembourg, p.362;

detail in the previous chapter. We used secondary data from the World Bank, IMF, Trading Economy, Azerbaijan State Statistical Committee, and the Central Bank of Azerbaijan for this study. All of this information was utilised in this research's analysis. The goal of this section of the study is to conduct an econometric analysis of the impact of crude oil prices on macroeconomic variables in Azerbaijan during a 25-year period, including export, savings, and foreign direct investment.

The Republic of Azerbaijan's primary export is crude oil, and this commodity has a significant economic impact on the country. Therefore, we investigate whether economic metrics are impacted by changes in global oil prices. According to OEC global data, crude oil is Azerbaijan's primary export and source of production. We used the World Bank website's Azerbaijan dataset of export, savings, and FDI to depict the indicator of variables from 1995 to 2020. This dataset can be used to investigate the relationships between variables through various tests.

We evaluate the impact of oil price fluctuations on various economic factors. We performed additional statistical analysis in the data and methodology section, including the use of descriptive statistics, the ADF test, cointegration, and VEC models. The Granger Casualty test is an additional test that aids in understanding the relationships between variables by demonstrating how they impact one another. In this study, we analyze our quantitative data using the VEC model.

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 project's "Empirical Results" section.

CHAPTER FOUR

4. DATA AND METHODOLOGY

The primary export in Azerbaijan is crude oil, and its value is greatly influenced by changes in oil prices. This chapter's goal is to examine how these fluctuations affect Azerbaijan's macroeconomic metrics. There have been numerous attempts to demonstrate how changes in oil prices affect the key macroeconomic indicators, as we discussed in the chapter before. There are so many scientific papers and research studied about the oil price influence in the Azerbaijan environment.

As stated by Ekong and Ebong [205] "Over the past few years, there has been debate on the effects of sudden changes in the price of crude oil on many economic factors. Controversial in that various and conflicting outcomes have been attained despite the pressing need to reduce the damaging effects of these oil price shocks on the economy". 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 specific oil price increase's direct impact 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.[206] As well demonstrated in this dissertation, the Azerbaijan economy is fully exposed to major crude oil price distortions. In this dissertation, we have mentioned all the factor that effect on economy related to oil price changes in previous chapters. We will show you statistical analyze in this part of research.

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

In this research, we take 25 years of data to analyze the result of oil price fluctuation. Our data is collected from world bank, Azerbaijan State Statistical Committee and Statista.com

[205] N. Ekong and D. Ebong (2016). On the Crude Oil Price, Stock Market Movement and Economic Growth Nexus in Nigeria Evidence from Cointegration and Var Analysis. Asian Journal of Economic Modelling, 2016, 4(3): p.112-123;

[206] Horsnell, P. (2004). Why Oil Prices Have Moved Higher, Oxford Energy Forum, Oxford. p.403;

website. We analyze with this data how oil price change in the world effects on these economic variables in Azerbaijan. For getting dataset, we use World Bank and Azerbaijan State Statistical Committee open dataset, which contains data of economic variables of the member countries in the world and official dataset of Azerbaijan. It considers as one of the most reliable source of the data. This chapter considers the influence of oil price changes on such macroeconomic variables:

1. FDI – Foreign Direct Investment.

2. Gross Saving – Saving, US $ million.

3. Export - Export, US$ million.

FDI

One of the most significant economic factors, FDI is correlated with a number of other macroeconomic variables. Furthermore, we decide to use it in our mode. 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.[207]. Therefore, unexpected change in crude oil price can directly effect on this variable.

[207] State Satistics Commitee (2022). "Azerbaijan in figures". Statistic journal..s.94-100;

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.

Table 9 show us 25 years of data of these variables. The given data is collected from Azerbaijan Statistical Committee and World Bank. We set up our model by using this information.

Table 9. 25 years of Data of Economic Variables

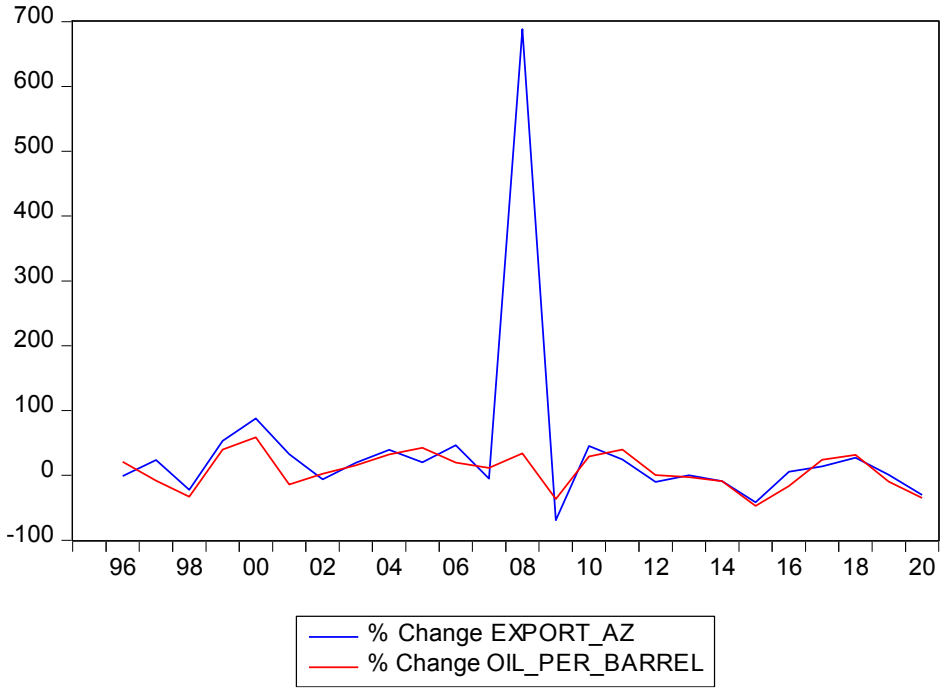
Year	Brent Oil Price per Barel	Export (USD)	FDI, net inflows (US$)	Gross savings (US$)
1995	17.20	637,199	330,050,000	173,818,121
1996	20.80	631,246	627,277,000	63,900,254
1997	19.10	781,310	1,114,838,000	547,291,174
1998	12.80	606,151	1,022,967,000	265,891,888
1999	17.90	929,664	510,317,000	431,320,961
2000	28.40	1,745,220	129,937,000	815,297,415
2001	24.45	2,314,206	819,579,000	1,128,174,902
2002	25.01	2,167,400	2,024,577,000	1,225,589,668
2003	28.83	2,590,378	4,007,330,000	1,704,018,533
2004	38.10	3,615,450	4,719,107,000	2,203,783,049

