MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

AZERBAIJAN STATE ECONOMIC UNIVERSITY

INTERNATIONAL MAGISTRATION AND DOCTORATE CENTER

MASTER DISSERTATION

ON THE TOPIC

"The impact of oil price shocks on corporate return in Azerbaijan"

Huseynli Gurban Altay

BAKU – 2020

THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

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Code and name of Programme: 060403 Finance

Specialisation: Financial Management

Group: 652

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BAKU - 2020

Elmi and

I, Gurban Huseynli Altay swear that I have written my master's dissertation on "The impact of oil price shocks on corporate return in Azerbaijan" in full compliance with scientific ethics and rules of reference and reflecting all the sources I use in the bibliography.

THE IMPACT OF OIL PRICE SHOCKS ON CORPORATE RETURN IN AZERBAIJAN

ABSTRACT

Actuality of the subject. There is growing interest in the causes and consequences of oil price changes. Various economic factors drive oil prices. Changing oil prices can affect the economy in different ways, depending on the factors driving the change.

Research goals and objectives: The main goal of the study is to measure the effect of oil price shocks in Azerbaijan by using several econometric methods

The information base of the research: From the Central Bank of Azerbaijan, State Oil Company of the Republic of Azerbaijan, Baku Stock Exchange,, State Statistics Committee of the Republic of Azerbaijan, World Bank

Research methods: Models such as Vector Error Correction Model, and Asymmetry test were used to find the relationship between oil price shocks and corporate investment**.**

Research database: All data related to the variables were taken from the Central Bank of Azerbaijan, Azerbaijan statistical committee, World Bank.

Limitations of research. While examining all of the relevant secondary data and information in this study, no significant issue has been identified during the process.

The practical importance of the study. The key findings of the research are as follows: Firstly, there is a significant linear relationship between oil price shocks and the economic activity of Azerbaijan. Secondly, oil price shocks affect significantly the inflation, interest rate and exchange rate, leading to increased inflation, tightened monetary policy and depreciation of the exchange rate in the country.

Key words: Oil, Corporate, Asymmetry, Stock Exchange

NEFTİN QİYMƏT SARSINTILARININ AZƏRBAYCANIN KORPORATİV GƏLİRİNƏ TƏSİRİ

Xülasə

Mövzunun aktuallığı. Neftin qiymətindəki dəyişikliklərin səbəb və nəticələrinə maraq artmaqdadır. Neftin qiymətinə müxtəlif iqtisadi amillər səbəb olur. Dəyişən neft qiymətlərinin dəyişməsinə səbəb olan amillərdən asılı olaraq iqtisadiyyata müxtəlif yollarla təsir göstərə bilər.

İşin məqsədi: Tədqiqatın əsas məqsədi bir neçə ekonometrik metoddan istifadə etməklə Azərbaycanda neft qiymətləri sarsıntılarının korperativ gəlirlərə təsirini ölçməkdir.

İstifadə olunmuş tədqiqat metodları: Vector Error Düzəltmə Modeli və Asimmetriya testi kimi modellərdən neft qiymətindəki zərbələr ilə korporativ investisiya arasındakı əlaqəni analiz etmək üçün istifadə edilmişdir.

Tədqiqatın informasiya bazası: Azərbaycan Mərkəzi Bankından, Azərbaycan Respublikası Dövlət Neft Şirkəti, Bakı Fond Birjası, , Azərbaycan Respublikası Dövlət Statistika Komitəsindən, Dünya Bankı

Tədqiqatın məhdudiyyətləri: Bu işdəki bütün müvafiq ikinci məlumatları və məlumatları araşdırarkən, proses zamanı heç bir əhəmiyyətli məsələ aşkarlanmadı.

Tədqiqatın elmi yeniliyi və praktiki nəticələri: Birincisi, neftin qiymət sarsıntıları ilə Azərbaycanın iqtisadi fəaliyyəti arasında ciddi xətti əlaqə mövcuddur. İkincisi, neftin qiymətindəki şoklar inflyasiyaya, faiz dərəcəsinə və məzənnəyə əhəmiyyətli dərəcədə təsir göstərir, inflyasiyanın artmasına, sərt pul siyasətinin və ölkədə məzənnənin dəyərdən düşməsinə səbəb olur.

Nəticələrin istafadə oluna biləcəyi sahələr: Müəssisənin maliyyə siyasətinin təkmilləşdirilməsinə dair tədbirlər planı üçün baza materal rolunu oynaya bilər.

Açar sözlər: Neft, Korporativ, Asimmetriya, Birja

ABBREVIATIONS

ADF	Augmented Dickey-Fuller
BRICS	Brazil, Russia, India, China, South Africa
CBAR	Central Bank of Azerbaijan Republic
CBR	Central Bank Rate
CI	Confidence Intervals
CPI	Consumer Price Index
EIA	Energy Information Administration
FEVD	Forecast Error Variance Decomposition
GARCH	Generalized Autoregressive Conditional Heteroskedasticity
GDP	Gross Domestic Product
GFC	Great Financial Crisis
GMM	Generalized Method of Moments
IMF	International Money Fund
IRF	Impulse Response Functions
LNG	Liquefied natural gas
NYSE	New York Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PP	Phillips-Perron
SCRA	Statistics Committee of the Republic of Azerbaijan
UAE	United Arab Emirates
UK	United Kingdom
US	United States
USA	United States of America
USD	United States Dollar
SOCAR	State Oil Company of Azerbaijan Republic
XR	Echange

CONTENTS

INTRODUCTION

Actuality of the subject. There is developing enthusiasm for the causes and results of oil value changes. Different financial elements drive oil costs. Replacing oil costs can influence the economy in various manners, contingent upon the components driving the change. A superior comprehension of these drivers would assist policymakers with settling on the fitting reaction to changing financial conditions.

There is, obviously, an enormous writing on the macroeconomic effect of oil-value stuns, concentrating specifically on the reaction of genuine financial development and shopper value swelling in oil-bringing in and trading nations.

This investigation evaluates the impact of oil value stuns on corporate return and economy with econometric models. These econometric models offered chances to gauge and gauge the worth and quality of impact of oil value stuns on other monetary markers. Thanks to these econometric models, in this study, impact of oil price shocks on corporate investment and economy were measured and evaluated for Azerbaijan.

Research goals and objectives: The main goal of the study is to measure the effect of oil price shocks in Azerbaijan by using several econometric methods and examining how oil price change affects investment of the companies and Azerbaijan economy, then giving recommendation based on the results of the research.

Object and subject of research: The main objects of the study are oil price shocks effects in the economy, the Central Bank's reports, bulletins, rules. Besides, quaterly data for GDP, the consumer price index, the central bank rate, exchange rate and the growth rate of Brent crude oil prices were used as objects of the study, while running econometric model.

Research methods: In this study, models such as Vector Error Correction Model, and Asymmetry test were used to find the relationship between oil price shocks and corporate investment. All the data and relevant information were secondary.

Research database: All data related to GDP, the consumer price index, the central bank rate, exchange rate and the growth rate of Brent crude oil prices were taken from the Central Bank of Azerbaijan, Azerbaijan statistical committee, World Bank. All data covers the quarterly period of 2001:q2 – 2019:q4.

Limitations of research. While examining all of the relevant secondary data and information in this study, no significant issue has been identified during the process.

The practical importance of the study. Because of this investigation, Asymmetry test results show that, from the complete example, regardless of whether the oil value rises or falls, or the oil cost is sequential, these elements don't have a significant sway on how the vulnerability of oil costs affects corporate venture, that is, there is no asymmetry.

The structure and length of dissertation. Initial segment of this investigation manages hypothetical interrelation between oil costs and stock returns. In the subsequent part, the effect of oil value stuns on corporate return was secured. Third piece of the examination comprises of technique, information and model determination. Finally end and suggestion of the investigation were introduced.

CHAPTER I. OIL PRICE SHOCKS INFLUENCE ON CORPORATE RETURN

1.1 Theoretical connection between oil price and stock return

The theoretical bond to each of oil fees and stock retrievals might be affirmative or privative. Following the theoretical rationale proposed by Jones and Kaul (2017), many of the literature has been directed toward testing the cash flow hypothesis, that claims asset values to be identified by means of predicted discounted cash flows (Fisher, 2016). The cash flow hypothesis offers that there may be a privative or affirmative bond to each of oil cost and stock retrievals. Two channels indicate a privative relation. First, since oil is the main resource for most firms, lofty oil fees rise the cost of production, lessening future cash flows, income and dividends and, consequently, stock retrievals. Also, grandiose oil charges may prompt elevated expansion and grand ostensible financing costs. Since financing costs are utilized to limit anticipated future incomes, this will result in lower benefits, profits and, thusly, stock recoveries. The third channel includes certifiable or privative bonds. Oil expense instability may influence the affectability of adjustments in oil charges to the segment of the rebate rate threat premium and income through security influences. Contingent upon the indication of the threat premium, which may differ generally by organization and time, affectability to oil esteems may have a confirmed or privative influence on oil expenses.

The other conceivable reason for the positive cling to every one of oil charges and stock recoveries is that, as Kollias and others state, speculators may well partner rising oil expenses with a quickly developing economy. Thus, grandiose oil charges may reflect elevated business execution and an accompanying influence on financial exchanges. (Kollias, C., Kyrtsou, 2018). Appropriately, Hamilton affirms that before the GFC, rising oil charges reflected rising markets and elevated degrees of business certainty. Chen and others offer that oil expense instability and securities exchange elements are positively corresponded. Accepting China as a contextual analysis, they offer that these bonds

are driven by financial specialist assumption, in which speculators answer to unpredictability in oil recoveries because of vulnerability by applying upward weight on loads of champs. (Hamilton, J.D. 2013)

Kilian and Park (2019) show that the reaction of stock recoveries to oil charges may be positive or privative, contingent upon the idea of the stun. Request stuns emerging from vulnerability about future oil conveyance deficiencies offer ascent to a privative cling to every one of oil charges and stock recoveries, while grand oil expenses brought about by unanticipated worldwide development have a certifiable influence on stock recoveries. They assert that toward the start of the business cycle there will be a positive relationship to every one of oil expenses and stock recoveries, mirroring that elevated request for fabricated products invigorates both oil charges and stock recoveries.However, in the long run, we might expect the oil fee ratio to become privative. Taking a two-stage Markov switch approach, Zhu and others also found that the relative significance of delivery and inquiry shocks varies to each of low and lofty volatility modes. However, Ciner avers that an affirmative correlation might be surprisingly robust. According to Ciner, rising oil fees do not always indicate privative stock retrievals. In fact, there may be long periods of joint growth in the oil and stock markets (our emphasis).

1.2 Oil price and aggregate stock return

Most of the early literature was devoted to the sway of oil fees on aggregate stock retrievals for specific countries or groups of countries. In general, most of these studies found a privative bond. However, some studies have found an affirmative association. There are also studies whose outcomes are ambiguous or there is no association to each of oil fees and stock retrievals .There are a number of causes for these mixed outcomes that we will examine in details beneath. One of them is that most of these researches do not explicitly take into consideration heterogeneity to the extent that firms included in the aggregate index might benefit or lose from alterations in oil fees. As per Mollick and Assefa, there is no cause why oil fees should have the same sway on aggregate indices, as the stock index is

a combination of firms that might make a profit or loss in response to fee oil fluctuations. (Mollick and Assefa, 2019)

Secondly, mixed outcomes might be partially explained by the heterogeneity of the level of oil dependence to each of firms in stock markets in variable countries. The main cause that most studies on the bond to each of oil fees and aggregate stock retrievals showed that they have a privative bond is that most studies have concentrated on the United States and other significant oil-importing countries, such as like Mightada, Japan, and most European countries where broader support for the cash flow hypothesis could be predicted. Third, many researches, all of them prior to Kilian and Park (2019), do not take into account the nature of shock. Fourth, most of these researches do not take into consideration that the ratio of oil fees to stock retrievals varies over time. Those investigations that do this will in general recognize the privative attach to every one of oil charges and stock recoveries before 2000, which gets flimsy and vanishes or turns out to be less articulated in the new thousand years, may reflect showcase bubbles. (Kilian and Park, 2019)

1.3 Do oil price shocks have asymmetric influence on stock return?

Various investigates have indicated that rising/falling oil charges have a lopsided influence on macroeconomic factors (Mork, 2010) and fuel expenses (Bacon, 2010). Most early investigations of the attach to every one of oil expenses and stock recoveries offered that the basic factors exhibit a straight and even modification process (Zhu et al, 2017).

