THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

AZERBAIJAN STATE UNIVERSITY OF ECONOMICS

INTERNATIONAL GRADUATE AND DOCTORATE CENTER

MASTER DISSERTATION

On the topıc

"THE IMPACT OF OIL PRICE SHOCKS ON GOVERNMENT BUDGET IN AZERBAIJAN"

Alakbarov Fariz Asdan

BAKU – 2020

THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

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Elm andı

Mən, Ələkbərov Fariz Asdan oğlu and içirəm ki, “The Impact of Oil Price Shocks on Government Budget in Azerbaijan” mövzusunda magistr dissertasiyasını elmi əxlaq normalarına və istinad qaydalarına tam riayət etməklə və istifadə etdiyim bütün mənbələri ədəbiyyat siyahısında əks etdirməklə yazmışam.

NEFT QİYMƏTİNDƏKİ KƏSKİN DƏYİŞİKLƏRİN AZƏRBAYCANIN DÖVLƏT BÜDCƏSİNƏ TƏSİRİ

XÜLASƏ

Tədqiqatın aktuallığı: Məlum olduğu kimi neft Azərbaycan dövlətinin ixrac etdiyi ən önəmli xammaldır və büdcə gəlirlərinin böyük hissəsi neft satışından əldə edilmiş pullar əsasında formalaşır.Son illərdə yaşanan neft qiymətindəki kəskin dəyişikliklər və bunun Azərbaycanın dövlət büdcəsində yaratdığı kəskin dəyişiklər bu mözvünün araşdırılmasını əhəmiyyətli edir.

Tədqiqatın məqsədi: Əsas məqsəd neft qiymətlərindəki kəskin dəyişiklərlə büdcə arasında uzun müddətli riyazi ekonometrik əlaqənin mümkün olub olmadığını və belə bir əlaqənin mövcudluğu halında 1 faiz neft qiymətlərindəki dəyişikliyin büdcə gəlirlərinə necə faiz təsir edəcəyini təyin etməkdir. Nəticə olaraq isə Azərbaycanda dövlət büdcəsinin neft qiymətlərindən kəskin şəkildə asılı olmasını ortaya çıxarmaqdır.

İstifadə olunmuş tədqiqat metodları: Dissertasiyada neft qiyməti ,məzənnə və büdcə ilə bağlı rəqəmsal məlumatlar yığıldıqdan sonra, tədqiqat metodu olaraq kointegrasiya və ADF test modelləri istifadə edilmişdir.

Tədqiqatın informasiya bazası: Təhqiqatda Dünya Bankı, Mərkəzi Bank, Dövlət Statistika Komitəsinin ölkəmizdə mövcud iqtisadi vəziyyət barədə hesabatları və 1995 və 2019-cu illər arası ümumi daxili məhsul,məzənnə,büdcə gəlirləri ,xərcləri,kəsirləri və neft qiymətinin statistik məlumatları istifadə olunmuşdur.

Tədqiqatın məhdudiyyətləri: Tədqiqat aparılması zamanı hər hansı əhəmiyyətli informasiya məhdudiyyətinə rast gəlinməmişdir.

Tədqiqatın elmi yeniliyi və praktiki nəticələri: Ekonometrik analizlərin nəticəsində məlum olmuşdur ki, neft qiymətində olan dəyişikliklərin büdcə gəlirlərinin artımına qısa və uzun dönəmdə təsiri var və bu təsir müsbətdir. Lakin büdcə gəlirləri ilə məzənnə dəyişikliyi arasında tərs əlaqə vardır.

Nəticələrin isifadə oluna biləcəyi sahələr: Aparılan araşdırma nəticəsində ölkə büdcəsinin neft qiymətlərindən aslı olduğu aşkara çıxarılmışdır. Bu nəticələrin nəzərdən keçirilməsi büdcə gəlirlərinin gələcək dövrlər üçün planlaşdırılması prosesində faydalı olacaqdır.

Açar sözlər: Azərbaycan,büdcə gəlirləri,neft qiymətləri,məzənnə dəyişikliyi

THE IMPACT OF OIL PRICE SHOCKS ON GOVERNMENT BUDGET IN AZERBAIJAN

SUMMARY

The actuality of the subject: As it is known, oil is the most important raw material exported by the Azerbaijani state, and most of the budget revenues are formed on the basis of money received from oil sales.

Purpose and tasks of the research: The main goal is to determine whether a long-term mathematical econometric relationship between sharp changes in oil prices and the budget is possible, and if such a relationship exists, how one percent change in oil prices will affect budget revenues.

Used research methods: After collecting digital data on oil prices, exchange rates and budgets in the dissertation, cointegration and ADF test models were used as research methods.

The information base of the research: The study used the reports of the World Bank, the Central Bank, the State Statistics Committee on the current economic situation in the country and statistical data on gross domestic product, exchange rate, budget revenues, expenditures, deficits and oil prices between 1995 and 2019.

Restrictions of research: No significant information restrictions were found during the study.

The novelty and practical results of investigation: Econometric analysis has shown that changes in oil prices have a short- and long-term effect on budget revenues, and this effect is positive. However, there is an inverse relationship between budget revenues and exchange rate fluctuations.

Scientific-practical significance of results: As a result of the study, the country's budget depends on oil prices. Consideration of these results will be useful in the process of planning budget revenues for future periods.

Keywords: Azerbaijan,budget revenue,oil prices,exchange rate

ABBREVIATIONS

ADF	Augmented Dickey Fuller
AIOC	Azerbaijan International Operating Company
AZN	Azerbaijani manat
BP	British Petroleum
BR	Budget Revenue
BTC	Baku Tbilisi Ceyhan
CBAR	Central Bank of Azerbaijan Republic
CCR	Canonical Cointegrating Regressions
CF	Contingency Fund
EXC	Exchange Rate
FDI	Foreign direct investments
FM-OLS	Fully Modified Ordinary Least Squares
GDP	Gross Domestic Product
OP	Oil Price
OPEC	Organization of the Petroleum Exporting Countries
SMEs	Small and Medium-sized
SOFAZ	State Oil Fund of the Republic of Azerbaijan
SSC	State Statistical Committee
US	United States
USD	United States Dollar
USSR	Union of Soviet Socialist Republics
SOCAR	State Oil Company of Azerbaijan Republic

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INTRODUCTION

Relevance of the research topic: The oil price fall of 2014 has revived policy and academic interests in considerate the linking between macroeconomic performance and oil prices, mainly of oil exporting countries. A huge body of literature is already present that focuses on how oil price change influences various sides of the economic process in both developing and developed countries. This investigation stresses on the fact that unexpected and huge fluctuations in energy prices could have significant undesirable impact on oil-dependent countries.

A significant channel through which low oil prices are anticipated to impact key economic variables in oil-dependent economies is government incomes. A continuous and severe drops in government incomes would definitely harm government progress plans.

The effective oil strategy relies on the dynamic growth of the Azerbaijani economy. The country has expressively strengthened its situation in the world oil supply over the past 25 years as a consequence of the investigation, growth, production and export of rich oil fields with the desirability of huge foreign investments. Nowadays, world oil value is the most vital foreign aspect that governs the state of the Azerbaijani economy, state financial plan, foreign exchange reserves, and the exchange rate of the country’s currency. The level of world oil worth has a direct influence on government incomes, trade balance, and the expansion of the non-oil segment. By the way, the learning of the key factors influencing the formation of world oil prices and their dynamics is of countless scientific and practical significance and has converted an essential and urgent research duty to define the upcoming conditions of the country's economy and, consequently, the main directions of general public policy.

The severe decline in world oil value, particularly in recent times, being the chief source of currency inflows into the country's economy, has created unfavorable circumstances for economic growth. Most notably, the conflict between the support aspects raises the uncertainty on the petroleum sector and requirements for a more

systematic and thorough review of the global oil market aspects. The topic of this thesis is dedicated to the question of the research from this aspect.

Statement of the problem and learning level: Important issue to identify here is testing the presence of the link between budget revenue and oil price. The research level encompasses examine data of Azerbaijan for this object.

Purposes and objectives of the research: The key objective of the report is to calculate the influence rate of oil prices shocks on the country's national budget with different econometric techniques, then giving policy recommendation relies on the outcomes of the study.

Object and subject of the research: The main goals of the research are the important macroeconomic processes in the economy, the State Statistical committee data. Additionally, yearly data for oil price, Gross Domestic Product, exchange rate and budget revenue were utilized as goals of the study, while running econometric technique. The influence of the oil price shocks in the other countries were also reviewed in this research.

Research methods: In this research, techniques, for example, Fully Modified Ordinary Least Squares and other cointegration methods were used to investigate the correlation between budget revenue and oil price. All the data and relevant information were secondary.

Research database: All data relied on budget revenue, Gross Domestic Product, oil price, and exchange rate were mainly obtained from the Statistical Committee of the country. During the study, specific data points were also considered, like the Central Bank of Azerbaijan and the World Bank. All data covers the annual period of 1995 – 2019.

Research limitations: While examining all of the relevant secondary data and information in this research, no important issue has been identified throughout the process.

Scientific novelty of the research: Econometric analysis has shown that changes in oil prices have a short- and long-term effect on budget revenues, and this effect is positive. However, there is an inverse relationship between budget revenues

and exchange rate fluctuations. Consideration of these results will be useful in the process of planning budget revenues for future periods.

Scientific and practical significance of the results: As an outcome of this study approves that there is a positive and statistically important influence of oil price on the budget revenue in the upcoming future for the Azerbaijani circumstance which are in line with the expectations and with the empirical discovery discussed in theoretical frame section. The outcomes display that a 1 percent increase in oil value in result 0.36 percent increase in budget income. The consequences of this dissertation are useful for the policymakers and enlarge the economic literature for further researches in the circumstance of oil-rich countries.

CHAPTER I. OIL PRICE SHOCKS AND THEIR IMPACTS ON ECONOMY AND BUDGET

1.1. The understanding of oil price shocks

World oil prices have been increasingly unpredictable, displaying varying degrees of rise and decline over time. Volatility of oil value often depends on a variety of global economic factors. However, given that there are only a few major players controlling the vast majority of oil supplies, this volatility is determined not only by economic factors, but also by geopolitical conditions.

To analyze the value of world oil after 1945, historical attention should be paid to it. This is because the oil industry was still in its early stages before that year, the mining capacity and technological level were far from mature, added to the fact that the insignificant amount of oil consumption in the global energy consumption structure, which was well below the portion of coal consumption, had no major impact on the international balance of payments in global oil price volatility. On the other hand, before World War II, the global oil market was led by numerous Western transnational oil companies, in such a case oil worth kept to a certain degree relative constancy. Following the Second World War, most major consumption countries joined the construction era, together with the industry's growth in mining capacity and technical level, triggered the unprecedented increase in oil demand (Hamilton J. D., 2003). By 1967, oil's position of the global energy demand system eventually surpassed coal, reaching almost 40%, and transformed the world's core resources. Organization of the Petroleum Exporting Countries (OPEC) initiated in those years to establish among the energy exporting countries as a vital organization for energy cooperation. But during that period, the Western transnational oil companies still held pricing control on the global oil market, the OPEC participants had no significant influence on the global oil price at the start of the establishment, which is why the oil worth retained relative stability at the time. From 1948 to 1957, the nominal oil value continued at 2.5 to 3.0 dollars per barrel, but considered the rate of exchange in 2004, the real oil price altered nearly interval at 15 to 17 dollars per

barrel and 20 percentage growing was corresponding to inflation. From 1958 to 1970, the global oil price fell from 15 dollars per barrel to 13 dollars each barrel in real conditions. As a result, we could understand that the global oil worth was only slightly adjusted in the small scope (Hamilton J., 1996).

Crude oil is arguably one of the most significant commodities in today's industrialized economy because it indicates an essential energy source for many countries. Its price has been subjected to several instabilities throughout time period, commencing in the 1970s when the world experienced its first significant movements in the global oil price, and thereby triggering one the connection between economic development and oil price (Lutkepohl H., 2004). At that time period, something that unavoidably led macro economists to study the country's relation to oil price variations. Moreover, experimental works started intensifying its horizons, and macro economists began learning how oil prices movements affected the economic development.

As a bulk commodity which is mainly related with the daily life of public and national economic developments, the yearly consumption of oil occupies nearly 40% of total usage of total energy. But because of its indefinite supply, and enormous price variation, oil is a strategic fossil energy for all countries in the world. In the 1970s the oil crisis, which happened twice widely, caused tremendous damage to the global welfare of countries. The global pricing of oil has ranged from roller coaster levels, at a rather high point after this Century, to nearly 143 dollars/barrel in the middle of 2008 from about fifty dollars/barrel in the first month of 2007, and then dramatically lowered in the last month of 2008 than forty dollars/barrel. The global vast oil worth variation has shaped dramatic changes for the economic and security oil. Thus, it is full of realistic directive consequence to make a broad and systematical analysis and assessment for all factors, which effect the global oil price instability.

Oil is goods, it has an inclination to perceive greater differences in the global price than more unchanging investments, for instance, bonds and stocks. There are

abundant power on the world oil prices, some of them we will be summarized within the below.

OPEC (the Organization of Petroleum Exporting Countries) is the essential and main influencer of instability in the global oil prices. It is an association and encompass of 14 countries. They are from American, Asian, and African countries. It is able to control nearly 40 percentage of the world provision amount of petroleum. The Union shapes supply rates in order to satisfy market demand and, by helping to raise or decrease capacity, may affect world petroleum and gas value. Nowadays, OPEC members does not make agreement to balance the worth of world petroleum. As a consequence, oil lose worth which is bad for the oil exporting countries.