2005	54.38	4,347,151	4,476,396,000	5,124,213,924
2006	65.14	6,372,165	4,485,966,000	9,291,305,288
2007	72.52	6,058,222	4,594,234,000	14,743,810,592
2008	96.99	47,756,040	3,986,807,000	24,152,581,207
2009	61.51	14,701,359	2,900,030,000	17,629,829,721
2010	79.47	21,360,210	3,352,997,000	23,367,403,863
2011	111.26	26,570,898	4,485,120,000	30,513,212,571
2012	111.63	23,907,984	5,293,250,000	30,527,000,927
2013	108.56	23,975,417	2,619,437,000	31,273,125,934
2014	98.97	21,828,609	4,430,466,000	30,234,632,296
2015	52.32	12,729,139	4,047,630,000	14,594,857,922
2016	43.67	13,457,592	4,499,666,000	8,361,642,997
2017	54.25	15,319,977	2,867,487,000	11,647,002,309
2018	71.34	19,489,068	1,402,998,000	14,946,425,941
2019	64.30	19,635,203	1,503,918,000	13,559,780,113
2020	41.96	13,740,568	382,800,000	10,118,968,588

Source: State Satistics Commitee and World Bank

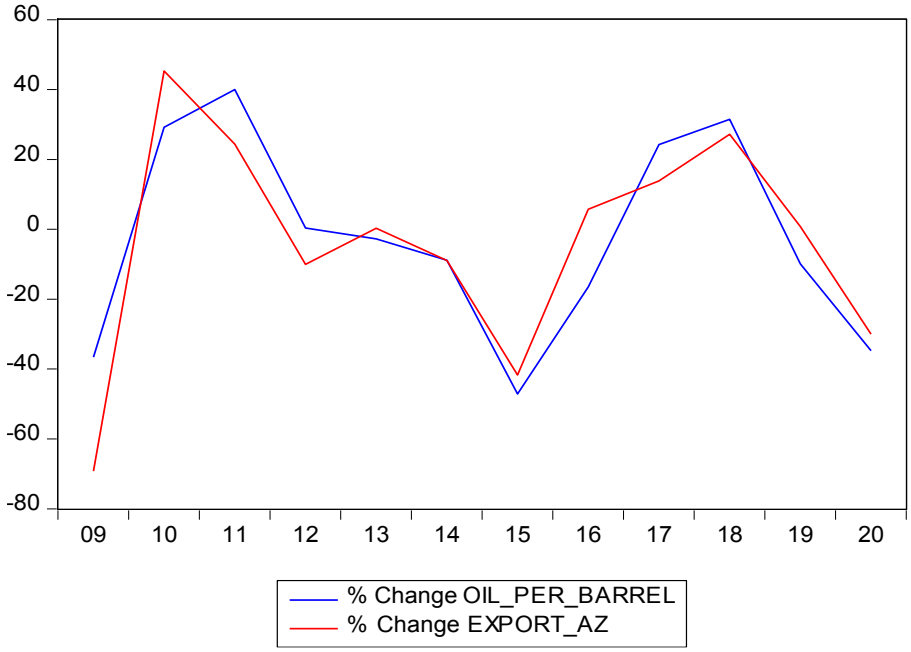
According to the given data below, we will look at the graphs of the variables and check whether there is a trend. Apart from that, we make a correlation analyze according to given graphs.

Graph 7. Export and Oil price fluctuation from 1995 to 2020



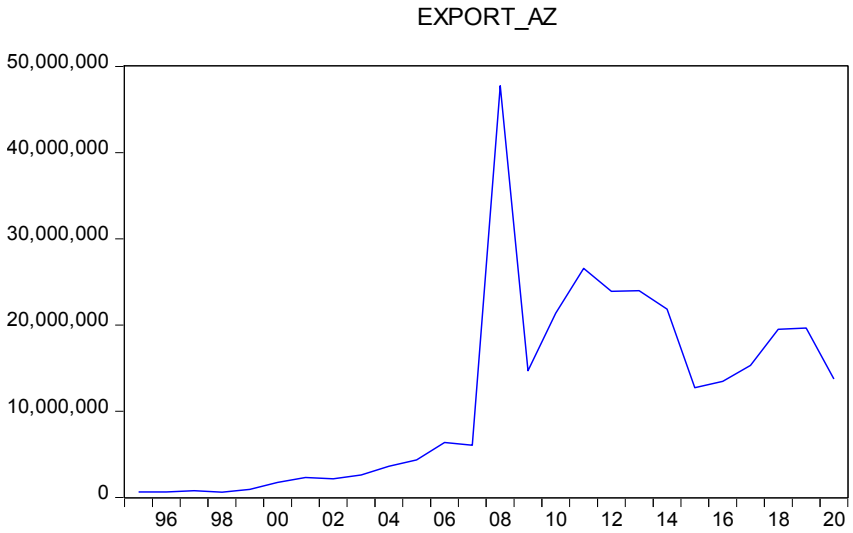
Source: State Satistics Commitee and World Bank

Graph 8. Export and Oil Price change after 2008 crisis



Source: State Satistics Commitee and World Bank

Graph 9. Changes in exports between 1995 and 2020

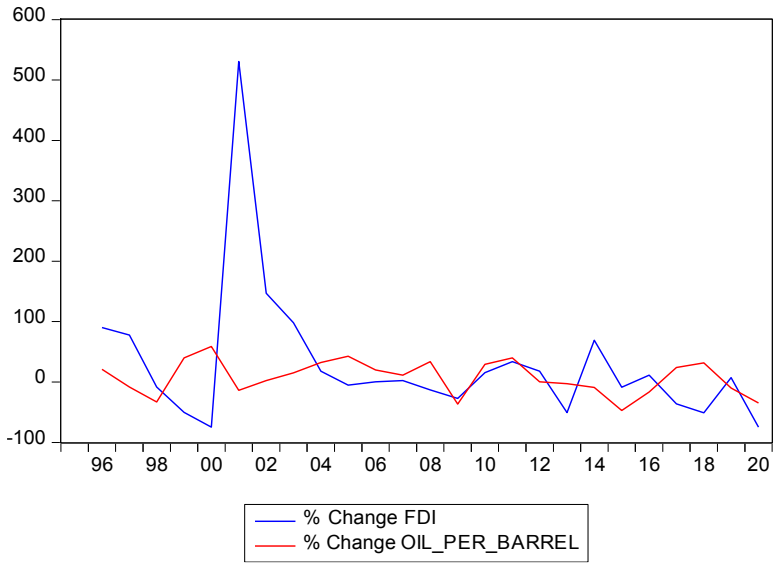


Source: State Satistics Commitee and World Bank

According to graphs of Export, we can understand that there is a upward trend and after 2007 it shows sharp increasing until 2009. Moreover, the result of correlation analyze