Wan (2017) gives a hypothetical confirmation for why oil charges may have a hilter kilter influence on stock recoveries. He offers that the best answer for recorded organizations is to deliver profits to their investors just when their anticipated current worth surpasses a specific edge. An ascent/fall in oil charges may either push the anticipated present estimation of future incomes underneath a limit level or permit the firm to deliver grand profits. In the event that an ascent in

oil expense pushes the anticipated current incentive underneath an edge, the firm chooses not to deliver profits and faces a fall in stock charges, while if the oil expense diminishes, the firm delivers a grand profit, which is probably going to prompt an ascent in expense stocks. Wan (2017) offers that the privative effect of the previous will be greater than the certifiable effect of rising stock expenses. There is additionally the chance of an aberrant lopsided influence through a markdown rate if the money related authority responds fluidly to rising oil expenses and a drop in loan cost the board. (Wan, 2017)

There is blended exact proof that oil expenses have a lopsided influence on stock recoveries. A few explores have indicated that rising expenses have a more prominent influence on oil gainfulness than rising charges. All things considered, different inquires about have not discovered proof of awry influences. Tsai (doesn't discover any indications of asymmetry before GFC, however shows hilter kilter influences during and after GFC. Ramos and Veiga (2018) discover proof of topsy-turvy influences in oil-bringing in nations, yet not in oil-sending out nations. By and large, it is best that oil charges have a deviated influence on stock recoveries. Most examines that have discovered hilter kilter influences to bomb have utilized combined stock recoveries. As Tsai (2019) states, the total stock record may blend the heterogeneous influences of positive and privative oil charge stuns on the recovery on singular stocks. (Tsai, C. L.2019)

There is additionally much proof that the cling to every one of oil expenses and stock recoveries is non-straight (sight Segment 1.4 underneath), which is steady with the lopsided influence to every one of oil charges and stock recoveries.

1.4 How do stock return answer to variable types of oil price shocks?

Relying on Kilian’s ground-breaking work (2019), which shows that delivery and inquiry shocks have variable implications for the US economy, Kilian and Park (2019) demonstrate that rising oil fees have variable sways on US stock retrievals, depending on nature of structural shock. They differ three types of structural impacts. Oil shocks reflect unpredicted alterations in oil production.

Aggregate inquiry shocks show alterations in global oil inquiry tied with the global business cycle. Shocks from specific oil inquiry are tied with a rise in precautionary inquiry due to concerns about a future oil shortage. Kilian and Park (2019) aver that studies that do not distinguish to each of these delivery and inquiry shocks will take into consideration the response of stock retrievals to the sway of the medium oil fee and, therefore, their valuations will either be biased towards no sway or will not be stable.

Kilian and Park (2019) believe that aggregate inquiry shocks and unit oil inquiry shocks are a lot more significant than world oil inquiry shocks to explain US stock retrievals, with specific oil inquiry shocks privatively sway US stock retrievals and shocks aggregate inquiry have an affirmative sway on US stock retrievals. The data on oil delivery shocks were consistent with the work of Hamilton (2019a, 2019b), according to which oil delivery shocks are no longer significant for macroeconomic alterations in general. Kang and others (2019) expand the analysis of Kilian and Park (2019) by distinguishing to each of oil production in the United States and outside the United States. By doing this, they locate that positive stuns in US oil supplies tied with an ascent underway since 2009 affirmatively affect US stock recoveries, while, dissimilar to the result of Kilian and Park (2019), oil conveyance stuns outside the US is similar to request stuns. Kang and others (2019) show that the commitment of oil conveyance stuns and total request stuns to clarifying modifications in US stock recoveries has adjustment over the long run, with total request stuns getting increasingly huge and oil conveyance stuns less huge after GFC. (Kilian, L. & Park, C. 2019).

Subsequent research for other countries showed mixed outcomes for oil delivery shocks. Some researches have shown that shocks from oil supplies affirmatively sway stock retrievals (Basher and others, 2017; Abhyankar and others, 2018). Other studies have shown that shocks from oil supplies adversely sway stock retrievals.Apergis and Miller (2019) found that shocks from oil supplies have little sway on stock retrievals in eight developed countries. To each of inquiry shocks, majority of the subsequent literature normally confirmed the

conclusion of Kilian and Park (2019) that aggregate inquiry shocks have an affirmative sway, and specific oil inquiry shocks have a privative sway on stock retrievals. Güntner (2019) uses the Kilian and Park (2018) system to study the impact of oil inquiry and delivery shocks on stock retrievals in six OECD countries. He believes that shocks from oil supplies have little sway: shocks from aggregate inquiry, rise oil fees and stock retrievals, while the sways of shocks from specific oil inquiry privatively sway net oil-importing countries and have an affirmative sway on Normanner (net oil exporter). Broadstock and Filis (2019) found that the impact of the three types of shocks on stock retrievals varies significantly across sectors.

1.5 The oil price-stock return connection differs over time

Nonlinearities in the proportion of oil charges to stock recoveries emerge when stock recoveries respond dynamically to oil expenses during times of low and grand monetary instability tied with a downturn or blast. Such instability may occur by budgetary emergencies or outer occasions, for example, geopolitical pressures or wars that adjustment the conduct of oil expenses or stock recoveries. Mohaddes and Pesaran (2019) accept that during 1946-2019, there is no steady attach to every one of oil charges and stock recoveries in the US. Mollick and Assefa (2019) and Tsai (2018) accept that US stock recoveries responded dynamically to oil expense stuns previously, during and after the GFC. Mill operator and Ratti (2019) accept that the privative long haul cling to every one of oil expenses and stock recoveries vanishes after September 2000 in worldwide financial exchanges.

In addition to financial turmoil, some researches have examined the sways of other external shocks on the bond to each of oil fees and stock retrievals taking non-linear models. Kollias and others (2018) found that in the US and major European countries, the correlation to each of oil fees and stock retrievals was lessend and volatility rose after the initial stages of the two wars in Iraq, but one-time terrorist incidents had little impact. Bouri and others (2019) believe that the

impact of oil fee shocks on financial company stocks and services on the Jordanian stock market intensified after the Arab Spring, which began in 2010. Zhang (2019) believes that the affirmative correlation to each of oil fees and stock retrievals on the Chinese market has altered from affirmative to privative after the first war in Iraq. Similarly, Bharn and Nikolovann (2016) believe that after the terrorist attack of September 11, 2001, the first war in Iraq and the civil unrest in Iraq in 2006, the bond to each of oil fees and stock retrievals on the Russian market turned to be privative. Cameron and Schnusenberg (2019) found that the privative bond to each of oil fees and US auto stock retrievals intensified after the first Iraq war.

In general, these studies show that external events raise the volatility of oil fees and / or stock markets, which, in turn, creates nonlinearity in the bond to each of oil fees and stock retrievals. The market may be more effective at absorbing information about single terrorist incidents than about wars (Kollias and others, 2018), although overall geopolitical and civil unrest amplifies the impact of oil fees on stock retrievals and creates privative bonds to each of the two variables. One of the channels through which this might happen is geopolitical instability, which rises uncertainty about future oil supplies, in which case there is a bond with the literature, which offers that shocks from oil inquiry tend to have a privative impact on stock retrievals.

A number of researches have examined the sway of large affirmative or privative fluctuations in oil fees on various quantiles of stock retrievals. These studies typically show that large affirmative or privative fluctuations in oil fees have an asymmetric sway on stock retrievals with a stronger sway observed in the lower quartile compared to the upper. Such influences likewise rely upon time and rely upon budgetary emergencies and the condition of the securities exchange. By dissecting information from three created markets and five BRICS markets, Reboredo and Ugolini, (2018) locate that unbalanced influences existed, however were constrained, before GFC, while after GFC they turned out to be substantially more articulated. In the interim, Lee and Zeng (2017) for the G7 and Zhu et al (2018) markets for China accept that the lopsided influences of enormous

variances in oil expenses on the lower and upper quantiles of stock recoveries vary contingent upon the bull and bear markets.

1.6 The oil price-stock return connection across sectors

One limitation of the use of data on aggregate stock retrievals is that they potentially mask heterogeneity in the bond to each of oil fees and stock retrievals by sector. Mature markets are a lot diversified, so aggregate stock indices show the medium of many sectors, while other markets are centred on a number of sectors. Consequently, the overall bond to each of oil fees and stock retrievals in studies that use cumulative stock retrievals is likely to depend on the industry structure of the market. In response; there are currently a number of studies that examine the correlation of oil fee retrievals at the sector level. Most of them are for the United States (sight, for example, Elysani and others, 2016, 2018; Narayan & Sharma, 2018), Europe or G7 countries (Lee et al, 2018). In addition to China, for which there are numerous sector-level studies, there is little research for emerging or transitional markets. Maybe the most comprehensive research in terms of latitude is Nandha and Faff, who examined the bond to each of oil fees and 35 global industry indices.

One of the main findings of these studies is that increasing oil fees have a affirmative sway on stock retrievals in oil and gas companies .El Sharif and others (2015) found a affirmative but weak sway of oil fees on UK oil and gas revenues. Kang and others (2019) distinguish to each of oil shocks and aggregate inquiry shocks as part of Kilian and Park (2019) for oil and gas companies. Unravelling the various shocks, they find that shocks in oil supplies that cause delivery disruptions tend to have a privative sway, while shocks in aggregate inquiry have an affirmative sway on the profitability of oil and gas reserves.(Kilian and Park 2019)

The second noteworthy end is that in businesses wherein oil is the fundamental expense of creation — production and transport — expanding oil charges will in general have a privative influence on stock recoveries. Nandha and

Faff (2018) accept that oil expenses privatively correspond with the incomes of assembling firms. In a unique investigation of the issue, Aggarwal et al (2018) reported that the ascent in oil charges unfavorably influences the incomes of a vehicle organization. Results of Aggarwal and others (2018) are steady with information from Cameron and Schnusenberg (2019), which demonstrate a backwards attach to every one of expanding oil expenses and stock recoveries on vehicle producers, with the greater part of the effect focused on SUV makers. Kristanpoller and Concha (2018) found that rising oil expenses positively influence aircraft stock recoveries. While fuel is a major expense to carriers, these creators clarify their result by the way that rising oil charges relate with grand financial development and more noteworthy request for air travel. The certain supposition that will be that total request stuns win, however it is hard to locate if this is so in light of the fact that the creators don't recognize the sort of stun.

The third fundamental end is that oil charges clarify adjustments in the recovery on portions of elective vitality organizations (Henriques and Sadorsky, 2018), and that rising oil expenses have a positive influence on the recovery on portions of elective vitality organizations. There is some proof that this bond is non-direct (Reboredo and others, 2019) and that it has reinforced over the long run (Managi and Okimoto, 2018), specifically after GFC (Broadstock and others, 2018).

1.7 The oil fee-stock retrieval bond across firms

A number of studies have examined the bond to each of oil fees and stock retrievals taking firm-level data. The advantage of firm-level data is that it provides a lofty level of disaggregation compared to sector studies and might reveal heterogeneity in industry stocks. Narayan and Sharma (2016) believe that the manner individual NYSE firms answer to alterations in oil fees show the sector to which they belong, with outcomes generally similar to those found in sector-level studies. Narayan and Narayan (2018) believe that when the fee of oil reached $ 100 per barrel, it had a privative sway on the firm's NYSE profitability, as they fell by

almost 1,600 shares and a number of subsamples of the shares declined variably. Phan and others (2019) examine how oil refining sways the profitability of oil consumer stocks in variable manners for oil producers at the firm level.