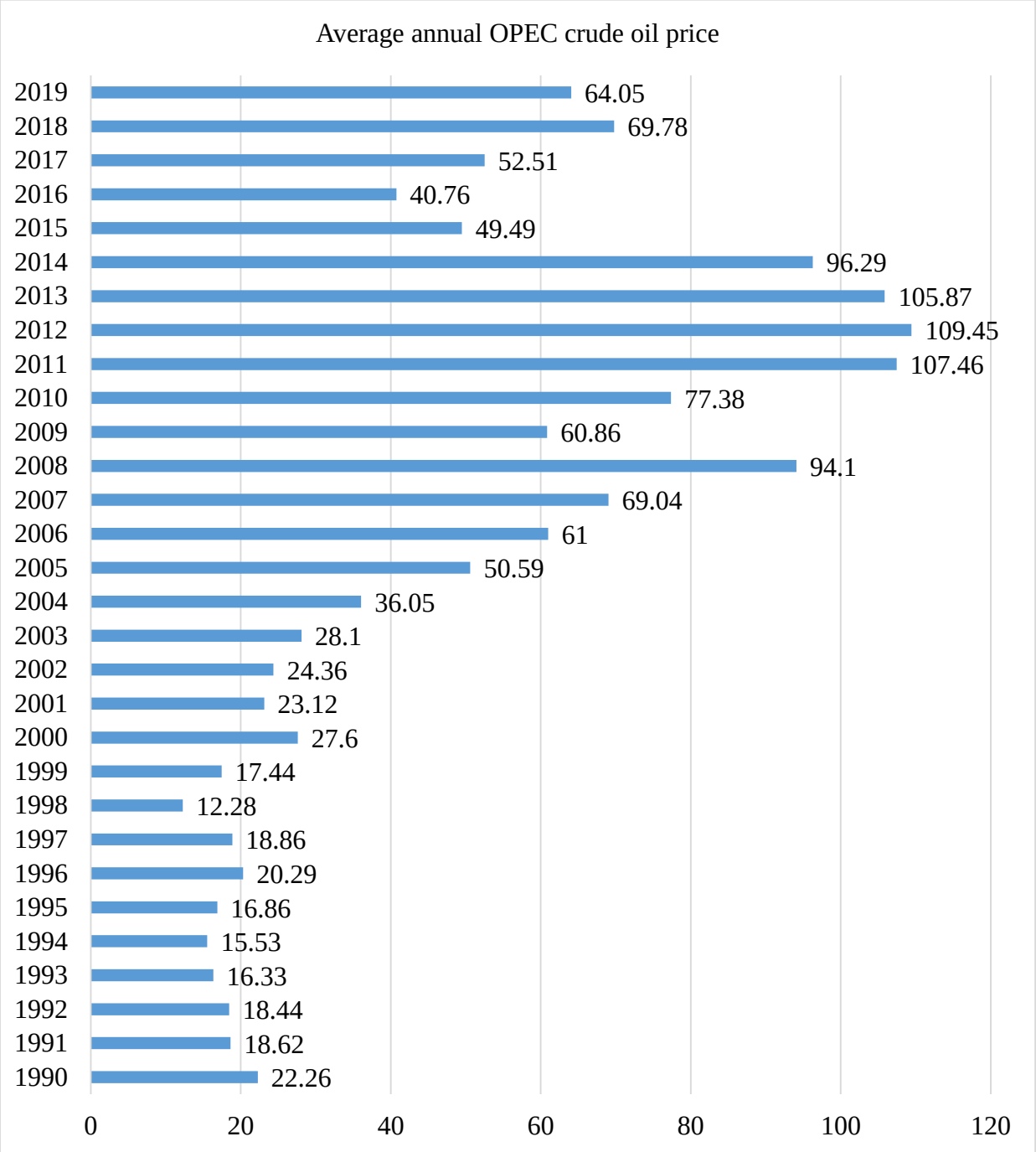
OPEC promised to preserve the global oil value above 100 dollars per barrel for the predicted upcoming periods, but in the middle of 2014, the worth of oil started to drop. It fell from a top of above 100 dollars per barrel to less than 50 dollars per barrel. It was the core reason of inexpensive oil prices, as OPEC disproved to reduce oil production, result in a diminution in the global price (Griffin J.M., 1985). With the help of the graph 1, we can see the average annual price of OPEC oil by the years. It approves that how oil price is changeable.

As with any goods, the rules of supply and demand is basis to vary in prices. When supply surpasses demand, prices diminish and the inverse is similarly right when demand beats supply (Gordon, Robert J., 1984). In addition to a constant provision of OPEC petroleum, the reduction in 2014 in petroleum worth could be linked to poorer petroleum need in China and the countries of Europe. The immense provision of gasoline has triggered to a dramatic reduction in oil worth. Since then, the worth of petroleum has altered and in September 2019 it has been priced at close to fifty-four dollars/barrel.

Though petroleum value have an effect on provision and need, the world oil worth is often regulated by upcoming contracts. A prospective oil agreement is a contractual arrangement which provides the purchaser the chance to obtain petroleum at a standard value over the next few periods. The purchaser and

vendor of the petroleum shall close the deal on a particular date, as set forth in the agreement.

Graph 1: Average annual OPEC crude oil price by years (USD)



Source: https://www.statista.com/statistics/262858/change-in-opec-crude-oil-prices-since-1960/, (11.10.2019)

Since 1974, the dollar officially linked to oil and most foreign oil transactions has been invoiced, distributed and developed in the US dollar, which implies that

the variability in the dollar exchange rate has not only a direct impact on the constancy of the world economy and the global oil price in the oil sector, but also a major effect on oil policy in oil consuming and oil exporting countries. The devaluation of the US dollar is inevitably causing the increasing international price of oil. US tolerance brings with it a decline in the price of global crude. On the one side, the devaluation of the US dollar allows the real buying power of OPEC's oil dollar income to collapse heavily on the global market, thus, to deal with such a situation, the OPEC needs to increase the price of oil for loss decrease. Conversely, the devaluation of the US dollar significantly enhances the market power of certain currencies, decreases the appeal of crude oil futures, which occurs as an investment commodity, to buyers in non-currency regions, however buying significant amounts of oil futures will result in a substantial rise in the global price of crude oil (Mork, 1994).

Possible world depressions in oil-export countries dramatically rise oil value. That is because sellers concern with the crisis will be limited supply.

That happened in January 2012 after auditors found more evidence that Iran was near to constructing nuclear weapons capabilities. The European Union and The USA initiated financial sanctions. The Republic of Iran menaced to shut the Strait of Hormuz. Then the United States replied with a pledge to open it with army whether compulsory. A warning was also raised by the possibility of an Israel attack. As a result, during November and the first month of the year, oil value splashed by roughly $95-100 per barrel. The oil value peaked over a hundred dollars per a barrel in the middle of second month and continued that price. The worth of gas has gone up to three point five dollars for unit equivalent. It was predicted that gas in the summer would be at least four dollars for one gallon (Sojoodi S, Mohseni F Z, and Aslani N M., 2006).

World insurrection as well triggered high global oil price in the second season of 2011. Stakeholders became worried about rebellion in Libya, Tunisia, and Egypt which converted recognized as the Arab Spring in March 2011. Oil prices grew

above 100 dollars per barrel in March and got its maximum of 113 dollars per barrel in April 2011.

The Arab Spring rebellions continued through the summer of 2011 and caused overthrow of despots in these countries. Suppliers were concerned that the Arab Spring would decrease oil provisions. But when it did not take place, the global oil price recurred to below a hundred dollars per barrel by the middle of June.

The oil price as well increased 10 dollars per barrel in July 2006 when the Israel-Lebanon conflict raised worries of a possible risk of conflict with the Republic of Iran. The oil price increased from its objective of nearly seventy dollars per barrel in May to a record-peak of seventy-seven dollars per barrel by July.

Political tensions in the Near East have culminated in oil markets shifting from a foreign perspective, as the country offers the greatest portion of the world's energy supply. For instance, through revolt and buyer worry over the wars in Iraq and the Islamic State of Afghanistan, the worth of oil per barrel in July 2008 was nearly one hundred and thirty-six per barrel.

Natural disasters will control oil worth if they are dramatic sufficient. Hurricane Katrina caused oil prices to raise three dollars per barrel and gas worth to extended five dollars per gallon in 2005. It affected nineteen percent of the nation’s (USA) oil production. Katrina get on the Hurricane Rita. Between these two, 113 seawards gas and oil platforms were destroyed and 457 gas and oil pipelines were damaged.

In May 2011, the Mississippi River flooding triggered gas worth to extend to $3.98 per gallon. Sellers were anxious the flooding would destruct oil refineries.

On the other hand, the Exxon-Valdez oil spill failed to cause oil prices to raise. One reason was because oil price in 1989 was first nearby twenty dollars per barrel. Furthermore, it was that only 250,000 barrels were dispersed. While this had a shocking influence on the Alaskan shoreline, it did not really threaten global source.

The BP oil spilled more than eighteen times the oil than did the Exxon-Valdez. Yet, gas and oil values barely budged as a result. Because, worldwide demand was down because of a slow recovery from the 2008 recession and fiscal crisis. Second, though 174 million gallons of oil were spread over a long period, it was absolutely.

It was also not an excessive portion of the U.S. overall oil usage. In reality it was around nine days' worth of crude oil. According to the United States Energy Information Administration, the United States consumed 6.99 billion barrels in 2010. That is slightly more than 19 million barrels a day.

Production costs may bring about oil prices to grow or decline too. Although petroleum in the Arabic countries is comparatively economical to excerpt, petroleum in Canada's soils is extra expensive. When the provision of low-cost oil is exhausted, the worth might growth if the left oil is in the deep of sands.

Production by the US also influences oil prices. With so much supply in production, the overall supply declines and the prices rise. The US has a normal daily output level of nine million barrels of oil, and it is average production, it's been downward trend. Ascending force on oil prices is set by regular weekly falls.

There are growing worries that petroleum availability is limited that influences investments in petroleum industry. Oil has risen rapidly and main center oil tanks have refilled up pretty fast. More than 77 percent of storage capacity has been utilized in Cushing one of these centers. However, the growth of the pipeline network and the decline in demand will reduce the risk in oil storage reaching its upper limits, which allows investors to shed their worries over so much output and an increase in oil prices.

While opinions are different, the fact is that interest rates and oil price possess some link among their actions, but are not interrelated exclusively. Actually, many aspects impact the way of oil price and interest rate. Sometimes those aspects are correlated, sometimes they impact themselves, and from time to time, there is no relation to what occurs.

One of the crucial models indicates that growing interest rates raise users' and producers' expenses, which cuts the extent of time and money society utilizes driving. Some parts of society on the road shows to a minor quantity of need for oil, which may be reason for oil prices to fall. In this sample, we would refer this an opposite association (Hove, P.,Sibanda, K., and Murwirapachena, G, 2015).

Additionally for similar conception, when interest rates drop, purchasers and companies are ready to borrow and use money easily, it manages need for petroleum. The larger the utilization of petroleum that has OPEC placed restrictions on supply rates, a lot of purchasers bid up the oil worth.

1.2. The impact of oil price change on Economy

Crude oil continuous to be a major driver of the global economy, and fluctuations in the price of oil have major effects on economic process, development, and welfare in countries in the world. Economists have thought of oil price shocks because of vital effects on economics variables. A numerous undesirable and positive oil price variations have been practiced by the global economy. Volatilities in oil prices have been a core reason for disturbance in economic activities of the oil exporting economies since the oil sector acts a crucial role in exports and production. Since the oil sector of oil exporting countries are subject to uncertainty in oil markets of the world; thus, the economic indicators have been affected considerably by the variations in oil value. The energy sector in these days is seriously dependent on the utilization of fossil energies (coal, oil, and gas), which together account for eighty percentage of global main energy consumption.

It is not a far leap to understand how oil prices affect the macro economy. Oil price increases are generally thought to reduce economic growth and increase inflation. In terms of inflation, oil prices directly affect the prices of goods made with oil products. Oil prices indirectly affect costs such as manufacturing, transportation, and heating. The increase in these costs can in turn affect the prices of a variety of services and goods, as manufacturers may pass production costs on to customers (Atmadja A.S., 2005). The extent to which oil price increases lead to consumption price increases depends on how important oil is for the production of a given type of good or service.

Economists disagree when it comes to the influence of rising oil prices on the economy. From one point of view, the rising energy carrier prices are growing the

output and distribution costs of everything. With demand growth slowing out production, company income plummet, and the stock market is undergoing a decline.

From the point of view of the consumers, the increase in fuel prices scares those who, seeing the loss of their buying power, minimize their spending on products not of prime need, which has a negative effect on the revenues of companies. This also has negative implications for stock markets and economic growth. The counter-argument to this view is based on the factors behind price rises. High demand is the most likely explanation for the development. A strong economy is rising energy demand, which is rising their price (Hooker M.A., 1996).

On the whole, this means good news for oil importers including Europe, China, India, Japan and bad news for exporters like Latin America, OPEC, and Azerbaijan when it comes to the influence of falling oil prices on the economy. Petroleum importers are gaining from falling prices, while oil import costs are growing. Which reduces the shortfall in the current account. In fact, the reduction in oil prices has the opposite effect for oil exporters: it lowers their production costs and contributes to a decrease in the trade surplus.

The drop in oil prices helps customers reduce living costs and save money which can be spent on more expensive purchases. In certain situations, this means a reduction of fuel costs, contributing to reduced operating prices and a lower rate of inflation. The drop in oil rates is basically a voluntary tax break. Theoretically, the fall in oil prices could lead to an increase in spending on other goods and services, as well as to real growth in GDP.

However, it may also induce deflation and a reduction in consumer trust, as they tend to conserve money instead of investing. In this case, a fall in prices rather than increasing expenses leads to a reduction in the level of inflation and the likely onset of deflation which can be extremely difficult to get out of. Another downside to low oil prices is that it can delay innovation in new sources to "environmentally friendly" electricity, such as electric cars. The fall in oil prices could halt the decrease in car usage and lead to increased traffic congestion and negative environmental

impact of gasoline use.

We generally expect OPEC to prefer the volume of the price and increase production in the near future when it comes to the law of supply and demand. However, we also expect a healthy growth in demand, together with the negative impact on non-US production in the US and non-OPEC countries, due to the continuing significant costs of cutting investment. We really do not believe Iran's lifting of sanctions will lead to a significant decline in oil prices. After decades of ineffective investment in oil field development and production facilities, Iran will need to draw billions of foreign investment to restore exports of hydrocarbons to pre-sanction levels. And global investors are more likely to be enormously cautious before investing regarding the legal and other problems these investments might face.

Unforeseen events, for instance, political instability, natural disasters, etc., can undoubtedly lead to more serious variations and higher world oil market prices.

The average price for oil in the 1980's was $36 per barrel, roughly the same as in 2004. By 2008 oil prices jumped to $97 per barrel. After the US mortgage lending crisis, accompanied by the bankruptcy of the largest financial firms, caused a sharp drop in economic activity and the collapse of quotations in commodity and stock markets in 2008, oil prices fell to $70 in 2008–2009. As an outcome, 0.6 percent of the global economy contracted in 2009, affecting foreign trade, which reduced by 11 percent following 8 percent growth in 2004-2008. Under the impact of vigorous fiscal and monetary stimulus measures taken by governments around the world, however, the world economy and markets have largely recovered in 2010–2011.

One of the main consequences of the drop in oil prices is the disruption of economies which rely heavily on oil. In the latest Venezuelan debt capacity rating, the country was downgraded by more than 40 percent because of a decrease in oil prices. That is because the country's foreign exchange and international reserves were very low. In addition, Venezuela is experiencing similar economic recessions and this is because it is incapable of providing essential services such as health care services and paying off its government workers. Russia is another country that is

adversely affected by a low price of oil.