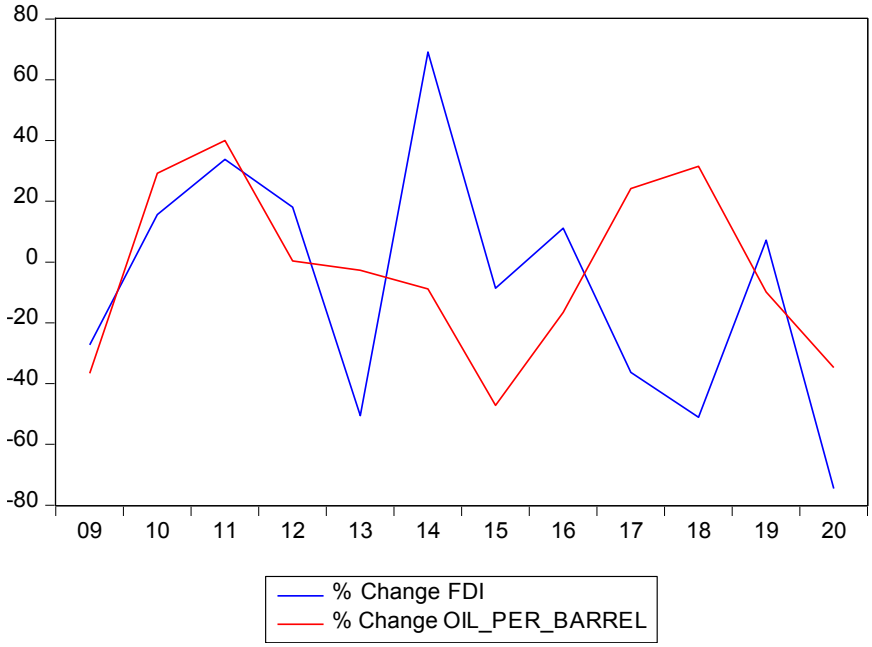
show that there is 84% correlation between Export and Oil price. This means that these variables depend directly on each other.

Graph 10. FDI and Oil price change from 1995 to 2020



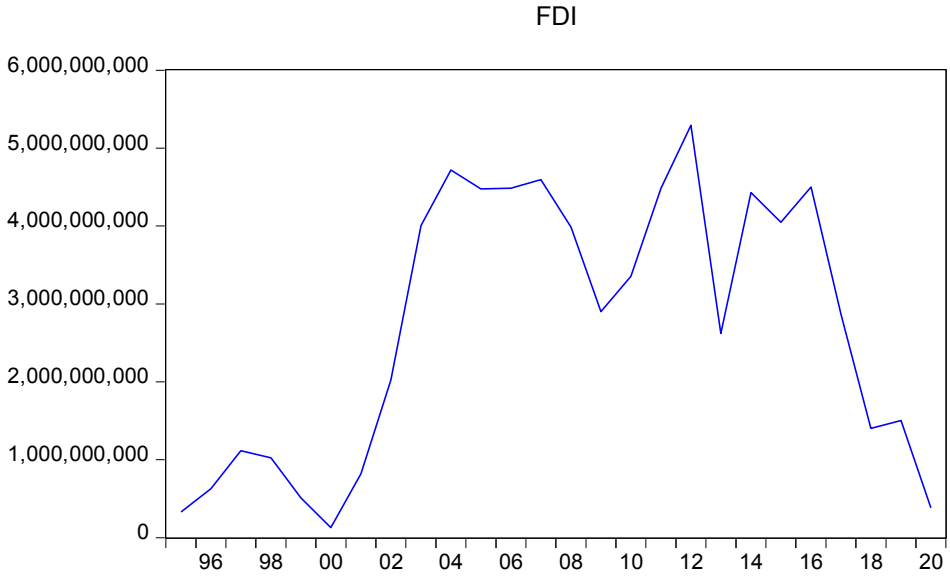
Source: State Satistics Commitee and World Bank

Graph 11. FDI and Oil price change after 2008 crisis



Source: State Satistics Commitee and World Bank

Graph 12. Changes in FDI between 1995 and 2020

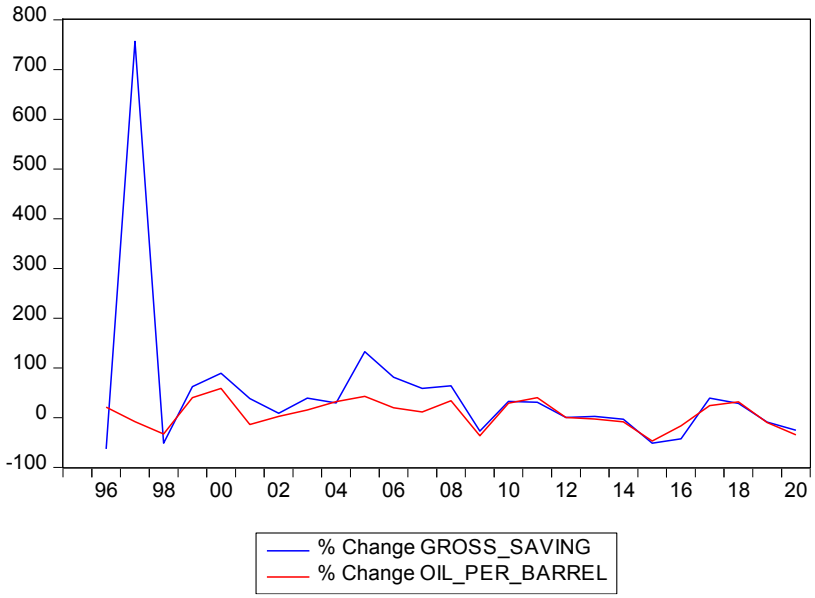


Source: State Satistics Commitee and World Bank

FDI graphs show that there is no trend between 1995 and 2020. According to graph 12, FDI has increased significantly after 2000 and 2009. The main decreasing has happened in FDI after 2008 because of financial crisis. This process then took place in 2014 and 2019, when oil prices fell and the COVID 19 pandemic spread, respectively[208]. According to graphic and correlation analysis, there is a 62% positive relationship between these two variables. Although there is no complete connection between them, they generally move in the same direction. According to graph 12, there is no trend in this chart, because there is no serious change.