A portion of these examinations utilize firm-level information to inspect how firm size influences the attach to every one of oil charges and stock recoveries (Sadorsky, 2018; Narayan and Sharma, 2016, 2018; Tsai, 2019). These examinations demonstrate that oil charges are bound to be privatively connected to stock recoveries in medium-sized (Sadorsky, 2018) or enormous firms before the GFC (Narayan and Sharma, 2016, 2018; Narayan and Narayan, 2018; Phan and others, 2019) Tsai (2019), in any case, accepts that the privative size-influence in huge firms may have debilitated after GFC.

Gupta (2018) utilizes firm-level information from 70 nations to look at how rivalry influences the cling to every one of oil expenses and stock recoveries. He accepts that oil and gas organizations, which are progressively shielded from rivalry, are less delicate to oil expense spikes. This result offers that market power debilitates the instability of stock recoveries at the organization level.

1.8 The oil fee-stock retrieval bond in net oil importers vs net oil exporters

It might be predicted that oil fees have variable sways on stock retrievals in countries that are net exporters of oil compared to net importers of oil. It might be predicted that a rise in oil fees will have an affirmative impact on stock retrievals in oil exporting countries, since lofty oil fees will raise the country's income. By the time, it might be predicted that rising oil fees will have a privative impact on the profitability of reserves in oil importing countries, given that oil is one of the most significant factors of production. a number of researches have clearly examined the bond to each of oil fees and stock retrievals in oil importing and exporting countries .Other studies have concentrated on one or a number of net oil importing countries (Masih and others, 2016; Cunado & Perez de Gracia, 2018; Bouri, 2019; Silvapulle and others, 2019) or one or a number of net oil exporting

countries (Bjornland, 2019; Arouri & Rault, 2018; Mohanty and others, 2017; Ramos & Veiga, 2019; Gil-Alana & Yaya, 2019; Demirer and others, 2019). In line with expectations, these studies usually show that lofty oil fees affirmatively sway stock retrievals in oil-exporting countries and privatively in oil-importing countries (Demirer and others, 2019).

A number of studies have examined the sways of various types of shocks proposed by Kilian and Park (2019) on oil importing and exporting countries. The outcomes were varied. Cunado and de Gracia (2018), foctaking only on oil-importing countries, believe that shocks from oil supplies adversely sway stock fees. Filis and others (2017) found that aggregate inquiry shocks have an affirmative sway, and oil specific inquiry shocks have a privative sway, while oil delivery shocks do not sway stock fees for oil importers and exporters. Wang and others (2018) found that stuns from oil supplies that ascent oil creation rise stock charges in oil bringing in nations since creation rises diminish expenses, while in oil sending out nations the bond is non-direct - stock charges at first fall, however then ascent over the long haul, mirroring the differentiation to every one of the present moment and long haul charge versatilities of oil request. Wang and others (2018) additionally found that total request stuns would in general have a positive influence on securities exchanges in oil bringing in and trading nations, and that these influences were increasingly diligent to every one of oil exporters.(Wang, 2018).

1.9 Role of volatility in shaping the oil price—stock return connection

A number of studies attempted to understand how volatility sways the sway of oil fees on stock retrievals. Choi and Hammoudeh (2018) examine whether oil fee volatility sways the S & P500. They open the lofty and low volatility modes that they use to attract the attention of investors. Taking European data, Arouri and others, (2018) study the secondary sways of volatility to each of oil and stock markets. Their analysis shows convincing evidence of the spread of volatility with the strongest spread from oil to stock markets. Interestingly, their analysis shows

that the secondary sways of volatility in the two markets do not matter. The authors use this information to draw conclusions for hedging. These findings for Europe and the United States also apply to the emerging market. Ghana Lin and others (2019) find compelling evidence of the spread of volatility and hedge effectiveness. In general, taking various methods, these outcomes of strong side sways were also discovered by Kang et al (2019), who use the VAR structural model, in contrast to the GARCH type models used by Choi and Hammoudeh (2018), Arouri and others (2018) and Lin and others (2019). From a methodological point of view, Salisu and Oloko (2019) supplement these studies with the introduction of structural gap analysis. These authors show that structural alterations significantly sway the sway of the spread of volatility on the stock market.

The job of oil expense unpredictability on stock recoveries has additionally been reported. Elyasiani and others (2017) appear, taking US industry information, that the unpredictability of oil prospects recoveries influences the abundance recoveries of oil-taking enterprises. Narayan and Sharma (2018) inspect whether oil expenses add to stock charge instability. They uncover the heterogeneous influence of oil charges on the unpredictability of stock recoveries and show that such measurable results are of financial signifimightce for the conduct of speculators in exchanging.

1.10 The role of lofty order moments of oil fees

The bond to each of oil fees and stock retrievals was studied almost exclusively taking the first moment of oil fees; one exception is those studies that are stated in section 1.9. However, these studies center only on the second point related to the retrieval of stocks or oil fees. Odd or even moments of lofty order (excess, asymmetry, hyper-excess and hyper-asymmetry) were not considered in this literature. This is a significant gap in the literature, especially when you realize that there are moments of a lofty order (in addition to the second order) that may be significant for stock retrievals. In this case, two caveats should be taken into

account when considering the sway of lofty order oil fee moments on stock retrievals. First, lofty-order moments are best-modelled taking intraday data. Secondly, computational problems are likely to arise when modelling the role of lofty order moments. For example, taking one-minute oil fee data to extract lofty-order moments might be computationally difficult, although this is not impossible.

1.11 Oil price and other financial instruments

In the writing on the effect of oil expenses on money related markets, practically all consideration was paid to stock recoveries. Kang and others (2018) inspect the influence of oil expense stuns on the yield of the US security showcase, however the influence of oil charges on different parts of the budgetary framework is generally less contemplated. In such manner, three variable zones of research might be fascinating. The first of these territories of research is the job of oil expenses in affecting choices in regards to capital structure. Firm influence (obligation) and how well it is overseen is at the center of corporate account look into. Normally, oil charges - in light of the fact that they influence the expense of creation and, thusly, influence deals and benefits/misfortunes - influence the objective influence of firms. Notwithstanding, nothing is thought about how, if by any stretch of the imagination, oil charges influence.

In the subsequent writing, the job of oil expenses is less comprehended. It is the determinants of corporate venture. In the region of corporate account, an endeavor was made to comprehend what characterizes corporate venture as a major aspect of Tobin's Q speculation model. Ordinarily, in this model, Tobin's Q represents motivating force to contribute, and it is easy to locate thoughtfully how oil expenses (which influence cost) may legitimately or in a roundabout way influence corporate speculation, influencing the motivator to contribute. Notwithstanding, it is muddled whether expenses influence oil for corporate interest as such.

Third writing alludes amazingly risk profiles. Credit threats reflected, for instance, in the credit default trade spread (Albums), are a huge supporting instrument. There is dynamic writing dissecting the cling to every one of Cds and money related markets, and there is no reference to the job of oil charges in this article. For sure, oil charges influence firm spending and income structure. This, thusly, as needs be adjustments the threat profile of firms. As peril profiles modification because of oil expenses, this adjustment is reflected in the Discs spread. Oil expenses, impacting the circulation of Albums, might influence the budgetary framework; yet this mentality is less comprehended.

THE IMPACT OF OIL PRICE SHOCKS ON CORPORATE RETURN IN AZERBAIJAN ANALYSIS AND FUTURE PROSPECTS

2.1 The Asymmetric influence of Oil Price Uncertainty on Corporate Investment in Azerbaijan

In spite of the fact that couple of researchers have investigated the effect of worldwide oil charge vulnerability on sustainable power source organizations' speculation, there are a great deal of expositions that have talked about the venture matters of sustainable power source organizations. For instance, Wustenhagen and Menichetti (2014) propose an applied structure for sustainable power source venture and uncover that risk, recovery, and arrangement all influence firms' present speculation levels. Liu (2015) features the over venture issue in wind power limit and investigates the elements that may asect organizations' over speculation Zhang and others(2016) test the overinvestment theory dependent on standard finance system and shows that sustainable power source organizations do have over-venture matters in China. Zeng and others (2017) gauges the speculation efciency of Chinese new vitality organizations taking a four-phase semi-parametric DEA investigation structure, and finds that such organizations have low venture efciency. It expresses that the speculation efciency of Chinese new vitality organizations is afected by worldwide and local macroeconomic conditions and trademark factors of ventures.

Q speculation model is utilized to test the efect of oil expense instability on corporate venture. Under standard neoclassical presumptions about firm conduct, the Q speculation model may be spoken to as the accompanying recipe:

$$(I/K)\ t=\alpha+\beta Qt+\varepsilon t \quad (1)$$

in which, It represents firm's gross long haul speculation, Kt speaks to the book estimation of the organization's fixed capital stock, Qt implies the peripheral q, and εt is an arbitrary mistake term. In exact specifications, Condition (1) is typically increased with other logical factors, and it has fixed effects for cross area and time.

The exact model of this investigation is set as follows:

$$(I/K)i,t=\alpha+\gamma Voilt-1+\beta 1TQi,t-1+\beta 2(CF/K)i,t-1+\beta 3(S/K)i,t+\delta Zi,t+\mu i+\theta t+\varepsilon i,t \quad (2)$$

(I/K) I, t speaks to the speculation capital proportion, which is gained bydividing the present venture by the fixed capital toward the start of the period. Voil is the unpredictability of worldwide oil charges. (CF/K) represents money flow scaled by the start of-period capital stock, which demonstrates the conceivable job of liquidity. S/K implies the firm's deal isolating by capital stock, and Z represents the control variable vector. μi and θt represent the firm-specific and time-specific fixed efects. We include Tobin Q as an intermediary variable for venture chances to the relapse condition.

Considering that there might be asymmetry in the effect of oil expenses vulnerability, we further added a cooperation term to the condition.

Table1. Descriptive statistics on the main variables

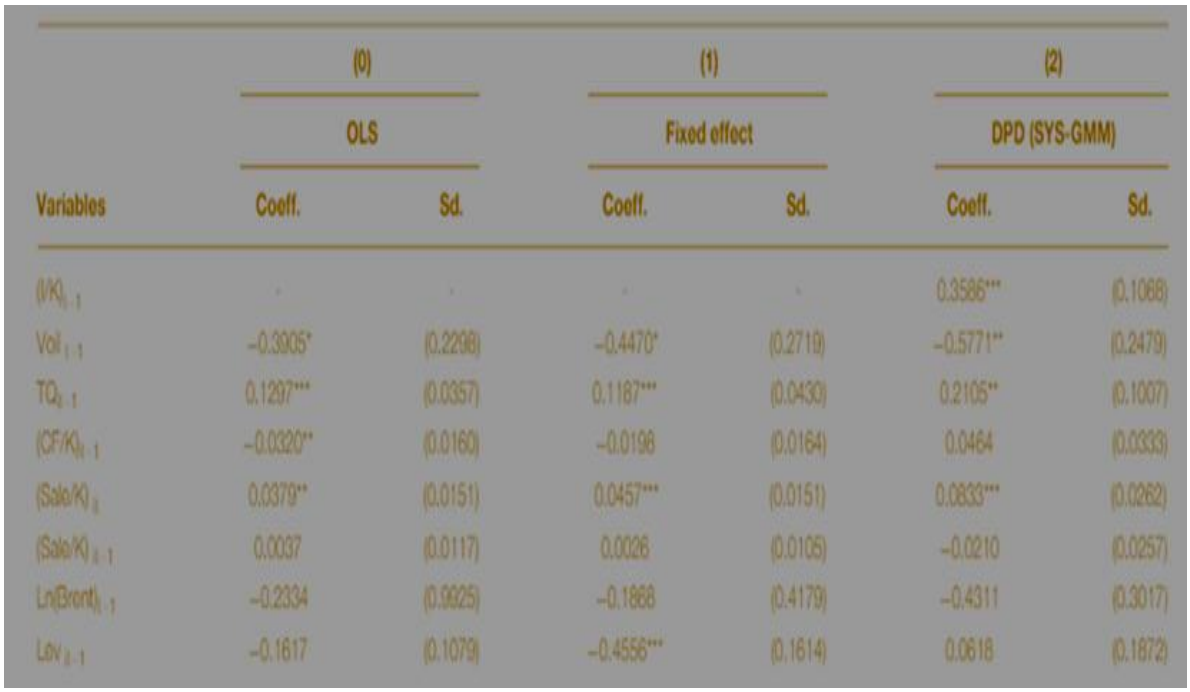
Variable	Description	Mean	SD.	Min	Max
I/K	Investment capital (fixed assets) ratio	0.5901	0.9452	0.0111	7.5617
TQ	Tobin's Q, the ratio of the market value to replacement cost	2.1366	1.0807	0.8872	6.6338
CF/K	Cash flows scaled by fixed assets	−0.9845	2.6251	−21.026	2.3283
Sale/K	Sales capital ratio	4.5553	7.0403	0.1839	56.995
Lev	Leverage rate, total debt to total assets ratio	0.4880	0.2121	0.0394	2.8408
Size	Natural logarithm of total assets	22.015	1.3424	18.9112	26.336
ROA	Net profit divide the medium value of total assets	4.4236	7.8496	−56.047	87.735

Source:https://www.researchgate.net/publication/322538205_What_do_we_know_about_oil_prices_and_stock_returns

The experiences of standard components are summed up in Table 1. The determined variables, I/K, CF/K, Deal/K, TQ, are winsorized at the first and 99th percentiles before they are used in the specific assessment. It shows that the mean of firms' funding extent is 0.5902, and the most extraordinary and least characteristics are 7.5618 and 0.0112 as requirements are. The medium estimation

of Tobin's Q is >1, which is 2.1367. The medium estimation of the business capital extent is 4.5554.