Like Venezuela, the Russian economy relies on oil, the Russian currency rate has depreciated as a consequence. Shortage levels were immense, suggesting dealing in Russian currencies was particularly dangerous at Russia's current credit rating. It is a truth which mainly because of oil and partially because of the economic restrictions placed on Russia by the European Union, and the Russian economy is suffering a recession.

Low-priced oil not only hurts the economies of states that rely on oil production and export, but it also hurts the economies of countries like the United States and United Kingdom. The British energy market, in especially the oil industry, for instance, is facing certain losses, and this has led to the collapse of most jobs, contributing to an increase in unemployment. High unemployment levels are not good for an economy, particularly because it has the potential to decrease a given state's GDP production. There is also a decline in US oil production with the US shale sector experiencing a drop in its output. This is because shale oil producers do away with drilling rigs from the Texas and North Dakota margins. This shows the industry is collapsing, so it can cause belt tightening and job cuts. Another detrimental effect of low oil prices is a decline in innovation. Scientists would be diminishing their research because of low-priced oil, thus failing to come up with other innovative ways of depending on oil, or coming up with other measures on how to lower oil prices. It is significant to emphasize that innovation has led to the growth of the leading economies such as Germany, France, the United Kingdom, China, Japan, the United States and so on. There is a high chance that these countries would not come up with better innovative resolutions without innovation which can support their economies' growth. In addition, low-priced oil prices have a negative effect not only on oil-industry companies but also on other sectors including a service sector, manufacturing and retail.

The macroeconomic situation in the raw material exporting countries is particularly sensitive to demand fluctuations of this raw material: economic performance is weakening and external and fiscal balances are worsening when the

demand of raw materials is falling, and vice versa, an economic boom is observed when the prices of raw materials are peaking. On the other hand, the rise in oil prices for all other countries in the world increases the cost of production and decreases the profits of firms, thus affecting economic activity. In the 1960s-1980s, a negative correlation between world GDP growth and oil prices was observed.

Typically, the effect of oil prices on the economy depends first of all on its structure, theoretically it must be diverse in comparison with its Gross Domestic Product for countries which receive huge revenue from oil exports and their importing countries. There is a flow of revenues from customers, importers to producers, oil exporters in periods of high energy prices. On a global scale, such a move toward income should not lead to a global GDP change. However, there is a widespread claim that oil exporters tend to spend less and save more, because of a higher propensity to spend oil consumers than producers. As a consequence, higher oil prices could lead to a slowdown in domestic demand and ultimately to a slowdown in GDP growth around the world. Another group of researchers is of the opinion that oil producers use their savings to invest in other countries, contributing to lower interest rates and higher asset prices and thus stimulating growth. Hence, the effect of GDP slowdown cannot be unambiguous from the second group's researchers' point of view (Gounder, R, and Bartleet M., 2007).

In any case, high oil prices create certain difficulties in implementing macroeconomic policies for governments of both oil-importing and exporting countries, since both must attain multiple, often conflicting goals at the same time, including smoothing consumption, ensuring equality in the income of various generations and capital investments in order to guarantee economic growth. So, in general, at a time of high energy prices, faced with uncertainty about export earnings, these countries' governments prefer to gather buffer stocks in the form of central banks' state oil funds and foreign exchange reserves. On the contrary, oil importers demonstrate a deterioration in foreign trade balances, which exerts pressure on exchange rate depreciation and ultimately leads to a fall in revenue. The influence of oil price growth on inflation generally depends on the macroeconomic policies

pursued in the country, as well as on workers' ability to claim compensation for lower incomes in the form of wage growth, and corporate desire to save profits. All of these factors can lead to the unwinding of the wage-price spiral, when corporations and households are forced to cut their spending after decreasing incomes, leading to deflation.

A clear and more or less proven fact is the growth of economic volatility and uncertainty which affects the real economy through investment decisions. If the increase in oil prices becomes longer term, the economy shifts to new equilibrium levels. Thus, long-term trade fluctuations for oil-exporting countries lead to higher investment contributing to GDP growth. Oil importing countries do not move to lower levels of economic growth, with lower levels of both private and public spending involved.

1.3. The impact of oil price change on Budget

A budget is a forecast of incomes and outlays over a concrete future period of time and is normally put together and prepared on a periodic basis. Budgets can be prepared for an individual, a family, a group of individuals, a commercial, a nation, a transnational organization, a state or simply about anything else that makes and spends money. A budget is a micro-economic notion that displays the interchange made when one thing is traded for another. In terms of the final consequence of this exchange a surplus budget means that profits are expected, a balanced budget means that revenues are anticipated to equal costs, and a deficit budget means that expenses will beat revenues.

Government budget is estimated by an administration of state incomes and costs for a concrete time. In state budget, the time concealed by a government budget is normally one year, recognize as a financial period, which can or cannot suit with the normal calendar time.

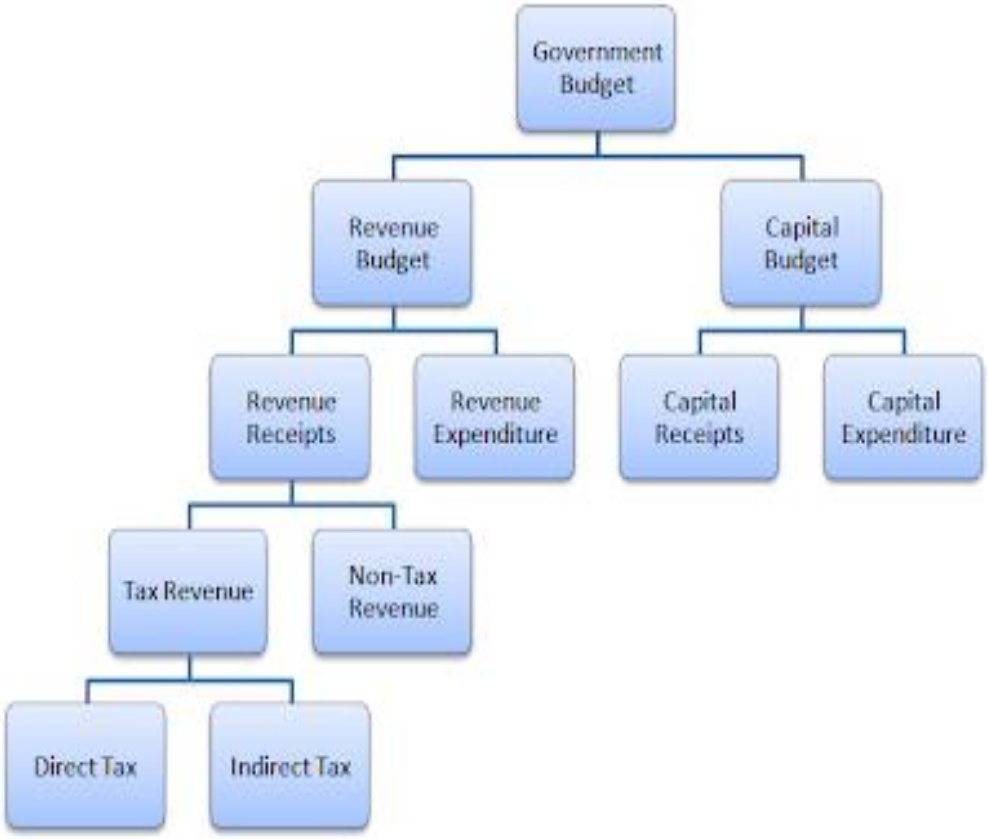
The State Budget consists of three parts: Public Account, Consolidated and Contingency Fund. Firstly, the Public account comprises the money which is not fully held by the state but which is paid directly for different organizations by the

State. It could comprise things like district savings, the aggregation of retirement funds in the pension funds of the employees and financing costs and deposit monies. It could be represented as the nation's banker budget.

As the terminology infers, the Contingency Fund is an extra money for hard situations. This comprises no actual cash, however it is a financial measure that is part of the budget, normally concealing the decided size and several unexpected expenses. Reserve fund expenses may be created with the consent of the government only and therefore have the benefits of circumventing the budget mechanism requiring statutory approval, even though the statutory seal is required in the future for the spending incurred. It lifts the numerical limit through the budgetary cycle in several countries in few years.

Most other "ordinary" budgetary transfers if they are in terms of income, capital or lending are based on the consolidated fund. The Consolidated Fund (CF) shall include non-tax income and the government tax and the governor's office shall select all expenses that are to be addressed by the CF. This Fund already meets the 'billed' expenses. There are 2 components of the Consolidated Fund of its own: the capital account and the revenue account (Graph 2). The income account covers expenses for daily government of the country, for example, salaries, wages, upkeep and renovations, day-to-day job expenditures, telecommunications and other overheads. Investment accounts include the expenses linked to the establishment of assets and this includes most plan expenditure. Possession from it is for such profits that does not share the responsibility for refunds. Besides the state's own income, this includes contributions to finance government plans from the state authority, in addition to expected contributions. Investment earnings include center loans, internal debts and the recuperation, and are included in the investment earnings, of one's own debts supported by the state to state corporate entities and businesses, and other. As long as capital spending is concerned, spending is equal to state budget expenditure and payments covering the servicing of state debt and the State loans and deposits for other bodies. Therefore, all interest and investments in the Consolidated Fund are compensated by the capital expenditure.

Graph 2: Components of Government Budget



Source: https://kalyan-city.blogspot.com/2011/02/what-is-budget-components-of-government.html, (15.10.2019)

The share of oil accounts for about 40 percent of total global energy consumption. Oil is also considered as the principal operator of global economic activity. The energy sources are used by factories, transportation, farms and other activities. Consequently, any variation in oil prices has significant economic effects on the countries that import and export. Importing countries are positively affected by the drop in oil prices, as they acquire inexpensive energy. Thus, energy input costs reduce (Jimenez-Rodriguez R., 2007). Oil in the exporting countries is considered to be the main source of the most significant micro- and macro-economic indicators, depending on the diversity of the economies of those countries.

The oil discovery had been a challenge and a significant turning point in the economies of the countries that possess it. These oil countries experienced an economic boom, and all aspects of life became deeply prosperous because of the oil

profits that contributed to the growing national income (Jimenez-Rodriguez, R. and Sanchez R.H., 2005). Oil prices during relatively close periods are subject to sharp variations which are also a major factor in global economic and financial instability. Financial and economic stability generally means avoiding sharp fluctuations in the macroeconomic and financial variables. Perhaps the most famous of these variables sensitive to oil prices is that of the public budget of the State.

The oil revenues play a key role in the economic structure of the oil exporting countries. In most of these countries, the oil revenues are a significant source of financing the budget and the government budget dependence on oil revenues is very high. It is expected that instability of the oil market influenced economy aggregate demand because the government budget constitutes an important portion of aggregate demand. So, the macroeconomic variables were influenced by the change of the oil revenues following the global variations of the oil prices. This dependence of the macroeconomic variables on oil affected the economic growth. So that the influence of declining oil price is reflected much broader on the economic activities.

Increasing in the oil price caused a transfer of income from oil- importing countries to the oil- exporting countries. Since the oil sector is one of the significant economic sectors in the oil-exporting countries and it has a major contribution to the economic value added, increasing the oil price caused the development of the oil sector which surges the domestic and foreign investment in these countries, and following that the tide of economic growth has flowed. For instance, major economic investment doing by the government in Iran, so the government expenses in construction and infrastructural arising from rises in oil revenue. The gross domestic product (GDP) raising by increase the amount of investment in construction projects, and so the government has experienced positive economic growth. In contrast, decline in the oil price, reduction the oil revenues in these countries, so at the same times, the government expenditure reduced as a result of declining in the oil revenues. This problem decreases the GDP and subsequently reduces economic growth (Yildirim Z., 2013).

CHAPTER II. THE OIL PRICE SHOCKS AND INFLUENCE OF IT ON GOVERNMENT BUDGET IN AZERBAIJAN

2.1. The brief overview of economic situation in Azerbaijan and the impact of oil price decline

Azerbaijan is one amongst the oil-reliant nations within the universe. The petroleum industry provoked thirty-one percent of the nation's Gross Domestic Product in 2015 (versus to fifty-two in 4 years before), besides this sector earnings accounted for sixty three percent of the government financial plan and comprised eighty-six percentage of country's over-all exports. Obviously, just like numerous energy-dependent nations, the decrease in oil and gas worth has a vital effect on the development of the country. Furthermore, the impact was even more terrible than predicted. Azerbaijan's oil income regulatory system relies on connecting general community budget system and SOFAZ, by which maximum petroleum earnings gather in the this organization and will be outlaying for forthcoming outlay on many capital plans rightly or via the national financial plan. The Fund's main yearly expenses are allocated to the national budget (the general public financial plan allocated an eighty-eight percent of the organization outlays of forty-seven percent of government budgetary incomes in 2015).

In the last 25 years, supplies super cycle was quite helpful for Azerbaijan's economic process Luckily that time coincide with a growth of producing in collaboration with international energy producers such as BP as well as other international companies, following the ratification of the "agreement for the Century" for the Azeri / Chirag / Guneshli areas. Azerbaijan's development in Gross Domestic Product was nearly fifteen percent from 2005 to 2010, on a regular. Through comparative analysis, Russia's Gross Domestic Product rise was nearly four percent at that time, with Kazakhstan just growing seven percent. (http://www.un.org/en/development/ desa/policy/ wesp/wesp_current /2013annex_tables.pdf, 2020). Because of the massive petroleum incomes provoked throughout the advantageous hyper period worth of petroleum, more than a figure of twenty-five

has boosted the overall public spending of Azerbaijan. All three nations created an independent fund with large currency reserves. (http://www. khazar.org /1files/ SWFs_new_book_RWI_ PFMC pdf, 2020).

These assets are anticipated to aid to fiscal constancy in the future. Until the last month of 2014, almost one hundred and eighty billion dollars (nearly nine percent of Gross Domestic Product) was deposited in Russia's reserve account. Additionally, sixty-nine billion dollars (thirty percent of the overall gross-domestic product) had been generated by Kazakhstan's Fund, whereas thirty-six billion dollars had been produced by the SOFAZ. The existing economic crisis demands the formal view of the administration into inquiry. Throughout petroleum flourishing time, our authorities stated- the nation obtained a satisfactory degree of financial sustainability. Besides that, unordered management actions display that they were badly handled at low rates for commodities. There seems to be no large and powerful strategy for the current government to adjust to the changing reality. Further important issue is inconsistency between the real representation official and statistics, for example, the amount of traded commodities, real cash flow in the country economy (some imported commodities are not displayed at the taxes' agency), tax avoidance, and others that establish the informal economy. Finally, the cause of this difference is the inadequacy in the current institutional framework, comprising tax gathering, taxes, and antimonopoly agencies.