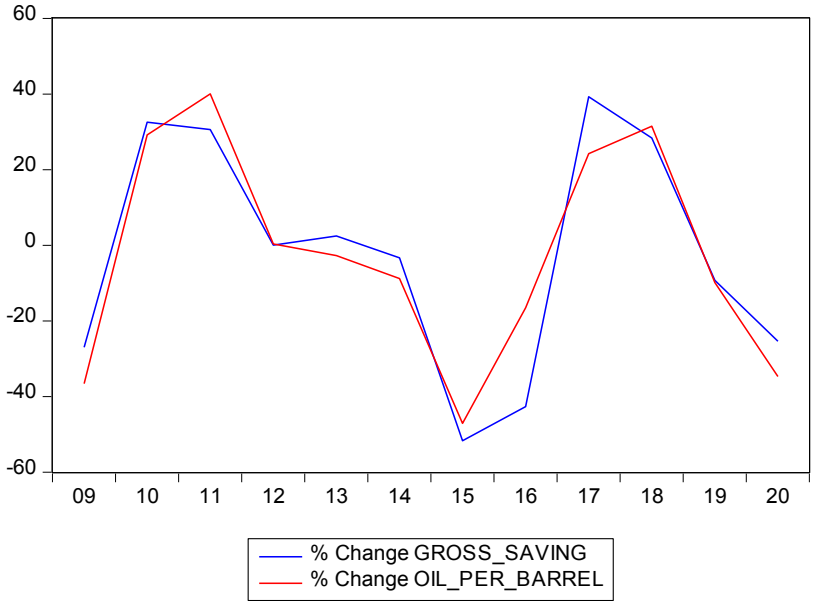
[208] bp.com/content/dam/bp/en/corporate/pdf/energy-economics/energy-outlook/bp-energy-outlook-2021.pdf ;

Graph 13. Gross Saving and Oil price change from 1995 to 2020



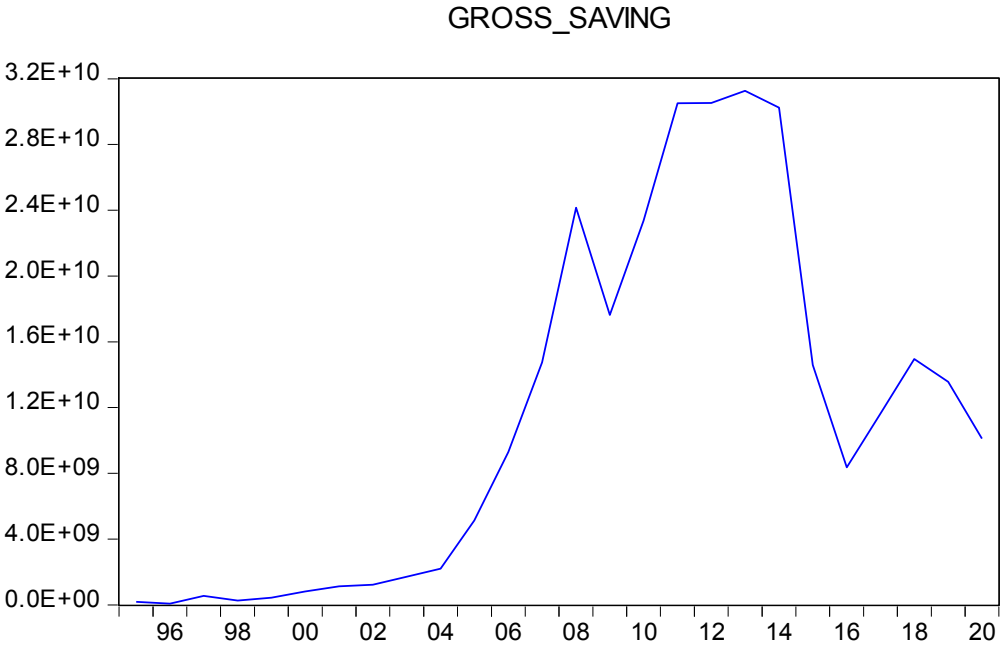
Source: State Satistics Commitee and World Bank

Graph 14. Gross Saving and Oil price change after 2008 crisis



Source: State Satistics Commitee and World Bank

Graph 15. Changes in Gross Saving between 1995 and 2020



Source: State Satistics Commitee and World Bank

According to this graph and correlation analysis, 96% gross saving oil price is related to each other and moves together. The impact of oil prices on savings is very high. Thus, we clearly see from the graph 13 and 14 that gross saving and oil price up and down together, 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.

After checking trend and correlation of variables, we will look at descriptive statistics of variables to get general information about the data.

4.2. Descriptive Statistics

The statistical characteristics of the study's variables are covered in this portion of the study. The descriptive statistics offer short explanations of the sample and data measures. Among the metrics frequently used to describe data collection are metrics of central tendency and metrics of variability or dispersion.

The mean, median, standard deviation, kurtosis, Jarque-Bera, and probability are among the properties that are discussed. The findings are shown in the table. There are 25 observations total for all the variables over the 1995 to 2020 analysis period.

There are two types of descriptive statistics: measures of central tendency and measures of variability, commonly referred to as measures of dispersion. The variance and standard deviation are the two most often used metrics of variability. These are used to quantify the dispersion or variability of your data.

Standard Deviation (or Variance).

A collection of values' variance or dispersion is measured by the standard deviation. As opposed to a high standard deviation, which denotes a larger range of values, a low standard deviation shows that the values tend to be near to the mean (also known as the anticipated value) of the set.

Skewness

It is a measurement of the asymmetry of the probability distribution around the mean of a real-valued random variable. A positive, negative, zero, or undefined value for the skewness may be used. A distribution's tail is often on the left side of the distribution if the skew is negative, and on the right if the skew is positive.

Kurtosis is "tailedness" measure of a probability distribution. Kurtosis characterizes the form of a probability distribution similarly to skewness. Any univariate normal distribution has a kurtosis of 3. The kurtosis of a distribution is often compared to this number.