Table 2. The impact of oil fee volatility on investment



	(0)		(1)		(2)	
	OLS		Fixed effect		DPD (SYS-GMM)	
Variables	Coeff.	Sd.	Coeff.	Sd.	Coeff.	Sd.
$(I/K)_{i,t-1}$					0.3586***	(0.1068)
$Vol_{i,t-1}$	−0.3905*	(0.2298)	−0.4470*	(0.2719)	−0.5771**	(0.2479)
$TQ_{i,t}$	0.1297***	(0.0357)	0.1187***	(0.0430)	0.2105**	(0.1007)
$(CF/K)_{i,t-1}$	−0.0320**	(0.0160)	−0.0198	(0.0164)	0.0464	(0.0333)
$(Sale/K)_{it}$	0.0379**	(0.0151)	0.0457***	(0.0151)	0.0833***	(0.0262)
$(Sale/K)_{i,t-1}$	0.0037	(0.0117)	0.0026	(0.0105)	−0.0210	(0.0257)
$Ln(Brent)_{t-1}$	−0.2334	(0.9025)	−0.1868	(0.4179)	−0.4311	(0.3017)
$Lev_{i,t-1}$	−0.1617	(0.1079)	−0.4556***	(0.1614)	0.0618	(0.1872)

State: The independent variable is I/K, Pool OLS, Fixed sway and system-GMM methods are used are used. Robust standard errors in parentheses, ***p<0.01, **p<0.05, *p<0.1

The benchmark relapse results are appeared in Table 2. Models (0) to show (2) are the results of relapse taking three techniques: pooled customary least squares strategy, fixed exect relapse, and dynamic board framework GMM. As appeared in Table 2, regardless of which model is utilized, the results acquiredindicate that expanding oil expense vulnerability will altogether reduce inexhaustible firms' speculation, and this result is predictable with previous examinations. Also, the coeffcients of venture openings (TQ), Deals proportion (Deal/K), firm (Size) are on the whole altogether confirmed in the three models. We likewise include the regular logarithm of Brent oil expense variable, Lnbrent, into the relapse condition and find that it has no critical elect on venture.

Table 3. The asymmetric sway of oil fee uncertainty on investment

	Total sample				Low TQ		High TQ	
Variables	**(3)**	**(4)**	**(5)**	**(6)**	**(3a)**	**(4a)**	**(3b)**	**(4b)**
Voil $_{t-1}$	−0.3038*	−0.3518	−0.3966*	−0.2995	−0.1269	0.1230	−0.9244**	−1.7570**
	(0.1670)	(0.2268)	(0.2118)	(0.2083)	(0.1553)	(0.2434)	(0.4236)	(0.7109)
(Voil *Dpov$_{oil}$)$_{t-1}$	0.0358	−0.1304			0.0079	−0.0365	−0.0062	−0.6521*
	(0.0594)	(0.1154)			(0.0561)	(0.1398)	(0.1195)	(0.3538)
(Voil *TQ)$_{t-1}$		−0.0252		−0.0312		−0.1272**		0.0188
		(0.0378)		(0.0371)		(0.0526)		(0.0687)
(Voil *TQ* Dpov$_{oil}$)$_{t-1}$		0.0546				0.0207		0.1200*
		(0.0343)				(0.0452)		(0.0671)
(Voil *Dnetpov$_{oil}$)$_{t-1}$			0.0398	−0.0802				
			(0.0660)	(0.1325)				
(Voil *TQ*Dnetpov$_{oil}$)$_{t-1}$				0.0372				
				(0.0325)				
TQ$_{it-1}$	0.1187***	0.1245	0.1187***	0.1670**	0.1477**	0.4094***	0.1164*	−0.0050
	(0.0430)	(0.0771)	(0.0430)	(0.0693)	(0.0715)	(0.1508)	(0.0663)	(0.1246)
(CF/K)$_{it-1}$	−0.0198	−0.0169	−0.0198	−0.0190	−0.0187	−0.0170	−0.0186	−0.0121
	(0.0164)	(0.0159)	(0.0164)	(0.0161)	(0.0116)	(0.0118)	(0.0212)	(0.0202)
(Sale/K) $_{it}$	0.0457***	0.0464***	0.0457***	0.0461***	0.0452*	0.0463*	0.0496**	0.0513**
	(0.0151)	(0.0152)	(0.0151)	(0.0151)	(0.0231)	(0.0238)	(0.0212)	(0.0214)
(Sale/K) $_{it-1}$	0.0026	0.0009	0.0026	0.0013	0.0140	0.0133	0.0004	−0.0003
	(0.0105)	(0.0112)	(0.0105)	(0.0109)	(0.0172)	(0.0162)	(0.0159)	(0.0173)
Ln(Brent)$_{t-1}$	−0.3491	−0.5408	−0.5118	−0.4613	−0.1541	−0.0563	−1.2723*	−2.6786**

State: The independent variable is I/K, Pool OLS, Fixed sway and system-GMM methods are used are used. Robust standard errors in parentheses, ***p<0.01, **p<0.05, *p<0.1

Conceivable asymmetry tests when oil expenses rise or fall. So as to confirm whether there is a potential uneven exect, the spurious variable of whether the expense of oil has risen, Dpovoil (=1 when the oil charge rises, else it =0), is presented here. The observational results are appeared in Table 3 underneath. In view of the benchmark relapse, the collaboration term to every one of the spurious variable of whether oil charge rise and oil expense unpredictability, (Voil∗Dpovoil)t−1, is included. It may be discovered that the vulnerability of oil charges despite everything has a noteworthy privative effect on venture, however the coexcient of the connection term (Voil∗Dpovoil)t−1, isn't critical, showing that there is no huge asymmetry in this exect when oil expenses rise or fall.

2.2 World oil prices

In the period of major economic and political crises, almost everyone is interested in oil prices, this is a serious indicator of future hopes in any country and especially for us. At this difficult time, the idea of turning into an energy trading process can be quite solid. Of course, you should not immediately enter the game

pool on the stock market, listen to the opinions of experts in the oil industry and consult analysts (Henderson, 2012: 5).

As of December 31, 2008, while the previous world crisis was severe, the minimum oil price was set at $ 36.72 per barrel. Analysts stated that by 2017, oil prices will be around $ 100 a barrel. In January 2017, the price of an oil barrel was $ 34 (and this is not the lowest recorded in 2017), in January 2018 the price was $ 69.

Figure 1. Brent Petrol 2014-2020 crude oil prices (in US Dollars per barrel)

Source: The State Statistical Committee of the Republic of Azerbaijan https://www.stat.gov.az. 01.01.2020

Crude oil is estimated to be $ 67 per barrel in 2020. Brent Crude Oil, also known as Brent Blend, London Brent and Brent oil, is a crude oil test called after the exploration site at Brent oil field in the North. It is slightly heavier than West Texas Intermediate. In this context, the sweet corresponds to a low sulfur content and the light corresponds to a relatively low density compared to other crude oil comparison criteria. It's no secret that oil prices are variable. The price of Brent crude oil was $ 71.19 a barrel in 2018. Annual average prices are record high in 2012, $ 111.63 per barrel. It is estimated that by 2020 it will drop to $ 62 per barrel. However, compared to Brent Petrol's average 2016 price of $ 43.74 per barrel, the price has recovered quite well since the oil shortage between 2014 and 2017 (Statista, 2019). End-use energy prices are now rising more than ever.

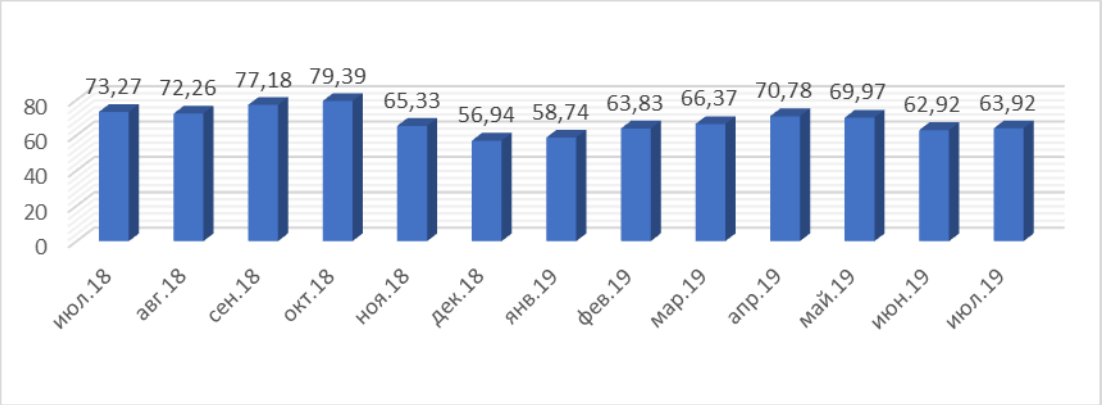
According to the weighted energy prices index provided by the World Bank, the energy price index is expected to reach 65.2 US dollars compared to 2005 prices. Oil prices in particular have increased sharply over the past two decades. In 2018, the annual average price of Brent crude oil reached a low price of $ 71.34 per barrel, a significant drop from $ 111.13 per barrel in 2012. It reached $ 3.17 per gallon in winter between 2018 and 2019 for heating oil in the USA (Statista, 2019).

The OPEC raw petroleum cost is characterized by the cost called the OPEC container. This bushel is the normal cost of oil mixes delivered by OPEC individuals. A portion of these oil blends are, for instance: Sahara mix from Algeria, Basra Light from Iraq, Arab Light from Saudi Arabia, Girassol from Angola, Es Sider from Libya, and so forth and decrease of oil creation. The OPEC reference bushel contains both substantial and light unrefined oils and is heavier than most other raw petroleum mixes (examinations) (OPEC, 2018).

OPEC Bin is among the most significant models at raw petroleum costs around the world. The most significant measures are English Brent, West Texas Focal (WTI) and Dubai Rough (Fateh). Since there are numerous sorts and nature of oil, it is essential for these rules to allude to the worldwide oil advertise. Seeing OPEC costs in the previous a year, the most noteworthy pinnacle was reached in April 2018, with a normal yearly cost of $ 68.43 and $ per barrel, while the least cost was $ 45.21 per barrel in June 2017 (Statista, 2019).