Following the dissolution of the Soviet Union, Azerbaijan achieved its former soviet transformation into a significant petroleum industry. This shift from central planning system to market economy was having its difficulties. The country encountered dramatic GDP falls during the first years of independence. Azerbaijan has considerable oil reserves, and since the increase in oil production and the opening of the Baku Tbilisi Ceyhan (BTC) pipeline the country's economy has fundamentally changed. Since 1997, when Azerbaijan signed the Agreement with the Azerbaijan International Operating Company, oil production in Azerbaijan has increased sharply. This rapid increase in petroleum exports has caused GDP to increase. Real GDP in 2005 was over 26 per cent, thus reaching record 35 per cent

in 2006. Such immense GDP growth turned Azerbaijan into the world's fastest developing economy. However increased oil production and exports together with high prices have made Azerbaijan more focused on oil than ever before.

Because of the immense oil revenues Azerbaijan's fiscal position improved, resulting in increased budget revenues in 2006. Increased revenues from the budget allowed government to increase public spending, particularly on investments in infrastructure. Due to the massive construction-related expenses of major export pipelines, Azerbaijan had a budget deficit of 30 per cent in 2004. Once these constructions were over, the budget deficit in 2006 turned into a 16 per cent surplus, mainly due to dramatic increases in oil exports (these numbers are taken from the European Bank of Reconstruction and Development website). Continued wage increases, large oil exports increase and domestic demand growth have put upward pressure on monetary growth. The result was a continued increase in inflation, which reached about 11.4 per cent at the end of 2006 and more than 16 per cent at the end of 2005 in March 2007 from 5.4 per cent. The real exchange rate appreciated by about 10 percent per annum over the past two years raises concerns about the non-oil sector's loss of competitiveness.

Foreign direct investment (FDI) plays a significant role in Azerbaijan's GDP. FDI flows to Azerbaijan increased 6-fold, from $227 million in 2001 to $1,392 million in 2002. FDI targets mostly the oil and gas industries. The massive influx of the foreign currency into the economy was important due to it helped stabilize balance of payments.

At this time, one of the main goals of Central Bank of Azerbaijan is to preserve the balance between exchange rate and inflation. Furthermore, Central Bank of Azerbaijan retains the fiscal liquidity in order to enhancement the expansion of non-oil segment through open market operations.

This part will investigate how last fluctuations in the global oil market will affect on both income and expenses sides of the state budget. Like as petroleum exporter country, our country might experience the impacts of a severe drop in oil income after oil value drop in the global oil market. Azerbaijan seriously relies on

petroleum and natural gas export incomes. In 2013, Azerbaijan hydrocarbon exports incomes accounted for ninety-five percent of our country's overall export incomes, and sixty-four percent of total financial incomes.

In several other areas, manufacturing, healthcare and many more, the drop in oil prices on the international markets has an adverse chain effect. This drop in prices contributes to instant spending reductions in the financial spending of petroleum companies both in the market system and among encouraging certain systems. Clearly, the worth of petroleum-based commodities and other sectors are related to the value of oil and gas, the worth of petroleum is in connected to the value of other energy sources. When falling oil value remain for a long period of time, it would outcome in future declines in energy exports income, and would press the country to make tough financial decision as influences are negligible for a short period.

The years pretty quickly after the liberation of our country were not only characterized by economic turmoil but also a time interval of catastrophic financial instabilities. Previous to liberalization policy making, the Soviet Union pursued to retain socially and financially dependent upon its Soviet republics. Inside this Union, commercial ties with each Soviet republic, comprising our country, occurred almost entirely. Years, after liberalization of the country, were described as a time of explosive development, rising economic chances and enhancing community requirement for the financial system of Azerbaijan.

Ratio of petroleum incomes to the state budget incomes are nearly between sixty and seventy percent. It encompass cash contributions from both the SOFAZ and tax collections from the petroleum industry. Additionally, the organization's transactions rapidly increased in the last periods which prompted to irreversible position.

As we have seen from the table 1, nearly 90 percent of export of commodities of Azerbaijan is oil and gas. The decline in petroleum output and values, along with the developments in the global system of oil transformation process, would naturally

trigger Azerbaijan's petroleum income to decline which will undesirably impact the state spending pace. The drop in oil production have been observed since 2010.

Table 1: Export of goods from the Republic of Azerbaijan with million US dollars and the share percentage

USD	QI, 2018	QII, 2018	QIII, 2018	QIV, 2018	QI, 2019	QII, 2019	QIII, 2019
Total export of goods	4,580	5,338	5,311	5,565	4,747	5,187	5,086
Oil and gas sector	4,242	4,862	4,974	5,098	4,351	4,638	4,690
Other sectors	338	476	337	467	396	549	396
The percentage share of total	**QI, 2018**	**QII, 2018**	**QIII, 2018**	**QIV, 2018**	**QI, 2019**	**QII, 2019**	**QIII, 2019**
Oil and gas sector	92,62%	91,08%	93,65%	91,61%	91,66%	89,42 %	92,21%
Other sectors	7,38%	8,92%	6,35%	8,39%	8,34%	10,58 %	7,79%

Source: The Central Bank of the Republic of Azerbaijan, https://www.cbar.az/page-41/macroeconomic-indicators , (11.12.2019)

Oil production decreased 11, 9 million tons or nearly 23 percent over past nine years. When the heights of petroleum fields rise, additional spending is needed to develop and the implementation of modern techniques becomes necessary in many situations. Hence, all of these earlier in this thread-cited problems will bring some troubles throughout the process of dramatic worth decline.

Table 2: Oil production in Azerbaijan in 1000 tons

Year	2018	2017	2016	2015	2014	2013	2012	2011	2010
Oil production in 1000 tons	38,814	38,688	41,034	41,586	42,022	43,483	43,389	45,625	50,795

Source: SOCAR, http://www.socar.az/socar/en/economics-and-statistics/economics-and-statistics/oil-production, (08.01.2020)

Local need is rising day after day because of the growth of industrialization and parking spaces. Local need, for example, amounted to 6.4 million tons in 2010 while local consumption figures reached 6.8 million tons in 2013 with six percent growth.

Close to 33 per cent of the income is allocated and existing fund capital is established. The main direction of the costs from the income from the fund is the allocation to the state budget, hence the budget relies seriously on the oil sector.

Observed decline oil prices in the world market also affect Azerbaijan's oil sector. The rent-ability of this area that acts a critical role in forming the revenue of the state as well as a vital role in defining the export size in terms of value. SOCAR and Azerbaijan International Operating Company (AIOC) attempt to limit earnings loss throughout reducing the amount of production along with the export size if the global market perceives a drop in petroleum values. AIOC is an association set up to serve the combined progress and output division structure for Chirag, and even the deep part of the Gunashli region in our sea countryside. It agreed between SOCAR and transnational firms (Azeri/Chirag/Deepwater Gunashli/Operations-and-projects /BP Caspian". bp.com, 2020).

The country economy has been dealing with the negative effects caused by the falling oil prices since December 2015. The drop in state income from oil, together with the devaluation of the national currency, is causing in economic hardships for the local people. The present economic recession raises questions regarding the long-term stability of the country. High inflation, linked to a drop in private purchasing power together with public budget decreases, led to a series of complaints in mid-January that emphasized the growing displeasure within the country. Azerbaijani government income relies up to 75 percent on oil and gas incomes, and the drop in oil worth came as a structural shock. Definitely, authorities had initially planned a 2016 budget based on a 50 USD per barrel. Given the nonstop decrease in the oil trading price, Azerbaijan’s central bank revised its annual budget on 19 January, regulating it to 30 USD per barrel.

Table 3: Export of energy products (in volume terms)

	2010	2012	2014	2016	2018
Crude oil (including gas condensate), thousand ton	44.507,9	36.756,5	35.227,3	34.972,4	32.651,3
Natural gas, million cubic meters	6.187,2	6.616,7	8.093,2	8.049,1	9.911,8
Liquefied gases, thousand ton	155,9	90,0	35,1	58,8	82,0
Motor gasoline, thousand ton	196,8	60,1	13,4	4,5	-
Kerosene - type jet fuel, thousand ton	114,6	146,0	196,7	236,3	304,7
Naphtha, thousand ton	64,5	-	-	-	-
Diesel fuel, thousand ton	1.569,4	1.139,0	1.523,2	1.228,1	661,2
Fuel oil, thousand ton	184,3	107,1	236,8	23,4	18,6
Petroleum coke, thousand ton	389,9	192,9	286,7	172,7	227,8
Bitumen, thousand ton	14,0	11,1	3,2	-	-
Lubricants, thousand ton	80,8	49,4	36,3	9,4	29,7
Other petroleum products, thousand ton	-	-	25,8	1,9	-
Electricity, million kWt hour	462,4	680,3	489,3	1.095,5	1.445,2

Source: State Statistical Committee of the Republic of Azerbaijan, https:// www. stat. gov .az/ source/balance_fuel/?lang=en), (10.01.2020)

The table displays that our country's crude oil exports decrease compared to the earlier years. The worth of petroleum in the global sphere will systematize the amount of oil and gas exports. We will display this process for 2014.

Table 4: Azerbaijan's oil export (million tons) in 2014

Month	11-th	10-th	9-th	8-th	7-th	6-th	5-th	4-th	3-rd	2-nd	1-th
Oil Export	1.27	1.98	2.00	2.27	2.07	2.20	1.91	2.41	2.03	1.73	1.99

Source: SOCAR, http://www.socar.az/socar/en/economics-and-statistics/economics-and-statistics , (12.02.2020)

The table displays that in 11th month of 2014 Azerbaijan discovered a minimum degree of petroleum exports. Azerbaijan's exports almost 1.27 million tons, down thirty-six percentage from the preceding month. Overall, declines in

Azerbaijan's petroleum exports are recorded beginning in August 2014. As a consequence, its exports fell in November 2014 to approximately eighty per cent linked to August. In April and August 2014, the country's oil export was in maximum degree.

The assessment of the state budget is simply one among many ways authorities took in an effort to preserve the national economy system. In December 2015, the Central Bank of the Republic of Azerbaijan retains the manat (AZN) from the US dollar to defense the country's currency from the continuing loss of worth. Since then, it lost more than half of its foreign currency reserve in an attempt to border the weakening of the country`s currency. This condition clearly displays that how Azerbaijan relies on oil price and its export.

Falling oil value in the international petroleum markets had an instant negative influence on country budget implementation. In 2015 budget earnings diminished by twelve percent and government expenses fell by sixteen percent associated to official statistics in the earlier year's state budget. Reducing crude oil value and following drops in fiscal and budget earnings have enlarged the budget deficit in our country. The instability of petroleum value in the international petroleum market and the reduction of our country's foreign currency assets caused enormous rise and fall in financial factors.

2.2. The brief overview of the state budget in the strategic years

A government budget is a yearly financial report which plans the estimated state expenses and state earnings for the future monetary year. Subject on the possibility of these evaluations, there are 3 budget forms. They are a balanced, deficit, and also surplus fiscal budget plan.

A government budget is supposed a balanced budget whether the valued state expenses is the same to anticipated state earnings in a specific fiscal year. Supported by many traditional economists, this kind of budget relies on the opinion of living within means. Economists supposed the state's spending ought not to surpass their income. However, a perfect method to attain a balanced economy process and

sustain monetary control, a balanced fiscal plan does not guarantee economic constancy at periods of financial slump or downturn. Academically, it's simple to balance the expected spending and estimated incomes but when it arises to applied execution, such equilibrium is tough to reach. A state financial plan is supposed a surplus financial plan whether the anticipated government incomes surpass the predicted government expenses in a specific fiscal year. It explains that the state's incomes from customs charged are more than the volume the government uses on community standards. A surplus financial plan indicates the economic wealth of a nation. This kind of a financial plan will be applied at times of price increases to diminish total need. A government financial plan is supposed a deficit budget whether the predicted state spending surpasses the anticipated government income in a specific monetary year. That kind of financial plan is more suit matched for developing economies. Particularly supportive at the period of downturn, a deficit financial plan aids generate extra demand and enhancement the degree of economic development process. At this point, the state suffers the unreasonable expenses to progress the employment rate. Consequences in a growth in requirement for commodities and service area which aids in stimulating the economy process. The state pays this volume during the community borrowings (supplying administration bonds), otherwise by diminishing from state's collected extra reserve.

Budget procedures are controlled by the budget rule in any nation. The budget law of our country are the Constitution of the Republic of Azerbaijan, rules on the national budget accepted in harmony with the rule for budget structure, the law of our country for Budget Structure, and further normative-legal acts, along with international agreements in which our country is member of the parties.

Compiling of the government draft financial plan is the preparation of draft government budget for the following year. It is based on assessment of predictions of the country's economic and social growth, aimed programs, and estimation of the consequences of the monetary and economic action of the parts of economy, administrative regions, and all initiatives regardless of their ownership forms for the existing and following year.

The preparation procedure of the draft national budget begins eleven months before the following budget year and includes the time till the date of submission to the National Assembly of the country. It begins with the choice of the appropriate administrative authority at the press in the third decade of year's first month. Along with this decision, the medium-term economic and social growth predictions of the country organized by appropriate executive authority are made precise until the end of second month of year. Although defining outlays of the budgetary organizations, their spare-budgetary expenses are taken into consideration. Economic and social progress predictions and national investment package for the following and subsequent three years are being identified by the appropriate executive authorities by August 1, taking into consideration the real outcomes of the six months of the existing year.

The initial form of summary budget for the following year and indicators of the ultimate budget for subsequent three years should be give in to appropriate executive authority and chamber of accounts of the country till September 15 of existing year.

The initial form of ultimate national budget and indicators of the last budget for the subsequent three-year, in conjunction with other documents defined by rule should be submitted to the appropriate executive authority till September 25 (The Law on the financial plan system of our country (with additions and revisions till 2016)).

After in receipt of proper budget plans from financial organizations, the executive authorities analysis the financial plan draft and, if required, make changes and additions. The administration of Azerbaijan give in to the draft rule on the state budget for the following fiscal year in cooperation with other documents (which additional to the rule) to the President of our country till October 1. The President of the Republic of Azerbaijan assesses them and yield to the National Assembly no later than October 15 as stated by the Article 109.2 of the Constitution of our country (https://static2.president.az/media/w1siziisijiwmtgvmdmvmdkvnhqzmwnrcgppyv9lb25zdgl0dxnpewffru5hlnbkzijdxq?sha=c440b7c5f80d645b,2020).

The Central Bank yield to the National Assembly the draft of the core directions of the state monetary policy for the following fiscal year till October 1 of the year. This draft is similarly sent to the President of the country and the Administration of Azerbaijan. Plans of aimed programs financed by the government budget at the National Assembly are look over and adopted instantaneously with the draft law on state financial plan. The country's President is giving in to the financial plan of the central government.