Test for normality

The assumption of normality is made by many statistical tests, including the t-test and the F-test, and the Jarque-Bera test is typically run before one of these tests to confirm normality. To determine whether a normal distribution is present, the test precisely evaluates the data's skewness and kurtosis.

The Jarque-Bera Test defined as:

- Null hypothesis H0: The data is normally distributed.
- Alternative hypothesis H1: The data are not normally distributed, or more specifically, the deviation from normality is statistically significant as determined by the test statistic.

Table 10. Descriptive statistic of variables.

Descriptive Statistic				
	Brent Oil Price per Barel	Export (USD)	FDI, net inflows (US$)	Gross savings (US$)
Mean	54.64846	11817993	2.72E+09	1.15E+10
Median	53.285	9550652	2.88E+09	9.71E+09
Maximum	111.63	47756040	5.29E+09	3.13E+10
Minimum	12.8	606151	1.30E+08	63900254
Std. Dev.	31.74924	11514149	1.73E+09	1.10E+10
Skewness	0.456594	1.184947	-0.140477	0.601698
Kurtosis	2.01926	4.507423	1.444097	2.030132
Jarque-Bera	1.945413	8.546113	2.708084	2.587872
Probability	0.378059	0.013939	0.258195	0.274189
Sum	1420.86	3.07E+08	7.06E+10	2.99E+11
Sum Sq. Dev.	25200.36	3.31E+15	7.49E+19	3.03E+21
Observations	26	26	26	26

We have 4 variables Brend Crude Oil Price, Exports(USD), Foreign Direct Investment(FDI), Gross savings (% of GDP) and. The fact that all variables are expressed in million US dollars, which is a significant amount, results in large variation. According to Skewness and Kurtosis, only FDI has a left tail, whereas exports have a distribution that is higher than the mean. We cannot reject the null hypothesis in the Jargue-Bera test for

FDI, Gross Saving, Export, and Brent Crude Oil even at the 90% significance level, suggesting that all of these variables have a normal distribution.

Table 11. The correlation analysis of variables

	Correlation			
	LOG_EXPORT	LOG_FDI	LOG_OIL	LOG_SAVING
LOG_EXPORT	1	0.58736	0.932395	0.962976
LOG_FDI	0.58736	1	0.649547	0.658354
LOG_OIL	0.932395	0.649547	1	0.940786
LOG_SAVING	0.962976	0.658354	0.940786	1

We use Pearson correlation analysis for getting general knowledge about the relationship among the variables. According to the correlation test, we see that exports have a positive and high correlation with oil price and gross savings, and a 58% correlation with FDI. Moreover, Gross Saving has also positive and high correlation with export and oil. In general, all of metrics have positive relationship among themselves.

. 4.3. Unit Root Test

Stationarity tests, such as the KPSS test, which analyzes the null hypothesis H0 that the series is stationary, and unit root tests, such as the Dickey-Fuller test and its modified version, are two distinct procedures[209]. The Phillips-Perron test (PP), or the Augmented Dickey-Fuller test (ADF), where the alternative null hypothesis is that the series has a unit root and is thus not stationary. I performed the ADF test to verify the data's stationarity in our model. Compared to the Dickey-Fuller test, the Augmented Dickey-Fuller test is more effective and can support more complicated models. In order to determine if a particular Time series is stationary or not, statisticians often utilize the Augmented Dickey Fuller test (ADF Test). The Augmented Dickey Fuller Test is typically characterized as:

H_0: There is Unit Root in the Data Series - Data is NOT Stationary

H_1: There is No Unit Root in the Data Series - Data is Stationary

[209] https://handwiki.org/wiki/Johansen-test;

A stochastic process known as a stationary process has an unconditional joint probability distribution that remains constant over time. We should first examine the variables' stationarity characteristics. We use ADF tests and the results of unit root tests are presented in below table. We discover that while the variables are stationary at the first difference, they are non-stationary at their levels. Our conclusion that variables are permits us to continue to the cointegration test.

Table 12. Argumented Dickey-Fular test

Augmented Dickey Fuller Unit Root Test at Level				
	Brent Oil Price per Barel	Export (USD)	FDI, net inflows (US$)	Gross savings (US$)
t-Statistic	-1.599935	-2.769281	-1.615656	-1.341082
Prob.*	0.4678	0.0771	0.4601	0.5941
Augmented Dickey Fuller Unit Root Test at the Fist Difference				
t-Statistic	-4.083931	-8.160941	-5.105729	-3.746884
Prob.*	0.0045	0.0000	0.0021	0.0383

In this study, level data are used as the input, Trend and Intercept are used as the test equation, and 3 delays are used as the maximum. The null hypothesis, which stated that our data are not stationary at the level, cannot be rejected in any test. In this study, we utilize the first difference in the logarithmic data to make the model stationary. Our indicator becomes stationary when we take the first difference in the data.

Table 13. KPSS Test Result for Economic Variables

	Asymptotic critical values*:	**Kwiatkowski-Phillips-Schmidt-Shin test statistic**

	1% level	5% level	10% level	
Export	0.739	0.463	0.347	0.511602
Gross Saving	0.739	0.463	0.347	0.438268
FDI	0.739	0.463	0.347	0.278062
Oil Price	0.739	0.463	0.347	0.441656

According to our KPSS test result, Exports validate the ADF test at 5% and 10% significant levels. Gross Saving and Oil Price validate ADF test at only 10% significant level. While, FDI cannot validate the ADF test result.

Determine optimal Lag

We can see that our values are not stationary, then take the first difference to make them stationary. Now that we understand how many lags we use, we can examine co-integration. Additionally, we use a VAR model to establish the ideal lag. When using three lags, the best lag is determined using the AIC, SC, and HQ information criterion. Assumedly, when choosing the right lag, one should take into account SIC for large samples and AIC for small samples. Additionally, because there are only 25 observations in our data, we apply 3 delays and consider AIC.