OPEC means "Association of Oil Trading Nations" and was built up in 1960 in Baghdad, Iraq. The accompanying nations are individuals from this association: Algeria, Angola, Ecuador, Gabon, Iraq, Iran, Qatar, Kuwait, Libya, Nigeria, Saudi Arabia, Venezuela and the Assembled Middle Easterner Emirates. The primary motivation behind OPEC is to arrange the oil approaches of these nations and in this way to have more effect on the worldwide oil advertise (OPEC, https://www.opec.org/opec_web/en/2018).

Figure 2: The monthly average OPEC basket crude oil price is between July 2018 and July 2019 (in US dollars per barrel)



Source: The State Statistical Committee of the Republic of Azerbaijan https://www.stat.gov.az. 01.01.2020

OPEC, https://www.opec.org/opec_web/en/ 30.12.2020

This measurement shows the month to month normal raw petroleum costs of the OPEC (Association of the Oil Sending out Nations) crate for the period between July 2018 and July 2019. The OPEC container is the weighted normal cost for oil blends delivered by OPEC nations. It is utilized as a significant rule at unrefined petroleum costs. In July 2019, the normal cost of the OPEC bin was about $ 63.92 per barrel.

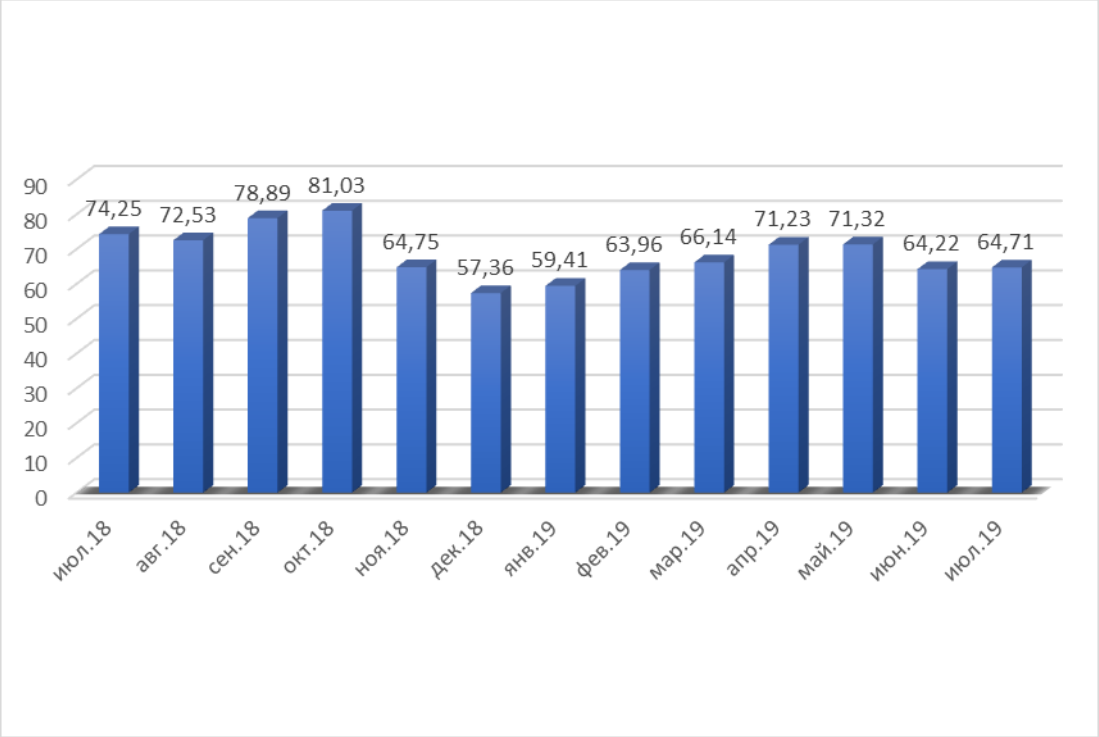
Different names for Brent Raw petroleum are Brent Mix, London Brent and Brent oil. The name Brent originates from the Brent oil field situated in the north east of the Shetland Islands and along these lines some portion of the UK. Brent Unrefined petroleum incorporates oil from three other significant oil fields, as Brent oil field has just passed the creation top. Brent under West Texas Middle (WTI) is one of the lightest rough oils. With low sulfur content, it changes between sweet unrefined oils. Most Brent Raw petroleum has been refined in petroleum and moderate refined water in Northwest Europe (Statista, 2019).

Other key models at raw petroleum costs are the West Texas Middle of the road (WTI), which is especially significant for North America, and the Dubai Unrefined (Fateh), which commands the Asian oil advertise. These models are

imperative to reference numerous sorts and grades of oil in the worldwide market (Wolf, 2009: 37).

With a couple of special cases, in the previous fifteen years, there has been an almost steady increment in the cost of barrels of Brent Unrefined petroleum. For instance, the normal cost per barrel was roughly $ 25 out of 2002.Until 2012, this price rose to approximately $ 112 USD. However, in 2010, the price dropped to the level of $ 100. In 2014, the price fell sharply, with monthly crude oil prices falling below $ 65 per barrel, then dropping below $ 30.70 per barrel in January 2016. Since then, prices have increased gradually (Wolf, 2009: 37).

Figure 3: Average monthly crude oil price (in USD per barrel) between July 2018 and July 2019



Source: The State Statistical Committee of the Republic of Azerbaijan https://www.stat.gov.az. 01.01.2020

This measurement shows normal month to month estimations of raw petroleum quality Brent Unrefined petroleum for the period between July 2018 and July 2019. Brent Raw petroleum is the world's driving value test for Atlantic Bowl raw petroleum. It is utilized to value 66% of globally exchanged raw petroleum supplies. In July 2019, the cost of a barrel of Brent Oil was about $ 64.71 a barrel. Brent Raw petroleum is the most significant unrefined petroleum standard for

Europe. Brent oil begins from the North Ocean and incorporates oils from Brent and Forties Oil Field in England and Oseborg and Ekofisk oil fields in Norway.

2.3 Effects of Oil Prices on the Economy

Like all other products, oil prices are determined by the supply-demand ratio. If supply drops, prices increase until demand equals supply. However, the peculiarity of oil is that demand is not elastic in the short term: rising prices have little effect on demand. A rare car owner will get on the bus due to rising gas prices. Therefore, even a slight drop in oil supply leads to a sharp increase in prices (Zotov, 2016: 123).

The fluctuation in oil prices is one of the most important causes of many crises in oil exporting countries as the main source of government exports, it is also one of the main causes of fluctuations as an important input in the production function in oil importing countries. Since the 1970s, macroeconomists have viewed changes in oil prices as a major source of fluctuations, but also as a global shock paradigm that is likely to affect many economies at the same time. Such a perception is largely due to low growth, high unemployment and high inflation characterizing most industrialized economies in the mid and late 1970s (Mahboobeh, 2011: 627).

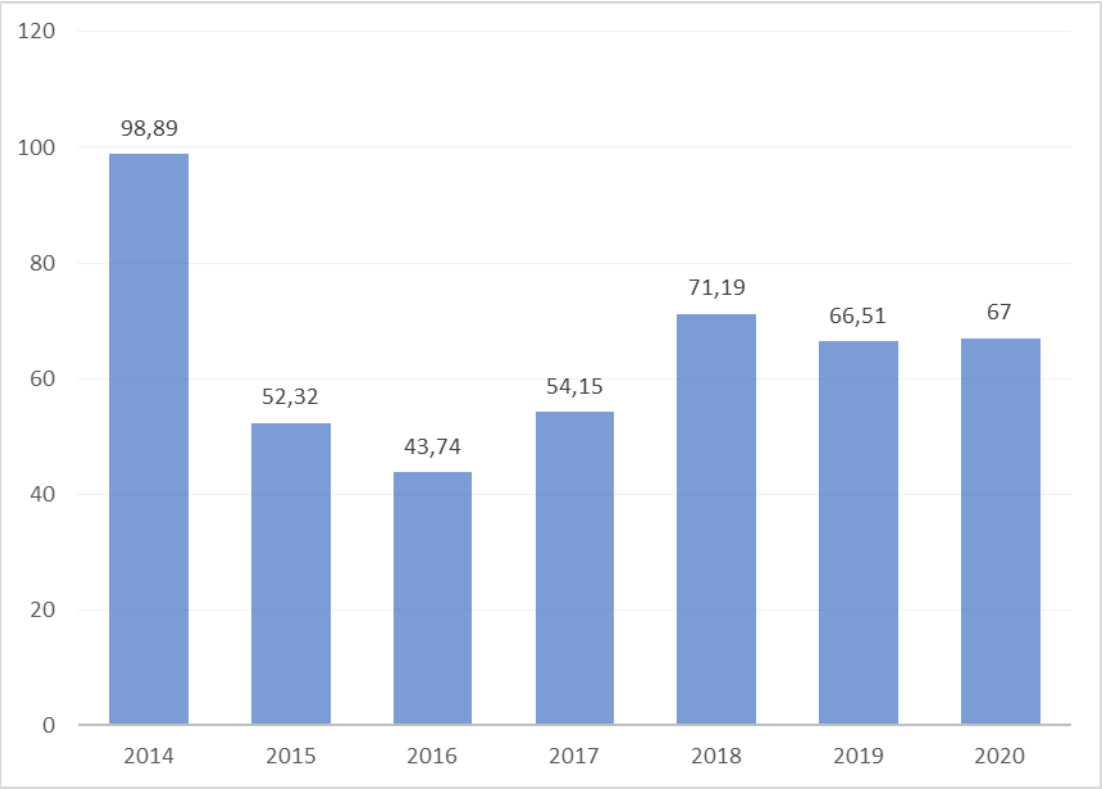
Today, the main problem in global energy policy concerns the regulation of oil prices. This is an obvious fact that is known to everyone and has been actively discussed in various fields in recent years. According to traditional approaches, the rise or fall of oil prices in the world market is the first of two important factors that have sufficient impact on the dynamics of oil production. Another factor is the speed of economic development in highly developed countries. These two factors are closely linked and directly linked.

Higher economic growth rates in developed countries led to increased demand for energy resources and higher oil prices. At the same time, the ongoing trend of rising oil prices leads to a decrease in demand for this type of energy. The reasons for the fluctuation in oil prices since mid-2014 have, to some extent, manifested in

this economic legitimacy process. Thus, the highest increase dynamics in oil prices peaked in 2014, which accelerated the increasing production process in oil producing countries. As a result, the increase in oil supply worldwide at the expense of non-OPEC countries led to a 50 percent drop in oil prices that year (Kutnyak, 2016: 45). Moreover, a significant increase in traditional oil production in Iraq, Libya and Brazil and non-traditional oil production in North America resulted in a huge supply in the world market. In addition, the balance of this process with the global economic growth rate had a significant impact on oil prices. The economic downturn of the USA in 2008 in China in 2009 and the economic downturn that occurred in Europe in the following years reduced the demand for these oil producing regions. The slowdown in global economic growth and the drop in oil demand were strongly felt by the increase in production in Libya in 2014, and this trend was further strengthened by Saudi Arabia and OPEC's decision not to cut production to maintain its market share (Respublica-News, 2019).

In recent years, the stability of the petroleum economy has largely been linked to this, gaining the "world currency" status. The price of oil is becoming an important indicator of the state of the global economy. However, you need to understand that there is no single "oil price". Oil varieties differ greatly in terms of quality and composition, and these properties largely depend on the origin of the raw materials. The main parameters of oil quality are density and sulfur content. Experts distinguish between light, medium and heavy oil degrees. Each variety has its own name (Kutnyak, 2016: 48). Brent oil is estimated to be $ 67 per barrel in 2020. Brent Crude Oil, also known as Brent Blend, London Brent and Brent oil, is a crude oil test called after the exploration site located in the Brent oil field in the North. Sea. It is a sweet, light, crude oil but slightly heavier than the West Texas Intermediate. In this context, the sweet corresponds to a low sulfur content and the light corresponds to a relatively low density compared to other crude oil benchmarks (Statista, 2019).