The following table displays the national financial plan of the State by the years.

Table 5: State Budget of the Republic of Azerbaijan by years

Years	Revenue(AZN)	Expenditure(AZN)	Surplus/Deficit(AZN)
2011	12 061 000	12 748 000	-687 000
2012	16 438 000	17 072 000	-634 000
2013	19 159 000	19 850 000	-691 000
2014	18 384 000	20 063 000	-1 679 000
2015	19 438 000	21 100 000	-1 662 000
2016	16 822 000.0	18 495 000	-1 673 000
2017	16 255 000	16 900 000	-645 000
2018	20 127 000	21 047 000	-920 000
2019	23 168 000	25 190 000	-2 022 000

Source: State Oil Fund of the Republic of Azerbaijan, https://www.oilfund.az/en/fund/documents/state-budget?page=1, (11.02.2020)

Azerbaijan’s economy relies on oil. Azerbaijan contracted the “Contract of the Century” which gives a chance to Azerbaijan to maximize incomes through oil trade in the forthcoming period. It was a new period in the enlargement of oil industry as well as overall economic process. As responsibilities of government are to provide people with social welfares, allocate revenue accurately and use incomes effectively and more significantly to save oil incomes for upcoming generations, Azerbaijan founded State Oil Fund of the country in 1999.

The aim of SOFAZ is to turn restricted oil assets into monetary reserves allowing persistent profits for present and upcoming generations, to fund intentionally critical facilities and domestic community projects, to ensure the country's representation in international arrangements for the joint investigation of

geological resources (http://www.oilfund.az/ en_US/ _found/ meqsed-ve-felsefe.asp, 2020). First money in the amount of 270.9 million USD were send to the SOFAZ's account in the Central Bank of AR. During the subsequent year's incomes and assets of fund increased and assets surpassed two billion USD in 2006 and thirty billion USD in 2012 (Suleymanov E., 2015). Every year Azerbaijan applied educational, social programs through the SOFAZ's transfers to our budget. About thirty percent of State budget is framed by the oil incomes. The portion of oil sector in GDP was thirty-four percent with 20372.5 million AZN in 2015 (Ministry of Finance. "Budget guide of a citizen" Baku, 2015). After 2010 the average value for crude oil was about 110 USD till 2014. Then oil worth surprisingly diminished by forty-four percent and converted sixty-six USD in August 2014. In December 2015 the Brent oil is traded for thirty-eight USD in the petroleum market. The government budget for 2016 is 14.566 billion AZN that is less five billion and four billion in comparison with 2015 and 2014 budgets correspondingly. The government budget for 2016 is the lowest budget of last five years. The declining size of incomes made government to decrease expenses on different segments. Consequently, the costs are accepted 16.264 billion AZN which were 21.100 billion AZN in 2015 and 20.063 billion AZN 2014. Allocation from Oil fund to the government budget decreased by about forty percent from ten billion AZN to six billion AZN.

2014 is important year for investigation of oil price effect on the government budget. Relied on state budget of the country for 2014, the revenue and spending of the government budget are more associated with actual economic situations than current years' budgets. State budget income is nearly 18384000 thousand AZN and expenses is 20060000 thousand AZN. Reducing government budget income is the consequence of declining in the SOFAZ allocation. Despite the apparent undesirable influence of fund allocations, SOCAR's income is the most effective component for the government budget. Table 6 reveals that in 2014 fifty-one percent of the country's government budget income was based on the national oil fund. As a result, the decrease in oil price severely impacts on government financial plan of the country.

Table 6: The incomes of the state budget of Azerbaijan Republic for 2014

Order	Allocation of incomes	Amount (thousand manat)	Percentage in total
2_1	Physical groups payroll taxes	882000	5%
2_2	Financial gains (earnings) tax of legal entities	2217000	12%
2_3	Tax on legal entities for land	48000	0%
2_4	Property tax on legitimate users	132000	1%
2_5	Tax for Value-Added things	3209000	17%
2_6	Simplified tax	130000	1%
2_7	Excise	874500	5%
2_8	Road tax	69500	0%
2_9	Tax for Extraction	116000	1%
2_10	Tax duties	330000	2%
2_11	Earnings from alterations in country wholesale prices and agreement value of products created in the Azerbaijan Republic with controlled value (with the exception of import costs)	313000	2%
2_12	Earnings from the credits supplied for in the Budget	4026	0%
2_13	Income of mortgages obtained from commercial banks with government assurance from of the Republic of Azerbaijan	2525	0%
2_14	Earnings from loans made available to foreign governments	3074	0%
2_15	Dividends obtained from corporations holding state shares in their holdings	1980	0%
2_16	Earnings on the management of the remaining account of the separate pension fund	4735	0%
2_17	Earnings from the SOFAZ	9337000	51%
2_18	Earnings from the rent of land, privately owned entities and infrastructures under the government property	5000	0%
2_19	Earnings from the rent of properties under the government property	8000	0%
2_20	Earnings from sales of extra tax labels	3000	0%
2_21	Fees	123000	1%
2_22	Earnings on renovation of "Guarantee Fund for government Guarantee Loans"	10660	0%
2_23	Earnings from Budget organizations' charged services	400000	2%
2_24	Other earnings	160000	1%
Total		**18384000**	**100%**

Source: State Oil Fund of the Republic of Azerbaijan (SOFAZ), https:// www. oilfund. az/ storage/ uploads/ ecf6ezvlpy.pdf, (08.02.2020)

By help of table 7 we can see situation of State Budget of the Republic of Azerbaijan in 2019.It is clear that there is no change dependence from oil sector.

Only two percent decreases incomes from the SOFAZ compare 2014 with 2019 in state budget.

Table 7: The incomes of the state budget of Azerbaijan Republic for 2019

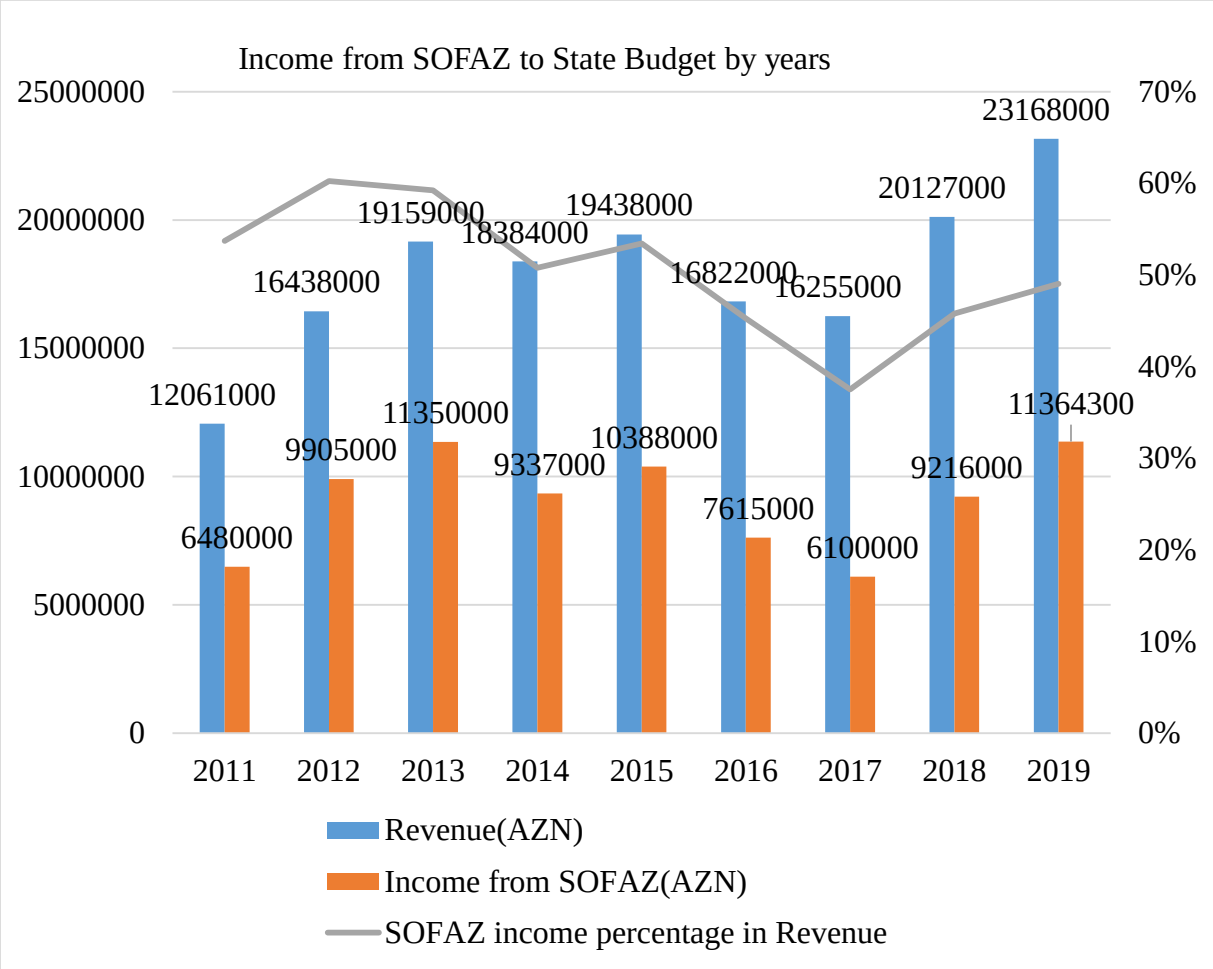
Order	Allocation of incomes	Amount (thousand manat)	Percentage in total
2_1	Physical groups payroll taxes	880000	4%
2_2	Financial gains (earnings) tax of legal entities	2670400	12%
2_3	Tax on legal entities for land	45000	0%
2_4	Property tax on legitimate users	211000	1%
2_5	Tax for Value-Added things	4194000	18%
2_6	Simplified tax	322000	1%
2_7	Excise	982000	4%
2_8	Road tax	114000	0%
2_9	Tax for Extraction	133000	1%
2_10	Tax duties	900000	4%
2_11	Earnings from alterations in country wholesale prices and agreement value of products created in the Azerbaijan Republic with controlled value (with the exception of import costs)	136000	1%
2_12	Earnings from the credits supplied for in the Budget(The Republic of Azerbaijan)	69148	0%
2_13	Dividends obtained from corporations holding state shares in their holdings	3920	0%
2_14	Earnings from the SOFAZ	11364300	49%
2_15	Earnings from the rent of land, privately owned entities and infrastructures under the government property	8000	0%
2_16	Earnings from the rent of properties under the government property	8000	0%
2_17	Fees	190000	1%
2_18	Earnings from Budget organizations' charged services	626600	3%
2_19	Other earnings which tax office gather	232600	1%
2_20	Other earnings	78032	0%
	Total	23168000	100%

Source: SOFAZ, https:// www.Oilfund.az/ storage/uploads/rs0ibglmuw.pdf, (11.01.2020)

The help of the Graph 3 we see allocation amount of money from SOFAZ to the government budget. It makes clear how the Republic of Azerbaijan is dependent

from oil price. It shows that between forty and sixty percent of money in the income part of budget transferred from SOFAZ to the government budget.

Graph 3.SOFAZ money transfer amount to State Budget from 2011 to 2019



Source: State Oil Fund of the Republic of Azerbaijan, https://www.oilfund.az/en/fund/documents/state-budget? Page=1, (11.02.2020)

2.3. Adaption to low oil prices and their social impact in Azerbaijan

Regardless of the accrual in the last fifteen years of substantial earnings from crude oil exports and incredible economic development. The economy of Azerbaijan has been troubled by the recent drop in global oil value and has been facing a period of difficult economic changes. The administration has decided to alter the outdated distributive process that relies heavily on the distribution of oil revenue in support of a novel profits-based technique which is supposed to gain from different

areas, except petroleum. It is clear from the recession in oil worth that the state is unable to face the low-priced scenario.

The national currency of our country has dropped in value compared to the United States currency and euro, as has several oil-rich Caspian Basin nations. Nevertheless, while Russia and Kazakhstan have initiated a decline in worth their money of , our country has persisted in the expectation of returning to desirable oil worth at a steady pace in 2014. Some other feature of this is that the country's currency has been devalued both severely and dramatically, which is specific to those country's system. Sanctions definitely had a substantial effect on the currency in the Russia circumstance. (Bayramov, Vugar and Orujova, Laman, 2017).

In consideration of the macroeconomic consequences, decline in the value of money has not only been considered a tool for preserving monetary stability but also an indicator of financial and budgetary stability. Just like Russia, the national budget of our county usually involves petroleum and different energies revenue and hence decline in the value of money allows it to produce and allocate additional energy exports earnings, even as petroleum sales currency is the US Dollar (Bayramov, Vugar and Abbas, Gulnara, 2017). The new socio-economic atmosphere that later appeared was difficult for entirely social groups but mainly the most helpless ones. Main investment plans were cut, comprising community investment projects supported by the government financial plan and SOCAR. SOCAR has frozen up its infrastructure investment initiatives, including the eighteen billion dollars construction of a new industrial site. Two other indicators are also noteworthy. The community national debt of the nation was also one of the smallest among petroleum-producing nations even before fall in the value of AZN, but it is no longer an issue in present years. Community outer GDP loans (in 2016) was equal to nearly 20 percent, compared to just nearly 9 percent a year earlier (Ministry of Finance).

The country's oil income management organization utilizes a join of SOFAZ and local spending plan structures, which collect most oil profits in the organization, and spending on the several financial plans for upcoming expense directly through and through state spending. SOFAZ has decided to sell US dollars value more than

one billion dollars from first to middle of third months of 2016, a major chance for local currency market, at the recently created auction mechanism. This was a significant move, as the government budget must be annually allocated by SOFAZ. This is further helps the Central Bank (CBA) of Azerbaijan to maintain its international money stocks. In fact, the state has given little intention, as was the situation in certain other oil exporting nations, of rising the allocation of SOFAZ money on the savings account. The drastic devaluation of the currency in the country also offers the government the ability to retain some of the funds over the next cycle.

The state is taking important steps to challenge the problems of macroeconomic balancing. Its strategic actions until now may be separated into three clusters: strengthening monetary safety and predictability, liberalization of the economic process and refining its private enterprise space and official reforms to encourage growth of the non-oil segment.

In particular, the state has focused on currency constancy. The economy has suffered turmoil for a period of time immediately after the decline in the last months of 2015, and the government did everything possible to prevent further instability in AZN of the country. Typically, the manat's even farther downturn refers to black speculative trading. The first moves have been nervous, chaotic and messy. The state wanted to stop the workplace and centered only on financial institutions and their offices in all exchanges systems. This action was obviously linked to the investment. The state succeeded in maintaining the constancy of the currency market and in addressing the rate of exchange. It used additional intervention from Central Bank (CBA) for this reason.