4.4. Cointegration Test

Test for Cointegration A linear combination of two or more non-stationary series may be stationary, as discovered in 1987 by Engle and Granger[210]. They suggested examining the non-stationary time series for cointegration. The non-stationary time series are referred to be cointegrated if such a stationary linear integration is found. The stationary linear combination in this situation is known as the cointegrating equation, and it may be seen as a long-run equilibrium connection between the variables. If it can be shown that there is a link between the data, they argue that two or more time series variables with I (1) trends may be co-integrated. Cointegration may be tested using one of three major

[210] Robert F. Engle and C. W. J. Granger (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. Econometrica, Vol. 55, No. 2, The Econometric Society, p. 251-276;

techniques. The long-term associations between two or more sets of variables are found below methods:

1. Engle-Granger cointegration Test.

2. Phillips-Ouliaris Cointegration Test

3. Johansen cointegration Test

3. Johansen Test

In our model, we use Johansen test for Cointegration. Several non-stationary time series data are tested for cointegrating relations using the Johansen test[211]. In my study, I used this cointegration test too. This test allows for more than one cointegrating connection and is thus more broadly applicable. In order to use the Johansen process, the best lag number must first be determined.

Table 14. Johansen test for cointegration (with log data)

Johansen test for cointegration (with log data)				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.87	85.69	47.86	0.00
At most 1	0.58	36.69	29.8	0.01
At most 2	0.45	15.68	15.5	0.05
At most 3	0.06	1.43	3.84	0.23

[211] https://handwiki.org/wiki/Johansen_test;

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.87	49.001	27.58	0.00
At most 1	0.58	21.01	21.13	0.05
At most 2	0.45	14.25	14.26	0.05
At most 3	0.06	1.433	3.84	0.23

We can perform the Johansen test after obtaining the Cointegration test criteria and optimal lag interval. If our variables are cointegrated, we can apply the VEC (Vector Error Correction) method; if not, we really should make our variables stationery (by taking the difference), then use the VAR (Vector AutoRegression) model[212].

The Johansen Cointegration test is conducted with data at the logarithmic level. Because our variables have a tendency and this trend is stochastic, we choose cases 1 to 3 and 3. At the 95% level of significance, an estimation choice was taken. As can be seen, the Trace test suggests 4 cointegrating equations at the 0.05 level, whereas the Max-eigenvalue test indicates 2. The variables are cointegrated. When a series is cointegrated, models must take historical residuals into account. The best model for this estimate is the VEC (Vector Error Correction) Model. The primary benefit of a VEC model is the ability to estimate both long- and short-term relationships in a single model.

4.5. VECM Model

The vector error correction (VEC) model is a particular type of VAR for variables with stationary differences[213]. Any cointegrating relationships between the variables may also be considered by the VEC. The specification of the VEC includes cointegration relations

[212] https://handwiki.org/wiki/Johansen_test;

[213] https://www.r-econometrics.com/timeseries/vecintro/;

that limit the endogenous variables' long-run behavior to tend to their cointegrating connections while preserving short-term adjustment processes. Since the deviation from long-run equilibrium is progressively adjusted by a succession of partial short-run adjustments, the cointegration component is sometimes referred to as the error correction term. If cointegration between the series has been discovered and we are aware of a long-term equilibrium connection between them, we may apply VECM to evaluate the short-run properties of the series. We immediately turn to Granger causality tests to identify the causes of the correlations between the variables because VECM is no longer valid without cointegration.

Table 15. Vector Error Correction Estimates

Cointegrating Eq:	**CointEq1**
LOG_OIL(-1)	1
LOG_SAVING(-1)	0.00
	0.00
	[2.7e-07]
LOG_FDI(-1)	0.00
	0.00
	[-1.9e-07]
LOG_EXPORT(-1)	0.00
	0.00
	[-1.4e-07]
C	-1.69

We use level log data in the first section. In our model, oil is the dependent variable. If these equations are significant, then there is long-term causation between the variables, which is demonstrated by the long-term causality. We can see that the statistical values of gross savings, FDI, and export are significant, indicating that there is a long-term causal relationship between gross savings, FDI, and export and oil.

Table 16. VEC Model Log Data

Error Correction:	**D(LOG_OIL)**
CointEq1	-1
	-5.60E-09
	[-1.8e+08]
D(LOG_OIL(-1))	-3.16E-14
	-1.30E-14
	[-2.36934]
D(LOG_OIL(-2))	2.32E-14
	-1.60E-14
	[1.41583]
D(LOG_SAVING(-1))	1.16E-15
	-6.50E-15
	[0.17887]
D(LOG_SAVING(-2))	-5.85E-15
	-5.20E-15
	[-1.11581]
D(LOG_FDI(-1))	-2.45E-15
	-3.30E-15
	[-0.74601]
D(LOG_FDI(-2))	-1.43E-15
	-3.20E-15
	[-0.45388]
D(LOG_EXPORT(-1))	1.09E-14
	-5.90E-15

	[1.84082]
D(LOG_EXPORT(-2))	-4.86E-15
	-5.90E-15
	[-0.82966]
C	-1.690752
	-1.70E-14
	[-1.0e+14]
LOG_OIL	1
	-9.80E-15
	[1.0e+14]

The Error Correction Part, the second component of the VEC model, analyzes data using opposing variables[214]. We use logarithmic data at the first difference in this section. The long-run equilibrium is out of balance, according to cointegrating equation 1. This model exhibits a long-term association if the coefficient in front of Cointegration equation 1 is negative and significant. The Cointegrating Equation is significant in the second part, just as it was in the first, indicating that our model has a long-term relationship. This coefficient also shows the short-term adjustment of the long-term relationship at the specified rate. In our model, this rate is 1, meaning that 100% of deviations will disappear in a single time (one year because we use annual data). The causal relationships between these variables are also shown by CointEq 1. In this scenario, there is a long-term causal relationship between the variables. Differenced lag coefficients demonstrate the short-term causality between the variables. We can determine that there is a short-term relationship between the variables if these coefficients are significant. At the 99% level of significance, the coefficient of FDI, Export, and Gross Saving can be regarded significant, indicating that there is a causal relationship between FDI, Export, and Gross Saving and Oil Price in the short-time.

[214] https://www.r-econometrics.com/timeseries/vecintro/;

4.6. Granger Casuality

A statistical hypothesis test for determining whether one-time series is useful in forecasting another is the Granger causality test. The Granger causality test was created in 1969. According to Clive Granger, the capacity to predict future values of one time series using data from another time series may be used to test for causality in economics.[215] If it can be shown that a time series X provides statistically significant info about future values of Y, often via a series of T-tests and F-tests on lagged values of X, then that time series X is said to Granger-cause Y.

Granger causality tests between two variables may be carried out in a variety of methods, therefore no outcome is specific or definitive. With various lag lengths p, one may get various outcomes inside the two-variable VAR.