Figure 4: Crude oil prices: Brent Crude 2014-2020 (USD)



Source: The State Statistical Committee of the Republic of Azerbaijan https://www.stat.gov.az. 01.01.2020

As seen in Figure 4, the highest price in the world oil market was seen in 2014. According to the estimates, towards the end of 2019, this price will be $ 66.51. The average oil price in 2020 is estimated to be $ 67.

The price of Brent crude oil was $ 71.19 a barrel in 2018. Annual average prices are record high in 2012, $ 111.63 per barrel. It is estimated that by 2020 it will drop to $ 62 per barrel. However, compared to Brent Petrol's average 2016 price of $ 43.74 per barrel, the price has recovered quite well since the oil shortage between 2014 and 2017 (Molchanov, 2016: 65).

Without oil, neither worldwide vehicle associations nor the worldwide economy can work effectively. Oil is likewise crude materials for vehicles, crude materials for the electrical vitality industry, and crude materials for the concoction business. For instance, street transport is 98% reliant on oil. Oil comprises 36% of

the vitality ingested on the planet and produces 9% of the power of the whole planet (Zotov, 2016: 125). Be that as it may, science despite everything doesn't stop and different elective vitality sources are developing. In present day conditions, mankind can't relinquish oil and different hydrocarbons. Any progress starting with one vitality source then onto the next is moderate and costly. The issue is that distinctive vitality sources are utilized for various purposes (Nikiforova, 2016: 41).

Petroleum added new chances to the worldwide economy contrasted with coal. Along these lines, the plenitude of oil permitted the development of numerous sorts of vehicles and the creation of airplane. Contrasted with other vitality sources, oil has numerous favorable circumstances: high vitality thickness; Usability; the common condition of the oil is fluid, so it is anything but difficult to siphon. It is preposterous to totally surrender oil as it has numerous different uses as crude materials. For instance, oil is utilized in the creation of herbicides and pesticides, in the development of black-top streets, medication, beauty care products, building materials and numerous different fields (Kutnyak, 2016: 47). It ought to be noted, in any case, that a few nations have gained critical ground in deserting hydrocarbons, for instance, Costa Rica. Since the start of 2014, just "green" vitality has been utilized in this nation, the state has manufactured various hydroelectric force plants, windmills and sun based boards to discharge ordinary powers and utilized biomass to create gas and diesel fuel (Zotov, 2016: 128). In any case, in spite of the advancement of elective innovations, numerous nations despite everything hold fast to oil, particularly their costs. Therefore, Saudi Arabia positions first on the planet in oil creation and fare. In the previous 20 years, the Saudi economy has been intensely reliant on oil sends out. Spending incomes from oil trades are 90%. Norway is the biggest oil maker in Western Europe - it creates around 4 million barrels of oil a day. Practically every one of them is traded. Spending incomes from oil sends out are half? Venezuela, Iran, Nigeria, Mexico and Congo are additionally nations where their economies are exceptionally subject to oil costs. Despite the fact that UAE is an OPEC part, it isn't attached to

oil costs. Incomes from oil deals in the nation's Gross domestic product rose from just 29% to 80-90s (Kutnyak, 2016: 50). This decrease in the portion of oil in Gross domestic product was accomplished by equipped enhancement of the economy (Nikiforova, 2016: 46).

Azerbaijan is a very oil-subordinate nation. In 2015, the portion of oil and gas incomes was 43%, such huge numbers of specialists' state that Azerbaijan is "perched on the oil needle" and ought to dispose of this dependence as quickly as time permits. As a matter of first importance, this issue can be fathomed by the motivating forces got from low oil costs for the improvement of the handling ventures and the expansion in the portion of the sans economy division, second, because of the broadening of the economy. Furthermore, thirdly, by making the Azeribaijan worldwide item and crude material trades, which will be settled as rubles, which will assist the Russian cash with becoming a progressively all inclusive instrument for global repayments and extend its effect (Nikiforova, 2016: 50)?

Diminishing oil and flammable gas incomes in the nation's spending will help take care of the issue of the ruble's reliance on oil costs. The embodiment of dependence is the offer of oil to the dollar, and the Russian financial plan must be filled and executed in rubles. Consequently, if the measure of dollars from the offer of oil is diminishing, so as to "decrease" the financial plan, you have to get more rubles for them, and this must be finished by degrading (Zotov, 2016: 133).

2.4 Factors affecting oil price change

There are basic, structural and secondary factors that determine the oil fees. Delivery-inquiry balance, which is the main factor, is mostly efficient in the long term, while secondary factors are effective in the short term. However, it should not be ignored that all the factors are effective in the short term that are also efficient in the long term. Because one short term sway is followed by another short-term sway, (Tsoskounoglou and others, 2008: 3798). In other words, short-term sways constitute a certain part of oil fees. Although the main determinant of

oil fees is the delivery-inquiry balance; the functioning of the delivery-inquiry mechanism in the oil market differs from other markets. This distinction is due to the peculiar characteristics of oil and the oil market, such as oil being a nonrenewable resource and non-close substitution, which is subject to scarcity rent, the global economy's dependence on oil and OPEC's market power.

It might be said that in the evaluation of the oil delivery-inquiry balance, the lack of close substitution of oil and the dependence of the global economy on oil is very significant. These two points cause the fee elasticity of oil inquiry to be low. In the short term, inquiry elasticity is very low, as the amount of inquiry is not affected by fee fluctuations. In the long term, the energy intensity of the countries is relatively more flexible due to the decrease in energy intensity and the use of alternative energy sources - although the fees of limited alternative energy sources are largely in line with oil fees.

When the oil fees in the former period are analyzed, it is seen that the fees have followed an upward trend. It might be said that the rise in the inquiry for oil plays a major role. The main cause for the rise in the inquiry for oil is that the world population and per capita income show an increasing trend (Tsoskounoglou and others, 2008: 3799). As oil production did not rise at the same rate as inquiry, equilibrium fees were upwards. However, despite the rise in fees, oil inquiry continued to rise.

Oil production costs consist of exploration costs, development costs and operating costs. Production costs vary depending on factors such as whether the search is on land or at sea, the structure of the production site, the technology used and the amount of production. Generally speaking; It might be said that the oil produced in the Middle East has a lower production cost than the oil produced in regions such as the North Sea, and OPEC member countries produce oil at lower costs compared to other oil delivery countries.

The production cost of oil has rose over time due to the increasing difficulty of exploring new reserves, less of the discovered reserves, the development of old and new reserves and increasingly difficult oil extraction. The rise in production

costs directly affects the market fee. In order for oil production to continue, the market fee must be lofty enough to cover the increasing marginal costs.

As oil is a non-renewable resource, limited reserves are predicted to expire one day. Therefore, oil fees are subject to scarcity rent over time. The concept of scarcity rent was first introduced by Hotelling's (2011) work on pricing non-renewable depleted resources. Hotelling's work has been a pioneer in the optimal use of non-renewable natural resources and has created a new area called the "natural resources economy". Basically, the concept of scarcity rent implies that in terms of optimal use of a depleted resource to each of periods, the net fee should rise at a rate equal to interest rates; otherwise there will be arbitrage to each of periods.

Hotelling (2011) avers that, even though the oil delivery-inquiry balance remains unaltered over the years, the fee of oil should rise equally to interest rates. If the inquiry rises for any cause, if the oil delivery is not rose in response to the increasing oil inquiry, oil fees are predicted to rise. However, a rise in oil production means that the limited existing oil reserves are lessened, so that oil is less available in the future. This leads to a rise in future oil fees. This situation shows that oil fees should move upwards due to limited oil reserves.

When looking at the course of past oil fees, it might be said that the diagnosis of Hotelling is not working properly. The reserves that have risen over the years have a great share in this. There are also matters to be appealed. These matters are such as rose costs, asymmetric information, and rose dangers. Due to the structure of the petroleum industry, oil produced from reserves is becoming more difficult and decreasing, and costs rise. On the other hand, there are doubts in the proven reserve figures. Some manufacturers do not update these figures. Especially the figures announced by the Middle Eastern countries are quite suspicious (Adelman and Watkins, 2008: 9).

Although scarcity rent is insignificant in evaluating past oil fees given the increasing inquiry and available reserves, it is predicted to gain significance in the coming years and affect the fees upward (Hamilton, 2009: 180 and 204).

There are other factors that affect oil fees, which are oil investments, energy intensity, speculations, geopolitical causes, stocks, natural disasters, fees of alternative energy sources, the value of the US dollar and environmental sways.

Oil investments: Investments in the oil exploration, development and production sector and the continuity of these investments directly affect oil fees in the medium and long term. Investments in the sector enable new reserve discoveries, expanding existing reserves and increasing production taking new technologies. But recycling of investments in the sector takes many years - if the fees remain low, the recycling period will be even longer - and even search investments are at danger of non-recycling. Investments, therefore, the long-term delivery trend largely depends on future fee expectations. Companies and countries with large reserves determine how much budget they will allocate to new reserve discoveries, development technology, production, and refinery and transportation infrastructure according to future fee expectations (Gholz & Press, 2007: 3).

Energy intensity: Energy intensity might be described as the energy consumption of countries per unit product. Energy intensity of the countries is a significant factor affecting the oil inquiry in the long run. Many countries have taken serious measures to lessen energy intensity in response to oil shocks in recent years and have been partly successful in this. Countries form their policies towards lessening oil use.

Speculations: Although it is difficult to say that speculations might affect the medium fee level in the long run, it is possible to say that they have a role in short-term fee fluctuations. Defining oil as an investment instrument has played a major role in making oil fees open to speculation. Short-term and profit-oriented transactions of speculators rise volatility. Increasing volatility lessens predictability and has a privative impact on investment decisions.

Geopolitical causes: Geopolitical causes such as political uncertainties, wars and terrorist activities in oil producing countries lead to anticipation of delivery cuts and lead to speculative movements and affect oil fees in the short and medium term. Increasing geopolitical dangers also affect short and medium term oil fees

through increasing insurance costs. International financial circles do not want to finance new oil investments in regions where there is an unstable and intense conflict due to danger, this situation is indirectly reflected in fees (Tsoskounoglou and others, 2008: 3798).

Stocks: Oil stocks of both net oil exporting countries and net oil importing countries are a significant factor affecting short-term oil fees. Lofty strategic stocks ensure the short-term instability in oil fees. However, when the oil stocks of OECD countries rise; OPEC lessens oil production quotas and does not allow inventories to rise too much so that oil fees do not fall beneath a certain level.

Natural disasters: As in the example of hurricanes of Katrina and Rita, which hit the Gulf of Mexico and the southern shores, where the main oil and natural gas production areas of the USA are located, natural disasters affect the oil delivery in the short term and therefore the fees.

Fees of alternative energy sources: Although the fees of alternative energy sources are in line with the oil fees as in the case of natural gas, and they are not full substitutes, they affect the oil fees in the medium and long term.

Value of the US dollar: The alteration in the value of the dollar is another factor affecting the oil fees due to the pricing of the oil over the US dollar.

Environmental sways: Increasing environmental regulations and environmental taxes due to the damage caused by the use of petroleum products affect petroleum use and investment decisions, and therefore fees in the long term.

Oil fees are formed based on delivery-inquiry balance in the free market. However, there are many factors that affect the delivery-inquiry balance and therefore fees in the short and long term. Considering that the factors affecting the short term are not permanent, it might be said that it is more accurate to look at the basic / structural factors affecting the fees in order to predict the oil fees.

2.5 Success in Uncertainty: A Preview of Upcoming Years

Despite the fact that oil expenses seem to have bottomed out in mid 2019, various financial and industry information demonstrate a huge influence on oil and

gas in 2019 and 2020, both on the conveyance field and on the request side. So, unpredictability appears to be setting down deep roots.

Feasible monetary development, in spite of the fact that there are risks of decay:

At the point when the worldwide economy developed quickly in 2017 and 2018, development is thought to be satisfactory in 2019 and 2020 because of rose political perils, developing exchange pressure, and debilitating monetary forms and development log jams in rising economies.