In addition, a number of management measures have been implemented, for example, by establishing the financial supervisory chamber, a new legitimate entity called. It is the responsibility of this entity to insure that the stock industry, cash funds, banking and financial divisions in the country are controlled by the public as well as the stability and efficiency of payment systems. Owing to modifications to the banking law, certain CBA functions were shifted to the newly-established

control chamber. The fluctuations also reduce the CBA's controls of administration over the banking sector.

Consequently, the policy properties that had been preserved from the Soviet had no forward-looking industry. By the way, the February 16, 2016 government order on privatization should be considered an extension of the "State Privatization of Private property Program" dated August 10, 2000.

All these determinations are essential, but not enough. The state should be aware of that the weak currency opens up massive chances for domestic business, mainly farmers. Nevertheless, with the aim of fully understand the possible of the emerging new atmosphere the state should start necessary liberalization reforms that would restructure the work of taxes' services and address the unlimited power of local authorities.

In this part of thesis, we will see the social influence of declining oil price. The oil price falling began in June 2014 and stays to this time finished a decade-long oil prosperous in the country. Flourishing converted to bust. The arguments crisis and post-oil era entered the language of policy makers, forming a new community opinion around the country's petroleum power and apocalyptic estimates about an upcoming period without oil. The whole world, from the average person on the street to worthy bureaucrats, seem like concerned about the troubling times ahead. Increasing food value without a correspondent growth in salaries worsened public's living standards. Throughout the prosperous times, many peoples borrowed credits from banks to pay for loan or to buy a car. On the other hand, as some credits were give out in foreign currency, the devaluation of the manat qualified with the USA dollar made it firm to repayment bank credits. A loss of confidence in the manat forced many debtors to change money into USA dollars. All these changes powered the sense of economic uncertainty for local people. More citizens currently than in the oil-boom period are interested state effectiveness in handling the country's oil incomes and the quality of community spending in overall. As everyone now recognizes, times will never be the same again.

One sector that has possibly been especially vulnerable to the loss in resource incomes is the social sphere: joblessness, poverty, and community welfare. Although the oil price reduction will have an incremental influence on the state's social aid program, there are some initial caution signs that the difficulties of community's welfare, joblessness (particularly youth unemployment) and quality of education are converting serious in a time of crisis.

Formal statistics displayed no radical changes in the work force participation, and the formal unemployment rate stays unrealistically low at five percent. On the other hand, the true size of crisis-induced joblessness might be higher than approved figures suggest. As said by media reports, a numerous private and government-run enterprises publicized job cuts in the wake of the newest currency reduction in December 2015.

Furthermore, the permits of seven of a total of forty-two banks operating in Azerbaijan were closed, and these supposedly bankrupt or illiquid banks were combined. A number of major energy firms, such as BP, announced dismissals, and Norwegian Statoil and USA petroleum giant Exxon-Mobil shut their representative workplaces in Baku. BP publicized in January 2015 that it would cut 255 works (105 local and 150 foreign workers) in the country.

Social expenditure comprising expenses on education, health, and social protection remained same, and the state has highlighted its promise to promoting social welfare. We see this from the table 8.

Table 8: Azerbaijan: Budget Expenses on Education, Health and Social Assistance, 2011–2016 (mln. AZN)

Criteria	2011	2012	2013	2014	2015	2016
Education	1,399.8	1,575.9	1,530.4	1,653.4	1,711.2	1,713.5
Healthcare	563.2	662.7	669.3	725.6	777.7	744.9
Social protection and social security	1,611.8	1,781.6	1,813.6	2,072.2	2,040.5	1,896.6

Source: Azerbaijan Ministry of Finance, Draft Budget Presentations, various years, http:// www.maliyye.gov.az/node/1128, (07.01.2020)

The government's ability to provide for welfare and basic living standards will depend on a number of variables, most importantly, the duration and intensity of the oil price and production level decline and its capacity to initiate and implement a strategy to overcome the oil induced economic crisis. The fiscal buffers have enabled the government to maintain a passable level of social welfare since the beginning of the oil decline. The government should attempt to increase non-oil sector percentage in GDP in future.

CHAPTER III. EMPIRICAL EVIDENCE BY THE HELP OF ECONOMETRIC MODEL

3.1.Econometric principles in the model

In econometrics, it is assumed that the numbers being examined can be acted as random variables. An econometric model is a collection of combined probability distributions to which the right combined probability distribution of the variables under method is thought to be appropriate. In the circumstance that the parts of this set can be numbered by a restricted number of real-valued constraints, the model is named a parametric concept or it is a non-parametric or semi-parametric theory. A huge part of econometrics is the study of methods for choosing models, guessing them, and execution inference on them.

The main econometric methods are structural because they convey casual and opposing to real information, and are utilized for policy assessment. For instance, an equation modeling consumption expenditure relied on income could be utilized to perceive what consumption would be depending on any of several hypothetical stages of revenue, only one of which (contingent on the selection of a financial policy) will result in really happening. For my dissertation analysis, I will give the information about Fully Modified Ordinary Least Squares (FM-OLS), Canonical Co-integration Regressions and Augmented Dickey Fuller methodologies. FM-OLS regression was initially calculated in study by Phillips and Hansen to offer the best evaluations of co-integrating regressions. The technique alters statistical method to clarify serial association properties and for the endogeneity within the regressors that outcomes from the presence of a co-integrating connection. The FM estimator was firstly designed to guess co-integrating relationships right by altering outdated OLS with improvements that take account of endogeneity and serial correlation. One purpose the technique has evidenced valuable in practice is that one can practice the FM corrections to define how vital these influences are in an experimental application. This has aided to make the technique less of a black box for practitioners. In cases where there are key

dissimilarities with OLS the source or sources of those differences can typically be easily situated and this in turn aids to offer the investigator with extra information about significant specifications of the data. Modern simulation knowledge and empirical investigation shows that the FM estimator implements well in relation to other methods of assessing co-integrating relations (Peter C.B., 1995). FMOLS are better than OLS for many explanations, therefore I will show the significant ones:

- Normal least squares evaluations are super-dependable, however the t-statistic become while not stationary or I (0) terms are solely roughly customary. Although, normal least squares is super-dependable, within the existence of a large restricted example bias coming back along of OLS is low in restricted examples.
- Normal least squares guesses could suffer from serial link, heteroskedasticity since the omitted dynamics are taken by the residual in order that implication exploitation the quality tables will not be effective even asymptotically. Therefore, "t" statistics for the guess OLS estimates are unusable.
- Absolutely changed normal least squares look out endogeneity by adding the guidelines and lags. Furthermore, white heteroskedastic customary errors are utilized.

As in a (normal) linear co-integrating regression similarly in the measured co-integrating polynomial regression condition the typical OLS estimator $\hat{\theta} := (Z'Z)^{-1}Z'y$ of θ is steady, but its restrictive distribution is polluted by second order bias relationships. The existence of these second order bias terms disproves standard implication and accordingly we study a proper fully modified OLS (FM-OLS) estimator. The attitude is like in the linear co-integration case, the fully modified estimator relies on two changes to the OLS estimator. Firstly, the dependent variable y_t is exchanged by an appropriately constructed variable y_t^+ .Secondly, additive correction aspects are used (Seung H. H., and Martin W., 2011).

It is famous that the traditional asymptotic theory of statistical result is not proper for co-integrating regressions. As discovered previously by Phillips and

Durlauf (1986), the restrictive distributions of the least squares estimators are in wide-ranging biased and unusual. Additionally, the distributions of the unoriginal exam statistics comprise a numerous annoyance constraints, asymptotically. This poses a severe trouble to the statistical conclusion on the co-integrating vectors. Especially, the annoyance parameter dependency makes the commonly used trials practically outdated for the inferential resolution. Park and Phillips (1988, 1989) have planned changes of the Wald tests and the least squares estimators to ease this problem. Their technique midpoints on the test statistics and renovations of the estimators using the approach which was introduced by Phillips (1987) for the tests of unit roots. While they have provided a very general outline within which we can effectively investigate several sides of statistical result in co-integrating regressions, their consequences are somewhat restricted from the applied point of view. The problem of outcome in co-integrated techniques was more successfully criticized later by Johansen and Phillips. Their processes relies on the system estimation of error correction techniques. The model by Johansen relies on the completely identified Gaussian error correction technique. The Phillips' technique, in contrast, only utilizes the existence of unit roots in the regressors for the construction of the error correction method. The simple impression of the methodology relies on a fact which is very important but seems like to have been ignored: non-uniqueness of co-integrating regression. Any set of integrated methods, which diverge only up to stationary terms from the constraints existing in a given technique, support the similar co-integrating connection with the same co-integrating vector. Stationary deviations, on the other hand, impact the restricted actions of the method. It is reality that for any given technique we can discover a transformation so that the normal least square measures, if implemented to the transformed technique, produce asymptotically efficient estimators and chi-square tests. It is named canonical co-integrating regressions (CCR's). The building of a CCR call for suitable regulations of the data using stationary parts of a given method. Statistical theory of the CCR method is quite related to that of the technique established independently by Phillips and Hansen. Though, inspirations for the two methods are dissimilar. While the

former selects a canonical regression among the class of models demonstrating the similar co-integrating connection, the second amends guesses and variables directly to eliminate the existing annoyance factors. The CCR technique focuses on the data conversions, but Phillips and Hansen practice the transformations of both the evaluations and data. The famous equivalence of the least squares for single and multivariate regressions permits us to search single equations specifically, with no loss in proficiency. Especially, the single equation CCR technique is asymptotically as effectual as the system maximum possibility approaches of Johansen and Phillips (Johansen S, 1988).Co-integrating regressions with variables comprising deterministic inclinations need no distinct model or technique. Of the first kind are models for which the regression errors are driven by a random sequence distinct from the processes generating integrated regressors. This seems to be more common. We call such co-integrating regressions regular. However, we also have important techniques of a various kind, where the faults are basically a linear combination of the innovations dynamic regressors. A key example is the unit root technique. More common, the co-integrating regression converts singular, when the primary time series are multi-cointegrated in the expressions of Granger and Lee .They have displayed that this types of techniques may be produced from some distinctive, yet curious, error correction tools (Engle R F. and Granger C W J., 1987). They similarly have revealed its economic relevancy, by supplying some vital economic techniques. We demonstrate that singularity is often changeable, basically through the building of an integral regression. This is the regression that comprises the integrals of the fundamental time series, along with their levels. For the technique with changeable singularity, along with for the regular model, the least squares estimators have mixed normal restrictive distributions in the CCR's. Furthermore, the concept of the standard test in the CCR's is entirely similar to that of the traditional regression. The normal "chi-square" tests have restrictive chi-square distributions (Joon Y.P., 1992).

Before 1980s, level forms of non-stationary data could not be utilized in running regression, as non-stationary data could outcome in very robust connection among distinct variable series since all were functions of time. This condition was

not reasonable to understand. With the purpose of solve this issue, distinct method of variables were utilized in regression techniques. Nevertheless, this could only guess short-run link among variables. So that run long term relationship among non-stationary variables, economic models forecast a long-term and stable relationship among some variables and this long-run relationship is named co-integration (Stock J H. and Watson M., 1993). The basic conditions for co-integration are below:

1. Initial difference forms of various variable series have to be stationary I(1)
2. Level form of residuals series have to be stationary I(0),

If these conditions are encountered, then these variables are co-integrated. Therefore, there is long-run connection among those variables (Gujarati and Porter, 2009).

Johansen co-integration technique is extensively used in the course of emerging long-term relationship. In the model of co-integration, it is detailed that the variables anticipated by the long-term relations will not move away from each other a lot. Johansen co-integration study examines how many independent linear combination (r) occurs for n variables where, as an outcome, a stationary process is created. In co-integration method, it is expected that there are general non-stationary processes under each variable. Therefore, it can be displayed as:

$$X_{1,t} = a_1 + b_1 Z_{1,t} + b_2 Z_{2,t} + \cdots + b_k Z_{k,t} + e_{1,t}$$

$$X_{2,t} = a_2 + c_1 Z_{1,t} + c_2 Z_{2,t} + \cdots + c_k Z_{k,t} + e_{2,t}$$

...

$$X_{n,t} = a_n + v_1 Z_{1,t} + v_2 Z_{2,t} + \cdots + v_k Z_{k,t} + e_{n,t}$$

The number of $Z_{i,t}$ can be supposed as:

$$k = n - r$$

Where, n and r are the number of variables and the number of independent linear combinations correspondingly.

Three potential results should be considered:

1. r=0 and k=n. in this circumstance, time series variables are not cointegrated.

2. 0 < r < n, 0 < k < n. in this situation, there is co-integration among variables.

3. r = n, k = 0. In this state, all variables are stationary and co-integration is not proper here.

So, with the support of examining the number of independent combinations, hypothesis for presence of co-integration can be framed.

Johansen co-integration method has two forms which are named the maximum eigenvalue test and the trace method (Amemiya T, 1985).

One of the co-integration technique is Park's Added Variables method which I use in my study. The technique is calculated by testing for the importance of spurious time inclinations in a co-integrating equation expected utilized one of the techniques displayed above.

Assume we guess the equation where, to make simpler, we let D_{1t} contain only of powers of trend up to order p. Next the Park method guesses the spurious regression technique comprising from p+1 to q spurious powers of inclination

$$y_t = X_t'\beta + \sum_{s=0}^{p} t^s\gamma_s + \sum_{s=p+1}^{q} t^s\gamma_s + u_{1t}$$

and techniques for the combined importance of the coefficients $(\gamma_{p+1}, \cdots, \gamma_q)$. Under the null hypothesis of co-integration, the fake trend coefficients should be unimportant since the residual is stationary, whereas under the other, the false trend terms will mimic the lasting stochastic trend in the residual. Note that unless you desire to treat the constant as one of your fake regressors, it should be comprised in the original equation specification (http: //www.eviews.com/help/helpintro. html#page/ content%2 Fnsreg-Testing_for_ Cointegration. html%23, 2020).

Augmented Dickey Fuller method (ADF Test) is a general statistical technique used to examine whether a given time series is stationary or not. It is one of the most frequently utilized statistical method when it comes to examining the stationary of a series. The ADF test fits to a group of methods named "Unit Root Test", which is the appropriate method for analyzing the stationarity of a time series.