Utilizing the level values of two (or more) variables, the test is run to determine whether a time series is a stationary process. If the variables are non-stationary, first (or greater) differences are used for the test. The information criteria, such the Schwarz information criterion or the Akaike information criterion, is often used to determine the number of lags to be included. Any particular lagged value of a particular variable is kept in the regression if it (1) passes the t-test for significance and (2) passes the F-test for providing explanatory value to the study when combined with the other lagged values of the variable. The null hypothesis test is that the variance in y is not explained by lag-values. Therefore, x(t) does not Granger-cause y(t).

Table 17. Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(LOG_SAVING)			
Excluded	Chi-sq	Df	Prob.
D(LOG_OIL)	4.638053	2	0.0984

[215] Robert F. Engle and C. W. J. Granger (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. Econometrica, Vol. 55, No. 2, The Econometric Society, p. 251-276;

D(LOG_FDI)	0.178478	2	0.9146
D(LOG_EXPORT)	0.624439	2	0.7318
All	11.19769	6	0.0825
Dependent variable: D(LOG_FDI)			
Excluded	Chi-sq	Df	Prob.
D(LOG_OIL)	0.484402	2	0.7849
D(LOG_SAVING)	0.11583	2	0.9437
D(LOG_EXPORT)	0.188463	2	0.9101
All	1.599687	6	0.9526
Dependent variable: D(LOG_EXPORT)			
Excluded	Chi-sq	Df	Prob.
D(LOG_OIL)	0.05857	2	0.9711
D(LOG_SAVING)	1.236324	2	0.5389
D(LOG_FDI)	0.784913	2	0.6754
All	3.131809	6	0.7921

The Granger test's null hypothesis is that lagged x-values cannot account for the variation in y. In our model, there is a 10% significant causal relationship between oil prices and gross savings in the long-term while there is not any relationship between oil prices, FDI and exports in the short run. As a result, we can conclude that the main income of Azerbaijan comes from oil and oil products, so the increase in oil prices will have a high impact on the saving level of the population. At the time of high oil revenues and the low exchange rate of the foreign currency in Azerbaijan has also led to the low cost of imported

goods and low consumer spending. Since consumer spending is the main expenditure of the population, the savings level of the population is high as imported products are low when oil prices are high, and thus oil prices have a direct effect on savings.

Although the majority of Direct Investments are directed to the oil sector, there is not causality between FDI and Exports. From this we can come to the conclusion that since the main export of Azerbaijan is oil and oil products, the change in the price of oil makes the impact of the population's savings and direct investment on these exports negligible. Because the country's main source of income comes from here, the country constantly implements projects in the oil sector.

Table 18. Heteroskedasticity Test

		Chi-sq	df	Prob.
VEC Residual Heteroskedasticity Tests (Levels and Squares)		216.9264	200	0.1958

In the Heteroskedasticity test, we cannot reject null hypothesis, which means that there is Heteroskedasticity in our model.

Table 19. Tests for Normality

Orthogonalization:		**Joint Skewness (Chi-square)**	**Joint Kurtosis (Chi-square)**	**Joint Jarque – Bera**
Cholesky (Lutkepohl)	Chi-sq Value	28.74887	76.28165	105.0305
	Df	4	4	8
	Prob.	0	0	0
	Chi-sq Value	21.18057	9.386905	30.56747

Residual Correlation (Doornik-Hansen)	Df	4	4	8
	Prob.	0.0003	0.0521	0.0002
Residual Covariance (Urzua)	Chi-sq Value	38.12527	154.6801	158.2705
	Df	4	4	55
	Prob.	0	0	0

In normality analysis, all tests give us the similar results that residuals of our model are normally distributed.

Table 20. Tests for Autocorrelation

Autocorrelation LM Testests for Autocorrelation Autocorrelation LM Test

Null hypothesis: No serial correlation at lag h						
Lag	**LRE* stat**	**Df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	76.82907	16	0	27.44087	(16, 15.9)	0
2	87.25673	16	0	43.8291	(16, 15.9)	0
Null hypothesis: No serial correlation at lags 1 to h						
Lag	**LRE* stat**	**Df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	76.82907	16	0	27.44087	(16, 15.9)	0
2	97.47195	32	0	20.00814	(32, 5.3)	0.0012

We apply two lags to the LM test to examine serial correlation. At any lag where the null hypothesis indicates that there is no serial connection, both at that lag and from the first to that lag, the null hypothesis cannot be rejected. When we used the portmanteau test, we likewise obtained the same findings. Diagnostic tests generally indicate that our VEC model is substantial, except for a minor heteroskedasticity issue.

After all these tests, we conducted regression analysis to measure the effect of exports, FDI and oil price on Gross Saving. In the regression analysis, we took the gross saving as a dependent variable, and export, foreign direct investments and brand oil prices as independent variables. We use regression model to analyze the relationships between these variables.

Table 21. The Result of Regression Analysis

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.973371191							
R Square	0.947451475							
Adjusted R Square	0.940285767							
Standard Error	2692429314							
Observations	26							
ANOVA								
	Df		*SS*		*MS*		*F*	*Significance F*
Regression	3		2.87546E+21		9.58E+20		132.2202	3.18E-14
Residual	22		1.59482E+20		7.25E+18			
Total	25		3.03494E+21					
	Coeff	*St Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*

Intercept	-5969679038	1168547879	-5.10863	4.05E-05	-8.4E+09	-3.5E+09	-8.4E+09	-3.5E+09
Brent crude oil	329171635.9	37876203.86	8.690724	1.45E-08	2.51E+08	4.08E+08	2.51E+08	4.08E+08
Export	87.68	89.32382188	0.981635	0.336953	-97.5629	272.9296	-97.5629	272.9296
FDI	-0.577	0.414425058	-1.39352	0.177382	-1.43698	0.281955	-1.43698	0.281955

Formula:
Gross saving = Brent Crude Oil x 329 171 636 + Export x 87.7 - FDI x 0.6 - 5969679037 - 2 692 429 314

Based on summary statistics, we can show the effect of independent variables on Gross saving with the following formula and make predictions based on it. According do formula, the crude oil price and the export are most effected metrics on the gross saving of people.

In the previous chapters, we witnessed that the saving level of the population is directly related to the oil price, since oil is the main factor in the generation of income in the country. In addition, a significant increase in consumer spending may be observed as a sharp change in oil causes price changes in other products. An example of this is the devaluation and rise in consumer prices after the fall in oil prices.