Constrained cuts balance, while consistence with OPEC prerequisites has all the earmarks of being at threat:

Automatic cuts in Venezuela and Angola helped OPEC decrease oversupply in the oil markets, yet the inquiry survives from to what extent creation limitations may be watched. What's more, there are fears that OPEC and its partners under the Vienna Understanding (drove by Russia and Kazakhstan) may differ on concurred decreases for 2019.

Oil expenses appear to have bottomed out, yet the instability has returned:

In spite of the fact that oil charges stay above $ 50 a barrel (WTI) - the physiological and monetary edge for US shales - expense instability rose in the last quarter of 2018. In the course of recent months, expenses have ascended by 8–10 percent.

Moderate OPEC oil saves in the midst of expanding shale oil holds:

OPEC oil holds, which are intensely affected by consistence with the association's prerequisites, stay at a moderate degree of 2.4 million barrels for each day, while the quantity of bored yet inadequate shale wells in the US surpassed 8500 in December 2018.

Efficient speculations of worry about underinvestment:

While control in capital uses has fortified the accounting reports of oil and gas organizations, the pace of decrease in the development of ordinary wells (both in the US and around the globe) has rose essentially. For instance, in Brazil, in the Campos Bowl, a 30% drop underway has happened in the course of recent years.

Organizations' financials are improving, yet new segmental movements are showing up:

Oil and gas organizations have never appeared as seffectivee as they are today, because of their exemplary work on efficiency and expenses. Notwithstanding, the relocation of significant worth and edge along the whole worth chain in the oil and gas industry remains very mutilated, and at present there are descending vulnerabilities (particularly on the fuel front).

Perm and LNG animate development, however framework bottlenecks endure: Infrastructural imperatives limit the transient development capability of Perm creation in the US and enormous scope extension of LNG around the globe. Vitality framework, particularly outside the US, remains underinvested and cornered and faces various agreement challenges.

Significantly following five years of downturn, the industry stays on the move, and the time of change proceeds for organizations. In what capacity may organizations defeat their difficulties to check out progress at unsure occasions?

Key and strategic work on the "center":

Extractive organizations have been fruitful in selling fringe resources, yet different portions are as yet fixated on solidification as opposed to improvement. For some, organizations, reinforcing their center are probably going to expect organizations to pick the correct size for their portfolios, reestablish their inside on operational greatness, bring together the execution of undertakings all through the organization, and change their plans of action. In the whole oil and gas division, organizations must assess what their solitary upper hand is and where it is progressively productive for them to work with associates/providers. All the more essentially, organizations must accentuate adaptability so as to plan for both development (because of underinvestment) and moderation (because of macroeconomic) threats. The right answer may shift by fragment and friends. While numerous U.S. land-based help organizations need to focus on scaling up and scaling up as this is probably going to improve their efficiency, different

organizations, for example, shale E&P, may be better off if their zone is profoundly appraised and simply the best are penetrated wells.

Clearly, mergers, acquisitions, and deals of benefits are anticipated to assume a key job in portfolio improvement, however strategic choices may be as huge as key ones. Expelling additional layers and procedures from the conveyance chain may decrease costs, and in case of a merger, economies of scale may help reduce costs and coordinate procedures. Correspondingly, as associations develop (or contract), the association should likewise twist, with key jobs reevaluated in new corporate procedures.

Utilize dynamic cash the executives programs.

The whole oil and gas industry appears to have battled to adjust incomes, capital consumptions (capital uses) and working costs (working uses). The essentialness of picking the correct portfolio isn't just operational, yet in addition money related. Organizations must try to bring cost unpredictability up in request to all the more likely match income instability. Obviously, adaptable agreements, just as leases for costly gear, would help. Nonetheless, the issue remains that numerous huge speculations must be forthright (for instance, water driven cracking, pipelines, petroleum treatment facilities) in a patterned business condition. Therefore, enhancement in some structure has its favorable circumstances.

Some may comprehend decent variety as putting resources into new energies, for example, sun oriented, wind and biofuels. The other may consider it an assortment of financing, expanding government capital and giving obligation through co-interest in private value ventures, elective structures, (for example, DrillCos) and between fragment cost allotment. Supportable book adjusting in an insecure business will expect organizations to assess all choices and consolidate different budgetary methodologies to decrease expenses and raise incomes to produce grand complete income.

Make new and diverse "openings," concentrating on the computerized degree of profitability.

All through the business, Research and development pioneers should give specific consideration to the recovery on interest in new chances, be it organizations with innovation firms, extending Research and development ventures, or redesigning focuses of greatness. It may likewise permit a few fragments/gatherings of organizations to twofold separation and relate their information lavishness and specialization to others in the biological system.

For instance, OFS organizations have practical experience in working with numerous organizations, and they may situate themselves as pioneers in examination and stages that may be handily adjusted to quickly changing client needs. Mid-level and lower-level organizations, then again, have a long history of taking computerized devices; however it might be important for them to connect their tasks to bigger markets with cutting edge examination, permitting them to synchronize with changing territorial request and offer stabilizers.

Acknowledgment of last and result situated "understandings".

Normal understandings between factor portions to fluctuating degrees share risks and advantages, running from one-time turnkey agreements to long haul esteem based installments. During the downturn, clearly administration organizations and, to a lesser degree, E&P endured a significant effect hit. The lessening in income either because of lower charges for crude materials, or by overhauling expenses with lower charges joined with a lower level of utilization and keeping up steady costs prompted the way that the results of benefit ended up being more grounded than the income. Mid-level organizations taking take-or-pay contracts, just as coordinated lower-level organizations that had the option to control edges accomplished better results.

In all circumstances, there is a contention for a more extensive utilization of result arranged agreements and a more extensive appropriation of risks. This makes motivating forces to raise efficiency while reducing the effect of repetitive charge drops on one specific portion. Be that as it may, there are confinements to consider. For instance, obligation financing in certain conditions may constrain the fluctuation of installments to administrators of gatherers and pipelines. Besides,

organizations seeking after grandiose peril and elevated benefit procedures may not concur with benefit sharing courses of action. Nonetheless, a solid oil and gas environment requires sound business portions, and the uneven influences of the downturn appear to underscore the requirement for better administration of agreement income, expenses and threats.

Reestablish financial specialist certainty with a convincing story:

A restricted, shoddy change program for oil and gas organizations, in light of a constrained perspective on the future, has sabotaged speculator trust in the oil and gas industry. Our examination of various financial specialist introductions shows that the present speculators don't simply follow oil charge cycles to figure their venture, they likewise expect adaptable present moment and persuading long haul procedures dependent on a more extensive scope of ruinous chances.

So as to meet these desires, oil and gas organizations need to advance the revelation of money related and key data and contemplate conceivable torment directs distinguished by financial specialists during introductions toward speculators. Likewise, oil and gas organizations, particularly those with a huge and differentiated portfolio, ought not to avoid discussing carbon outflows, manageability, and even their perspectives on sustainable power source and putting resources into new vitality, (something that European supermasters have effectively and reliably done that have additionally outperformed different IOCs in the course of recent years). A point by point, straightforward and persuading look is the thing that financial specialists frequently need to fabricate long haul associations with the organization.

In the previous occasions, conceivable charge rises have profited everybody, even those with the loftyest make back the initial investment rates and/or the least powerful. Be that as it may, another period of bounty, lower expenses and expanding unpredictability may give occasion to feel qualms about the systems and results of even the best organizations in the business. Quest for cycles or incomplete change may no long.

III CHAPTER. OIL FEE SHOCKS SWAY ON CORPORATE RETRIEVAL IN AZERBAIJAN

3.1 Literature Review

By rising importance of characteristic assets in monetary flourishing, incredible quantities of researchers are focusing on the influence of instability in the expenses of normal assets on corporate benefits. Various exact articles considered the influence of oil expense instability on salary and arrived at a generally reliable resolution, that is, the previous has a critical privative influence on pay. In any case, most previous investigations are constrained to created nations.

Recently, focusig on the unpredictability of worldwide oil charges, Senior and Serletis (2011) assert that such vulnerability has had a factually critical privative influence on various pointers of speculation, sturdy products utilization and total yield in the US. Henriques and Sadorsky (2012) look at the effect of vulnerability in oil charges on US vital ventures by organizations and show that U-molded connections exist between them.

Yoon and Ratti (2012) found that elevated vitality expense vulnerability reduces the agreed influence of deals development on speculation. Kellogg (2015) evaluates the effect of modifications in the vulnerability of future oil charges on speculations and finds that an ascent in the anticipated unpredictability of future oil expenses diminishes the action of boring organizations.

Wang and others (2018) look at the effect of universal oil expense unpredictability on corporate speculation spending in China. Lee and others (2012) examines the influence of genuine oil charge stuns on corporate ventures from both immediate and aberrant influences, and the results show that oil expense stuns have an all the more limiting influence on corporate speculations for organizations with elevated stock expense unpredictability. Taking firm-level information from 54 nations, an ongoing report by Phan and others (2019) rethinks this influence, and uncovers the privative effect of oil charge vulnerability on venture. The effect of

universal unrefined petroleum charge vulnerability on the venture conduct of vitality endeavors ought to be increasingly unique and complex, yet various articles talk about this issue.

It is significant noticing that Mohn and Misunda (2010) and Cao and others (2019) led some exploration around there. The previous examination utilized gathering information from 15 oil and gas organizations, and the second utilized information from Chinese sustainable power source organizations that inspected the influence of vulnerability in oil charges on speculations. Tragically, a potential asymmetry in the relationship has not been settled.

Regardless of hardly any researchers have examined the influence of vulnerability in universal oil expenses on the speculations of sustainable power source organizations, there are numerous articles talking about the venture issues of sustainable power source organizations. For instance, Wustenhagen and Menichetti (2013) offer a theoretical system for sustainable power source ventures and uncover that risk, recoveries and strategies mirror every single current degree of speculation. Liu (2014) brings up the issue of over-putting resources into wind power and investigates factors that may influence organization speculations for a bigger scope. Zhang and others (2017) test the over-speculation theory dependent on the center financing system and show that organizations taking sustainable power sources have over-venture matters in China. Zeng and others (2018) assess the venture execution of Chinese new vitality organizations taking the four-phase semi-parametric DEA investigation structure and locate that such organizations have low speculation execution. It expresses that the venture execution of Chinese new vitality organizations relies upon worldwide and residential macroeconomic conditions and trademark endeavor factors.

After gaining independence, Azerbaijan acquired significant economic growth due to abundant energy resources; however, it also became heavily dependent on resource revenues due to poor diversification and economic policies. Due to lofty-energy revenues, the non-oil sector depended on government spending driven by

oil revenues; hence, the vulnerability of the entire economy to shocks in world oil fees.

3.2 Data set

The decision about choosing variables is one of the decisive acts in building the VAR model. According to the literature in this area, the VAR model of this article includes the following endogenous variables: (i) real GDP growth (GDP), (ii) consumer fee index inflation (CPI), (iii) central bank rate (CBR), (iv) the exchange (XR) and (v) the growth rate of Brent crude oil fees (OP). The survey data set covers the period from the second quarter of 2002 to the fourth quarter of 2019. The starting point is limited to the disclosure of quarterly GDP data (since 2002) and the calculation of growth rates compared to the former quarter.

I choose Brent quarterly oil as an indicator of the real world fee of oil received in real terms from the US Energy Information Administration (EIA). The data on the indicator of real economic activity, GDP, were acquired from the State Statistics Committee of the Republic of Azerbaijan (SCRA). Also derived from the SSCA, mining and production were selected to represent oil and gas GDP (OG), and the remaining economy proxied non-oil GDP (NOG). The remaining variables, CPI, CBR and XR, are acquired from the International Monetary Fund (IMF). I use the CPI as an indicator of inflation and the exchange rate in manat to the US dollar. In the analysis, they are determined in such a manner that a rise in the CPI implies a rise in inflation, and a rise in XR implies a rise in the exchange rate, which is predicted to damage the external competitiveness of the country's economy.