Famous econometricians, Dickey and Fuller developed a unit root test to exam non-stationary series. The important to Dickey Fuller's method defines whether a

series is stationary or not. Dickey Fuller's main technique of first-order autoregressive process (AR (1)) is as the below:

$$Y_t = pY_{t-1}+e_t \ (I) \qquad t=1,2,....$$

According to the method, if the variable series is stationary, then $/ p / <1$. Nevertheless, if the series is non-stationary, then $/ p / = 1$. A time series with P = 1 is generally named a random walking method. In this circumstance, the showed null hypothesis is written as $H_0: p = 1$ and the other hypothesis is $H_a = / p / <1$. Additionally, Dickey and Fuller similarly suggest three alternative equations that a series can be displayed:

$Y_t=m+pY_{t-1}+e_t (II)$

$Y_t=m+Bt+pY_{t-1}+e_t (III)$

If Y_{t-1} is subtracted from both sides of the equations, then the equations *(I), (II)* and *(III)* can be written in the form of various equations:

$Y_t-Y_{t-1}= (p-1) Yt_{-1}+e_t$

$\Delta Y_t=(p-1)Y_{t-1}+e_t$

$If\ p-1=\delta$

$\Delta Y_t= \delta Y_{t-1}+e_t$

Analogically,

$\Delta Y_t=\mu+ \delta Y_{t-1}+e_t$

$\Delta Y_t= \mu+\beta t+ \delta Y_{t-1}+e_t$

The Dickey-Fuller unit root method deals with analyzing whether p = 1 or p-1= δ = 0 in all techniques above. If t statistic is less than the critical value, the null hypothesis for the presence of the unit root is rejected and the outcome is a static Y_t process. It means that the data series is stationary (Gujarati D. N and Porter D. C., 2009).

In unit root method established firstly by Dickey and Fuller, the whole series is treated as a first-order autoregressive process and proposes that there is no autocorrelation in the error terms. In 1981, Dickey and Fuller set the new unit root technique to comprise extra delayed values of the variable series to eliminate autocorrelation problem (Amemiya T., 1985). In the supposed Dickey-Fuller unit root method, the lag length in extra terms is attained by the Akaike Criterion (AIC) or

the Schwartz Bayesian Criteria (SBC) and the techniques for the ADF unit root method with further lags will be as the below:

$$\Delta Y_t = \delta Y_{t-1} + \sum_1^j a_j \ \Delta Y_{t-j} + e_t$$

$$\Delta Y_t = \mu + \delta Y_{t-1} + \sum_1^j a_j \ \Delta Y_{t-j} + e_t$$

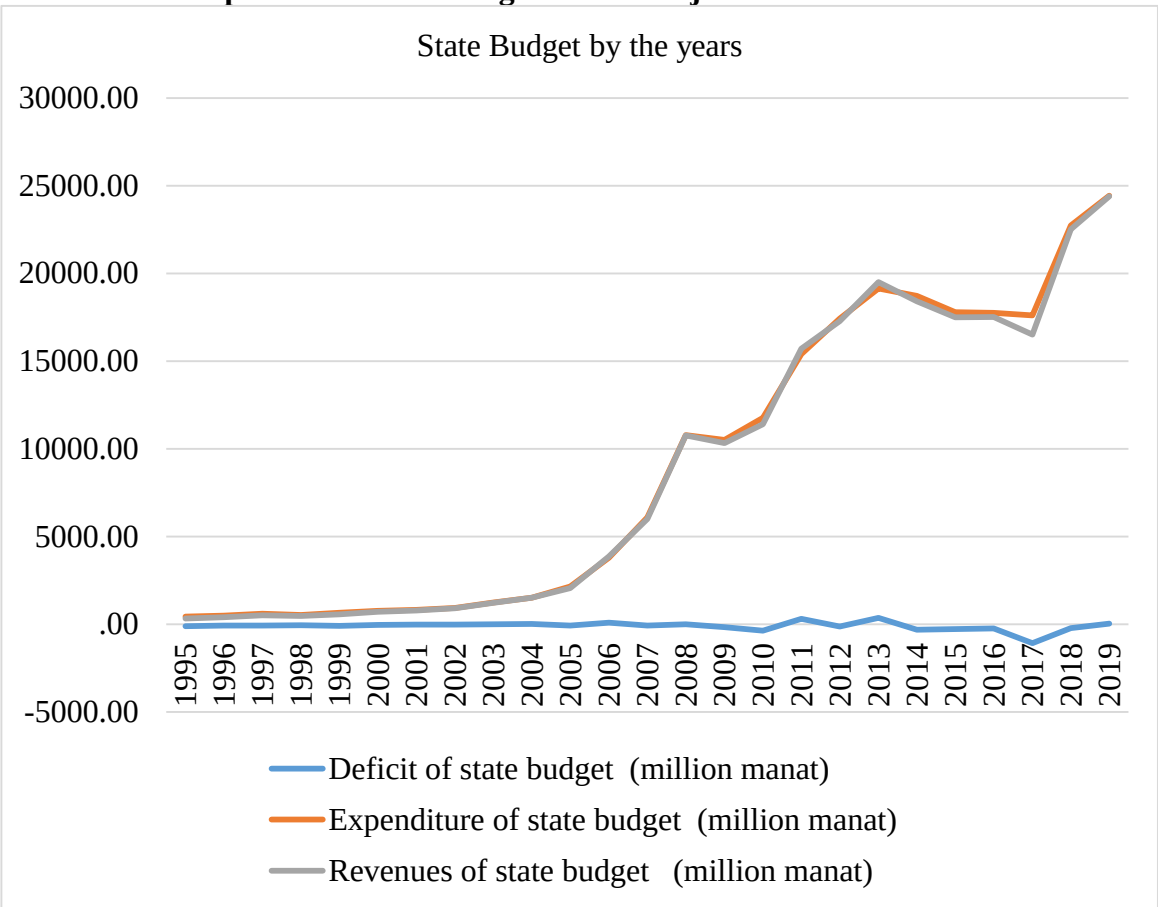
$$\Delta Y_t = \mu + \beta t + \delta Y_{t-1} + \sum_1^j a_j \ \Delta Y_{t-j} + e_t$$

3.2. Econometric Methodology and Data

Economic positions of nations are being continuously formed by globalization. The economies can be studied in the previous years in two phases: perceived periods with high and low oil value. Massive empirical research suggests a linear relationship between variations in oil prices and economic development (Hamilton, 1983; Papapetrou, 2001; Werner, 2005; Gbadebo, 2009). On the other hand, the sign of this relationship and its significance rely on whether countries are oil exporters or importers. In the situation of countries which import oil as raw material, variations in oil prices vary their cost of production, the level of goods and services produced, and consequently impact key macroeconomic variables such as inflation and joblessness. In oil-exporting countries the circumstances are quite distinct such that oil price variations exert shocks of both supply and demand. The goal of this part is to study in our country's case the connection between oil price fluctuations and the budget. Azerbaijan is an oil-rich republic, has passed the previously mentioned economic route and faced similar challenges, and forty-six percent of its budget is financed through allocations from the Republic of Azerbaijan State Oil Fund. As an outcome, it make it substantial to examine relationship between budget revenue, exchange rate and oil price in Azerbaijan.

By the help of the data, which is represented in the below in form of the graph and others, I have done econometrical analysis. If we look through the graphs ,we will see the relationship between State Budget revenue ,GDP and exchange rate .This graphical analysis will represented on econometrical model in the below.

Graph 4: The State Budget of Azerbaijan from 1995 to 2019

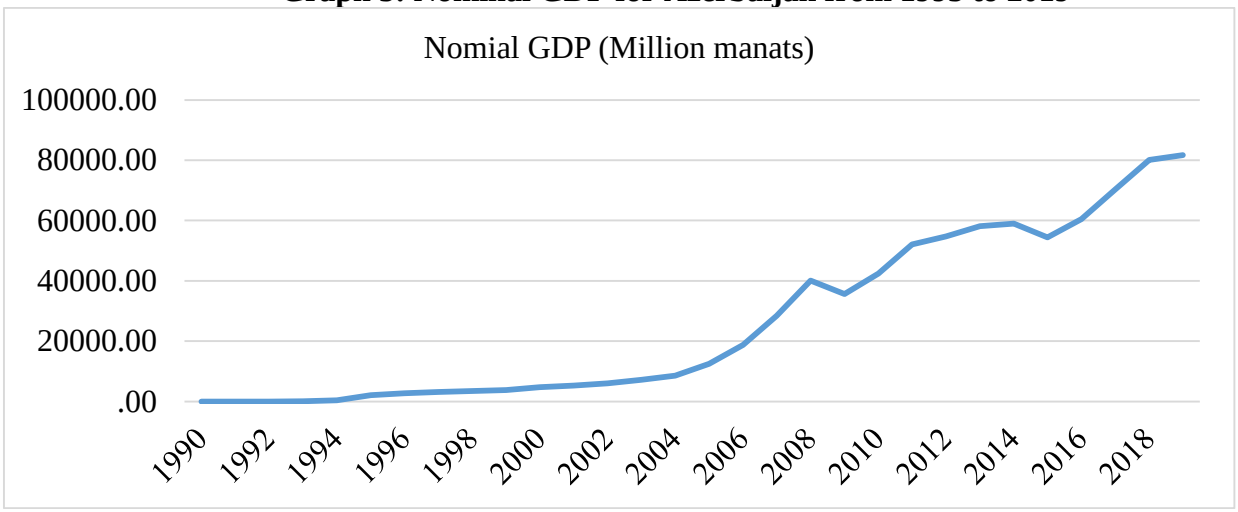


Source: State Statistical Committee of the Republic of Azerbaijan, https://azstat.org/statHtml/statHtml.do?orgId=994&tblId=DT_BK_001&vw_cd=MT_ATITLE&list_id=&scrId=&seqNo=&language=en&obj_var_id=&conn_path=I2&path=, (12.03.2020)

We see that Budget revenue and expenditure increased from 1995 to 2014 (2008-2009 is except).This is clearly related with oil price.

GDP has increased since 1998. Before 1998, GDP was decreasing due to the collapse of the previous economic system and only after that time did the economy start to recover. GDP was decreasing in 1998 because of the undesirable influence of the 1998 Russian crisis on the economy of our country. The leap of GDP in 2006 was probably because of the influence of oil incomes following the finishing point of the Baku-Tbilisi-Ceyhan foremost export oil channel. GDP growth has decreased since 2008, as worsening global economic conditions have resulted in lower oil and commodity prices leading, to a decline in foreign exchange revenues.

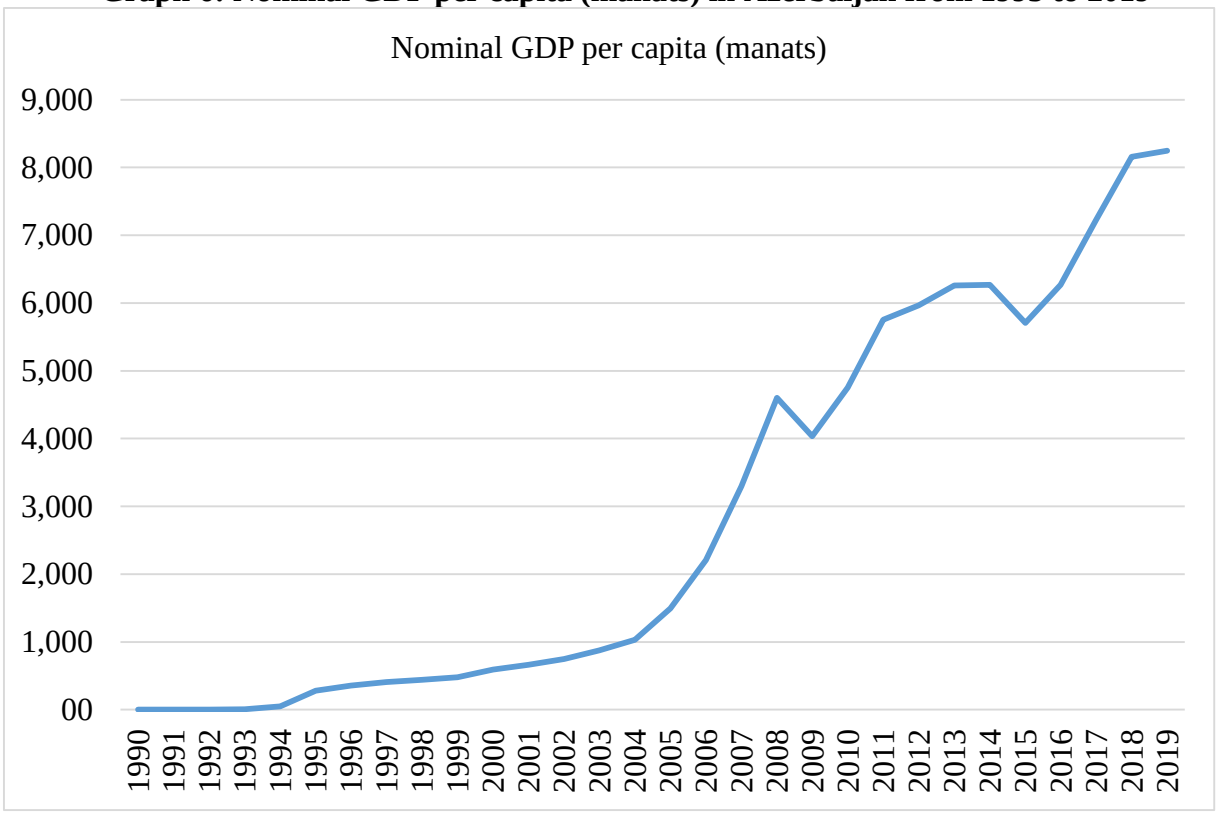
Graph 5: Nominal GDP for Azerbaijan from 1995 to 2019



Source: State Statistical Committee of the Republic of Azerbaijan, https://www.stat.gov.az/source/system_nat_accounts/?lang=en, (17.03.2020)