CHAPTER FIVE

5.CONCLUSION AND RECOMMENDATIONS

This chapter presents the general results of the research and the acceptance or rejection of the hypotheses made in the chapters. 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. In this chapter, we will highlight the importance of our research, key findings, and recommendations for future generations.

5.1. Findings

In our dissertation, we examined how the negative effects of oil prices affected transition economies. Basically, countries whose revenues come from the sale of oil and oil products are most affected by these changes. Our study touched on key topics related to oil. The structure of oil, the main factors influencing the formation of its price, the role of OPEC in the oil market, etc. are covered in our dissertation. Azerbaijan sample is mainly used as a country with a transition economy in this research, and was given more attention. It is also included in Russia, Kazakhstan and some Eastern European countries. 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, we have 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, as a result of Heydar Aliyev's efforts, 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[216]. One of the main reasons for

[216] Ibrahimov R. (2010). Azerbaijan: Happiness is the Availability of Export Corridors, Available at: http://www.turkishweekly.net/columnist/2536/azerbaijan-happiness-is-the-availability-ofexport-corridors.html;

this is the new oil strategy being implemented. As a result of the implementation of the strategy, the republic's economy has integrated into the world economy.

The most momentous moment in Azerbaijan's history is the signature of the "Contract of the Century" on September 20, 1994. The decision by Azerbaijan to accept international oil corporations and profit from oil production was a success. This accomplishment allowed Azerbaijan to grow its economy and finance social projects. However, in order to sell oil to the world market, Azerbaijan decided to build the Baku-Tbilisi-Ceyhan pipeline with the help of geopolitical partners. Azerbaijan made significant investments in oil fields in the early years after gaining independence thanks to contracts with big corporations, and it also joined the ranks of nations that produce oil and gas by boosting the sale of oil through pipelines. All this financial flow helped Azerbaijan to get out of a difficult situation, as well as to develop its economy. The financial flow played an important role in restoring the social and economic situation in Azerbaijan and also enabled the implementation of major projects.

Especially, investments to Turkey in the field of oil transportation was one of the main projects. The transportation of Azerbaijani gas and oil to Europe with the route of Turkey developed the economic relation with Turkey. The present state of the economic connections between Azerbaijan and Turkey may be seen in the BTC and BTE pipelines[217].

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.

[217] Atakisiyev M. (2014). The role of Azerbaijan's oil strategy in the development of the national economy. "Tax" journal, Vol.5(119). p.78;

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." The manat saw two significant depreciations between 2014 and 2017, the first being in February and the second in December 2015. Since it is a gradual process, the sharp decline in oil prices in 2014 didn't have any significant effects until 2015. At that point, it adversely damaged the manat's exchange rate and contributed to volatility until 2017.

To summarize, the year 2015 was unfavorable for the economic growth of the country. In the short term, falling oil prices in global markets were reflected in macroeconomic indicators.

The national currency has lost its value by 50% after 2015 (30.12.2015, 1 USD=0.7844 AZN, 30.12.2015, 1 USD = 1.5594 AZN[218]). Foreign exchange holdings of the Central Bank decreased by $8.74 billion, dropping below $5 billion for the first time since August 2009. Additionally, there was a significant reduction in both the GDP and GDP per capita, which fell by 53.6 and 54.2 percent, respectively. Consequently, the former dropped to 34.9 billion USD while the latter rose to 3,657 USD.

[218] Central Bank of the Republic of Azerbaijan (2015). Statement on the main directions of monetary and financial stability policy for 2016. https://www.cbar.az/page-14/main-directions-of-the-monetary-policy ;

Government spending was reduced as a result of the state budget declining, and at the end of the year, 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. The number of paid employees decreased by 0.8%, according to data from the Statistical Committee. The economic downturn has had an impact on the investment climate. 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.

Due to a sudden devaluation, the banking industry had faced significant issues. Banks tightened their lending standards as a result of a fall in consumer and commercial credit repayment capacity that increased the number of problem loans.

In order to deal with the challenging scenario, organizations like CBAR and SOFAZ held currency auctions and other policy actions, stabilizing the manat and restoring its confidence this year. The stabilization of the manat's rate in 2017 is significant.

The low currency reserves of CBAR, which also increase the manat's extreme volatility, are problematic for the exchange rate.

Although the effects of the 2015 crisis in Azerbaijan will be corrected after 2017, the COVID 19 virus in the world after 2019 has aggravated the situation in the country again. However, this global infection has affected not only oil-dependent countries, but all countries of the world. In Azerbaijan, as in all countries of the world, there have been significant negative effects on the economy The tourism industry was among those most hurt by the travel restrictions. At the same time, it's difficult to miss the fact that services, catering, and transportation suffered big losses as well. Additionally, we noted a significant decline in the volumes of imports and exports based on the data and statistics provided by the State Customs Committee of the Republic of Azerbaijan. In order to stabilize and maintain the economy, the government had to take certain actions. As a

result, the government's assistance measures were designed to aid in and contribute to the economic recovery.

5.2. Recommendations

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 for 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.

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. Other regions and rural areas must be developed with various governmental programs in order to escape economic crises.

An improving the progress of Azerbaijan's legal system, will attract more foreign direct investment (FDIs). Since FDIs are undertaken with long-term objectives, stakeholders are reluctant to invest in high-risk environments.

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.

5.3. The Result of Analysis

In this research, we are going to use 4 macroeconomic variables of the Azerbaijan such as Oil price, Export (annual %), Gross savings (% of GDP) and FDI to analyse research. 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. As Azerbaijan has gained independence for more than 30 years, it has been very difficult to find data, and 25 years of data have been more accurate in terms of data accuracy.

In our methodology part, we show the general information about our model and which process has been performed. We make our analysis by EViews program and put the result of it in the fourth chapter. Although we used many economic variables in our analysis, we were able to obtain the most appropriate result with these given economic variables. Due to our variables is non-stationary, we made VECM analysis as a result of it.

Beginning with descriptive statistics of the variables, we learn that export, foreign direct investment, the price of oil, and gross savings are all normally distributed. Next, we apply the Augmented Dickey-Fuller Unit Root Test to determine whether or not our 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, we utilize the Johansen test to determine whether our data are cointegrated. We can 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. Last but not least, we performed diagnostic testing, which includes examining heteroscedasticity, normality, and autocorrelation. At the 95% significance level, we found that 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, we performed a regression analysis and created an overall savings formula. This formula allows us to predict the total savings with the given variables. We analyzed that the most influencing variable in gross saving is oil price.

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