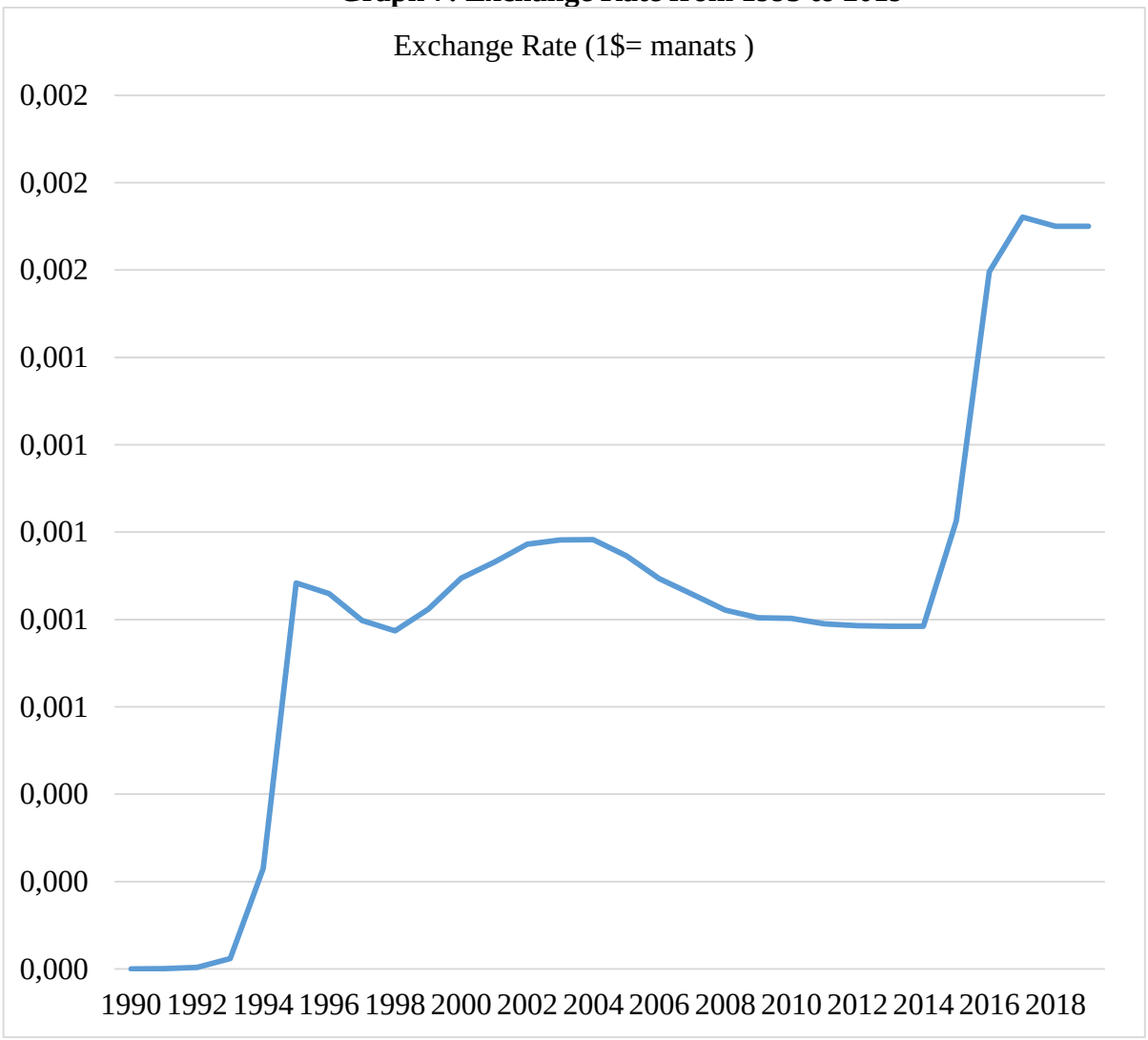
It is displayed in Graph 5, there was an important growth in the amount of credit between 2003 and 2015. The key reason behind this condition is the economic development in Azerbaijan throughout that time.

Graph 6: Nominal GDP per capita (manats) in Azerbaijan from 1995 to 2019



Source: SSC of the Republic of Azerbaijan, https://www.stat.gov.az/source/system_nat_accounts/?lang=en,(17.03.2020)

Graph 7: Exchange Rate from 1995 to 2019



Source: SSC of the Republic of Azerbaijan, https://www.stat.gov.az/source/system_nat_accounts/?lang=en,(18.03.2020)

As well, it is obvious from the graph 7, there is a relationship between exchange rate and Budget Revenue. We will confirm this relation with support of the techniques in the below.

For empirical research, the investigation uses yearly data over the period of 1995 to 2019 for the subsequent variables: Budget Revenue (BR), exchange rate (EXC) and oil price (OP). All data group have been taken from the State Statistical Committee (SSC) of the country. Budget Revenue is measured by revenue result impacted by the oil value shocks. Budget Revenue is the dependent variable. Oil price is the crucial independent variable, and measured by oil incomes to the budget

of the country in a million manats. The exchange rate (EXC) is similarly utilized as a regulator variable, which may have an influence on the state budget. The EXC is measured in the country's currency per USA dollar. This variable was utilized in many earlier research, for instance, Sturm et al. (2009), Mukhtarov (2018), and Mukhtarov et al. (2019), who discovered that EXC has an important impact on key macroeconomic aspects. All variables have been transformed into the logarithmic method.

The link between oil price, exchange rate and budget revenue is discovered utilizing the various co-integration techniques in this research. In the empirical part, stationarity and unit root of variables will be measured, then the long-run co-integration relationship, and then the long-run relationship between oil price, exchange rate and budget revenue will be forecasted. The Augmented Dickey-Fuller (ADF) technique by Dickey and Fuller is implemented for unit root exercise, although for examining the co-integration relationship, the Park's Added Variables technique is utilized. Afterward, two co-integration techniques are used to analyze the long -run connection. Initially, Fully Modified Ordinary Least Squares Method (FMOLS) is utilized as a foremost tool, then Canonical Co-integrating Regression (CCR) technique are utilized for the healthiness check.

The above-mentioned approaches are extensively used in enormous researches, they are concisely discussed in the first part of the third Chapter. The complete information about these approaches has been stated in Dickey and Fuller ("1981"), Park ("1992") and Stock, and others.

3.3.Empirical Results and Discussion

Initially, unit root problems of the used variables are examined by using ADF unit root method in my research. Outcomes of the ADF technique are displayed in Table 9. Table 9 demonstrates that all the variables are non-stationary at their stages, on the other hand, they convert stationary at first alteration. Consequently, they can be investigated for the co-integration link.

Table 9: Results of ADF unit root tests

Variable	Panel A: Level		Panel B: 1st difference		Result
	k	Actual value	*k*	Actual value	
BR	0	0.707	0	-4.094***	I(1)
OP	0	-1.720	0	-5.077***	I(1)
EXC	1	-1.394	0	-2.698*	I(1)
Notes: The maximum lag order is set to two and "the optimal lag order (k)" is choose in the ADF method relied on the Schwarz criterion; *, * * and * * * indicate that the null hypothesis is rejected at 10%, 5% and 1% meaning levels; significant values are obtained from the MacKinnonun (1996) table. Timeframe: 1995–2019.					

Source: SSC of the Republic of Azerbaijan, (28.03.2020). This data source was used by the author in the process of modeling above

For co-integration bond, co-integration experiments are used and outcomes are given in Table 10. The Park's Added Variables co-integration technique displays the co-integration connection among the variables.

Table 10: Park Added Variables Cointegration Test Results

	Value	**df**	**Probability**
Chi-square	1.893	2	*0.388*
Note: Dependent variable - $\ln(BR)_t$			

Source: SSC of the Republic of Azerbaijan, (28.03.2020). This data source was used by the author in the process of modeling above

Hence, after approving the presence of co-integration among the variables, the long-run connection can be assessed. For this purpose, FMOLS and CCR techniques are utilized to exam the long-run correlation among the variables. The estimation consequences are provided in Table 11.

The long-run coefficients of the two techniques are statistically significant in terms of significance and magnitude, and near to each other. As stated in the section on Methodology, priority is given to the FMOLS method, whose consequences are shown in the first row of Table 11. The long-run coefficients of the two techniques are statistically significant in terms of significance and magnitude, and near to each

other. The long-run coefficients of the two techniques are statistically significant in terms of significance and magnitude, and near to each other.

Table 11: Long-run coefficients from the methods

Methods	OP	EXC	Intercept	Trend
	Coef. (t-Stat.)	**Coef. (t-Stat.)**	**Coef. (t- Stat.)**	**Coef. (t- Stat.)**
FMOLS	0.36** (2.203)	-1.39*** (-4.440)	4.24*** (9.906)	0.22*** (12.63)
CCR	0.58** (2.654)	-0.87** (-2.403)	3.78*** (6.669)	0.19*** (8.679)

Notes: The dependent variable is $\ln(BR)_t$; Coef and t-Stat. mean coefficient and t-Statistic; *, ** and *** indicate significance levels at 10% 5% and 1%. Estimation period covers 1995-2019.

Source: SSC of the Republic of Azerbaijan, (28.03.2020). This data source was used by the author in the process of modeling above

As stated in the section on Methodology, priority is given to the FMOLS method, whose consequences are shown in the first row of Table 11. The research has found a positive and statistically significant influence of oil prices on budget revenue at the level of 5 percent. The analysis shows that an increase of 1 percent in oil price results in an increase of 0.36 percent in budget revenues. Similarly, the influence of the exchange rate on budget revenue is adverse and statistically significant at the level of 1 percent. This shows that a 1% increase in the real exchange rate (depreciation of the currency of the country) is reduced by 1.39% in budget revenue.

CONCLUSION AND RECOMENDATIONS

In the context of globalization, world oil value have become one of the most vital economic indicators that have a direct effect on the government of products and financial markets, along with the country's budget system. Under the impact of the opportunities of business units concerning the upcoming dynamics of world oil worth, exchange rate, stock prices, user and wholesale prices are shaped. The guesses of the international petroleum marketplace are taken into consideration in the progress of Azerbaijan's financial plan and capital investing plans of the commercial division.

Immense oil reserve advantages in the previous decades, the republic could obtain high economic development. Nevertheless, the oil price drop of 2014 displayed that Azerbaijan's economy seriously relies on both petroleum exports and activates based on immense government expenses controlled by State Oil Fund's possessions. This study highlights on country's exposure to price rise and fall. We examine the special effects of oil price shocks on the national budget using Econometric methods for the period 1995-2019.

The research analyzes the influence of oil price and exchange rate on budget income. Initially, unit root problems of variables are examined. The outcomes finished that they are stationary at initial differenced form, therefore variables can be examined for the long-run co-integration connection. The Park's Added Variables co-integration method approves co-integration bond among oil value, exchange rate and budget income in Azerbaijan. The FMOLS and CCR methods are utilized to assess the long-run relationship among these variables. Estimation outcomes of FMOLS display that rise in oil worth increases budget income in the long run by 0.36 percent. Vice versa, growth in exchange rate declines budget revenue in the long run by 1.39 percent. In conclusion, these econometric models confirm the long term connection and display the impact rate.

The key outcomes of the investigation are as following. Initially, there is a significant linear relationship between oil price shocks and the government budget of the country. The decline price in the oil-gas subdivision can be clarified by a drop

of oil incomes because of the slackening oil value in the international marketplace. The parallel drop in GDP rising in the non-oil sector can be described by its structure, as it is controlled by government expenses funded generally from oil income. The severe drop in oil incomes limits the government's capacity to support the remaining economic process. Additionally, oil price shocks affect significantly the exchange rate, resulting in depreciation of the exchange rate in the country. Depreciation of the manat leads to more costly foreign commodities.

After the examines of the oil price influences, the previous and existing economic circumstances reveals the acute situation in Azerbaijan with a significant need to apply better procedures and reforms by the administration with long-term viewpoints. Oil dependency in the country should be studied in details to grow the non-oil segment and eliminating the division of the economy into two parts: oil and non-oil division. Consequently the Azerbaijani authorities should recognize the importance of sticking to the strategies of the Strategic Road Map in 2018 to resist the economic slump in 2017. On the other hand, the higher oil values have distorted the speed of the modifications and created additional concerns. High oil prices will not tempt the administration to push for reforms, but in a low oil worth environment there could be stronger necessity for reforms.

The economic condition can be further improved and addressed if it is necessary to boost the liberalization of the governance mechanism and facilitate the development of SMEs by creating a space for diversification and lowering the emphasis provided to state-owned firms. It can therefore lead to well-backed structural development within the country.

In addition, focusing on expansionary government policy with higher spending in other sectors rather than infrastructure could be drawn on. Therefore there should be more companies ready to invest in Azerbaijan. Yet if the previous examples are evaluated, the usage of government expenditure is not really optimistic for the upcoming pattern. The Azerbaijani government can seek more long-term strategies that will improve and diversify the country's economic stability by successful economic and social changes that can inevitably contribute to a more stable

economic environment for everyone within the region, rather than only the upper class. Furthermore, achieving Azerbaijan's long-term plans can offer many financial benefits for a bottom up development.

The limited domestic market is also a concern that doesn't enable the production of non-oil items in Azerbaijan. As a consequence, we consider non-oil industry diversification and supporting small and medium-sized businesses as potential alternatives to the Azerbaijani economy's weakness. Furthermore, SME growth will also bring value to the economy, as local demand can be increased.

The position of SMEs in developing an economy for sustainable development and consolidating a country's economic system is crucial. This became more apparent during the 2008 crisis that SMEs became more responsive to the pressures of global economic recessions, which may be a similar case for Azerbaijan.

In addition, Azerbaijan should invest heavily in education and academics to mitigate future impacts of allocating its real economic resources through bottom-up development. Higher taxes from the oil industry will be dedicated to the production of human resources in order to create an successful economic condition that is impossible to occur before the systemic changes are carried out to boost the economic sectors with the key emphasis on education, because it is the social base and real benefit of an economy without an inherent and monetary value. It will allow the economy to expand sustainably, since its qualified human capital is the most valuable commodity for a country's economy. That can build the country's long-term prospects for social development.

To strengthen the economic condition in Azerbaijan and to address the above issues, we submit the following suggestions.

Recommendations:

- Supporting the Strategic Road Map aims to boost the Azerbaijani economy's self-sufficiency by keeping with the planned aims.
- Improving the legislative framework in Azerbaijan that will bring more Foreign Direct Investments (FDIs). Since FDIs are designed for long-term outlooks and investors are not able to invest in a high-risk environment.

- Facilitating the development of SMEs by strengthening the rule of law and establishing new attractive policies. In this way, the diversification of the economy should be established through a bottom-up strategy, as small and medium-sized companies introduce technologies to the market which in the long run would establish a favorable situation for Azerbaijan. Consequently, developments introduced by the small and medium-sized businesses will improve local development by promoting economic value added.
- Creation of a “Diversification Fund” to create and execute proposals to boost the non-oil sector in Azerbaijan by supplying the government with innovative recommendations and policy initiatives to develop new economic growth strategies in Azerbaijan; The Fund should be involved in grassroots analysis of the current economic difficulties in Azerbaijan in order to be able to simplify the development process for the diversification of the Azerbaijani economy, which is an important necessity for Azerbaijan's future. In addition, native development, big business and enterprises would be funded through the Diversification Fund, while Azerbaijan's export capacity will be further enhanced.
- Creation of a Currency Market Balance to evaluate foreign currency demand and currency volume entering the Currency Market; It would thereby increase the predictability of the AZN exchange rate and reduce the uncertainties so that potential price adjustments can be mitigated. In addition, a volatility space should be created for the exchange rate of the currency of the country, to make Manat resistant to any minor variation in the exchange rate marketplace.

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