I added real oil fees and GDP growth rates in the system to reflect the response of GDP growth to oil fee shocks. The growth rates of the CPI and CBR are included to take into account the inflationary and monetary sways of oil fee shocks on economic activity, while the XR variable is included to find out if the “Dutch disease” is applicable to Azerbaijan. Dutch disease is a phenomenon in which excessive dependence on the export of one product raises the value of the

national currency, which privatively affects other sectors of the domestic economy, making imports cheaper and exports more expensive.

In econometric literature, one significant factor is that each of the endogenous variables considered must be stationary, especially in VAR models. The stationary of variables is checked by analyzing their integration order taking unit root tests, such as the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The null hypothesis of the tests is that there is a unit root in the series. The rejection of the null hypothesis implies that the series is stationary. The series is tested at levels with both tests. As shown in Table 4, the ADF test rejects the null hypothesis at a significance level of 10% for the GDP, CPI, and NOG series, while the remaining series are non-stationary. Nevertheless, the outcomes of the PP test show that a unit root might not be declined even at a significance level of 10% for all series, which means that all variables are unsteady in levels.

Table 4. Outcomes of unit root test outcomes. Linear case

Series	**In level**				**In first log-distinction**			
	ADF test		**PP test**		**ADF test**		**PP test**	
	t-stat.	prob.*	t-stat.	prob.*	t-stat.	prob.*	t-stat.	prob.*
OP	-1.47	0.826	– 1.68	0.744	**-6.65*** **	0.000	**-6.85*** **	0.000
GDP	**-3.17***	0.097	-2.53	0.306	**-5.53*** **	0.000	**-5.47*** **	0.000
CPI	**-3.47***	0.050	-1.74	0.716	**-2.81***	0.061	**-5.31*** **	0.000
CBR	-2.20	0.205	-2.02	0.282	**-6.31*** **	0.000	**-6.27*** **	0.000
XR	-3.07	0.118	-0.41	0.984	**-1.77***	0.072	**-8.22*** **	0.000
OG	-2.90	0.167	-2.36	0.392	**-5.46*** **	0.000	**-5.40*** **	0.000
NOG	**-3.32***	0.071	-2.75	0.194	**-7.87*** **	0.000	**-7.80*** **	0.000

Source: Compiled by the author based on E-views program

States: *, ** and *** implies that series are stationary at 10%, 5%, and 1% significance levels, accordingly; CBR is in the first distinction.

As for stationary, the rows shown in Figure A1 were taken by taking the first logarithmic distinction, and seasonality was eliminated by seasonal adjustment. The ADF test outcomes in the first logarithmic distinction show that the OP, GDP,

CBR, OG and NOG series are stationary at 1%, while the CPI and XR series are stationary at only 10%. However, the PP test outcomes show that a single root might be declined at 1% for all series, specifically, all series are stationary, and I (1) (Table 4).

Same as in the linear case, I tested a stationary series of transformed oil fees for non-linear characteristics taking ADF and PP tests. The outcomes presented in table 5 show that all converted variable oil fees are stationary and I (1) process.

Table 5. Outcomes of unit root test outcomes. Asymmetric and Non-Linear cases

Methods	**Transformed series**	**ADF test**		**PP test**	
		t-stat.	prob.*	t-stat.	prob.*
Mork	AOPI	**-7.90*** **	0.000	**-7.90*** **	0.000
	AOPD	**-6.23*** **	0.000	**-6.21*** **	0.000
Hamilton	NOPI	**-8.32*** **	0.000	**-8.40*** **	0.000
	NOPD	**-6.55*** **	0.000	**-6.40*** **	0.000

Source: Compiled by the author based on E-views program
State: *** implies that series are stationary at 1% significance levels.

3.3 Methodology

First proposed by Christopher A. Sims (20111), the VAR model helps identify and interpret economic shocks and evaluate their impact on macroeconomic variables. In the VAR model, all variables are considered endogenous, and the current value of the endogenous variable linearly depends on its past values and past values of all other endogenous variables. Adding oil fees to the Sims six-variable VAR model, Hamilton applied it to an analysis of the relationship between oil fee shock and economic activity (Hamilton 2014, 232). Because of that, the VAR model has become a well-known method in the field of empirical analysis due to fluctuations in oil fees and the macroeconomic activity.

The explanation of the coefficients of the VAR calculation model is usually difficult. Therefore, I also compute Granger causality tests, impulse response functions (IRF), and forecast error variance decomposition (FEVD) tests to examine the relationships between system variables. My empirical strategy is

based on a linear VAR model (Sims, 2010) of order p in combination with various endogenous variables, which might be written in abbreviated form as follows:

$$y_t = \delta + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + u_t$$

(1)

where $y_t = (y_{1t}, y_{2t}, \cdots, y_{kt})'$ *is a* K dimensional vector of endogenous variables, while y_{t-i} is the relative lag values of order i. δ stands for the K-dimensional constant terms, A_i are the i^{th} $(K\ x\ K)$ coefficient matrices of vector y_{t-i} for $i = 1, 2, \cdots, p$, $u_t(u_{1t}, u_{2t}, \cdots, u_{nt})'$ is the K-dimensional white noise process which is the vector of unobservable i.i.d (identically and independently distributed) zero mean error term.

where is the dimensional vector of endogenous variables, while the relative values of the order delay denote K-dimensional constant terms, is the i-th coefficient of the vector matrix for, is the K-dimensional white noise process, which is the unobservable i.i.d vector (identically and independently distributed).

I evaluate four variable versions of equation 1. In the first step, I evaluate a basic model with five variables with (i) GDP, (ii) CPI, (iii) CBR, (iv) XR and (v) OP. At the second stage, I divide the indicator of real GDP into two components of production and evaluate the six-variable model with (i) growth in real GDP in the oil and gas sector, (ii) growth in real GDP in the remaining economy, (iii) CPI, (iv) CBR, (v) XR and (vi) OP.

To study potentially asymmetric responses to lower oil fees and lofty oil fees, I rely on the approaches of Mork and Hamilton. Both specifications differ only in the definition of a variable oil fee, while the entire structure of the model and macroeconomic variables remain unaltered. These specifications allow us to compare linear with asymmetric and non-linear models to study various properties of the behavior of oil fee jumps on macroeconomic activity.

The idea of an asymmetric sway of oil fees on economic activity was first proposed by Mork. To determine the asymmetric correlation, Mork defined the rise and fall of oil fees as separate endogenous variables, allowing an asymmetric

response to alterations in oil fees. (Mork 2011, 741). Its transformation might be described more technically as follows:

$$AOPI_t = \{OP_t \quad if\ OP_t > 0 \quad 0, \quad otherwise \tag{2}$$

$$AOPD_t = \{OP_t \quad if\ OP_t < 0 \quad 0, \quad otherwise \tag{3}$$

where OP_t is the rate of change in world oil prices, while $AOPI_t$ and $AOPD_t$ are the positive and negative rate of changes in the oil prices.

Where *OPt* is the rate of alteration in world oil fees, as well as the affirmative and privative rate of alteration in oil fees.

Hamilton (2017) determined the net rise in oil fees by comparing the oil fee in each quarter with the highest value observed in the former four quarters. If the value for the current quarter is greater than the maximum of the former year, the percentage alteration is used compared to the maximum of the former year. If the oil fee in quarter *t* is lower than it was at some point during the former four quarters, the series is set to zero at date *t* (Hamilton 2017, 215-217). Du and others (2011) expanded the Hamilton method (2017) and analyzed the sway of a net decline in oil fees in the case of China (Du and others 2011, 4147). Because of that, inspired by Hamilton and Du and others we might describe both a net rise and a decrease in oil fees as follows:

$$NOPI_t = max\{0, OP_t - max\{ OP_{t-1}, OP_{t-2}, \dots, OP_{t-4} \}\} \tag{4}$$

$$NOPD_t = min\{0, OP_t - min\{ OP_{t-1}, OP_{t-2}, \dots, OP_{t-4} \}\} \tag{5}$$

In the third and fourth stages, I expand the base variable VAR with five variables and include in the system the variable oil fees defined by Mork (2011) and Hamilton as AOPI, AOPD and NOPI, NOPD, accordingly, and consider them as separate endogenous variables. Because of that, the third and fourth specifications of my VAR model contain the following variables: (i) GDP, (ii) CPI,

(iii) CBR, (iv) XR, (v) AOPD (vi) AOPI and (i) GDP, (ii) CPI, (iii) CBR, (iv) XR, (v) NOPD, (vi) NOPI, accordingly.

I adjust p = 3 because VAR (3) sufficiently reflects the dynamics in the model and is stable, since all eigenvalues lie inside the unit circle, at the same time, the delay structure is as mean as possible. Moreover, the outcomes of the Ljung-Box Portmanto test for autocorrelation show that VAR (3) does not have autocorrelation, and the residuals are white noise processes. This study uses orthogonalized IRFs with Cholesky decomposition, cumulative answers and dispersion decomposition. Therefore, we must choose the order for the variables, which might shock the system by acting on the variables in the right direction, because the method of ordering orthogonalized variables conveys the purpose of instant correlation only to a specific series. Since Azerbaijan is a small country and does not have economic or political power to sway world oil fees, we must first accept the variable oil fee as exogenous. Secondly, the order of the variables should follow a sequence from the most exogenous to the least exogenous. Therefore, I first order oil fee indicators and allow the simultaneous response of all other macroeconomic variables to oil fee shocks.

Confidence intervals included in IRF plots emphasize the significance of the relationship and might be calculated taking asymptotic distribution, bootstrap, and modeling techniques. As far as I know, the vast majority of literature in this area uses asymptotic methods for the confidence interval. Therefore, I also use the asymptotic method for the significance of confidence bands.

3.4 Empirical Outcomes of Linear Specifications

Granger causality tests were conducted to demonstrate a causal relationship between real oil fees and macro variables selected in Azerbaijan. The null hypothesis of the test is that to each of the variables there is no Granger causality. When the null hypothesis is declined, we might conclude that there is a causal relationship between the variables.

Table 6 states that there is a statistically significant causal relationship between fluctuations in oil fees and for all macroeconomic variables. More specifically, a probability value of about 0.003 implies that the null hypothesis that "real oil fees do not cause Granger growth in real GDP" might be declined even at a significance level of 1%. Moreover, the causal sway of oil fees on the GDP of the oil and gas sector and the remaining economy is statistically significant. Specifically, p values of about 0.004 and 0.011 indicate that the null hypothesis might be declined even at significance levels of 1% and 5%, accordingly. In addition, Granger oil fees lead to CPI, CBR, and XR, accordingly, and a zero value might be declined even at a significance level of 1% for all three macroeconomic variables.

Table 6. Outcomes of pair-wise Granger causality test: Linear Case

Null Hypothesis:	**Tests with 4 lags**		**Robust. tests with 8 lags**	
	F-Stat.	prob.	F-Stat.	prob.
OP does not Granger Cause GDP	4.52111	**0.0030****	3.18552	**0.0062****
GDP does not Granger Cause OP	1.09945	0.3660	0.51415	0.8390
OP does not Granger Cause OG	4.30562	**0.0041****	3.25533	**0.0054****
OG does not Granger Cause OP	0.89094	0.4755	0.41514	0.9056
OP does not Granger Cause NOG	3.60822	**0.0110****	2.37903	**0.0321****
NOG does not Granger Cause OP	0.99812	0.4164	0.64014	0.7395
OP does not Granger Cause CPI	4.75131	**0.0022****	2.54406	**0.0231****
CPI does not Granger Cause OP	1.53471	0.2048	1.03856	0.4228
OP does not Granger Cause CBR	4.66671	**0.0025****	4.53977	**0.0004****
CBR does not Granger Cause OP	1.00151	0.4148	0.53344	0.8246
OP does not Granger Cause XR	7.31927	**8.E-04****	3.57783	**0.0028****
XR does not Granger Cause OP	0.89308	0.4743	0.49488	0.8530

Source: Compiled by the author based on E-views program

State: *, ** and *** implies that F-statistics is significant at 10%, 5% and 1% levels, accordingly.

It should be stated that the test outcomes do not reveal any feedback sways from macro variables to the variable oil fee, which means that macroeconomic variables selected from Azerbaijan do not cause Granger-global oil fees, which are determined exogenously. These outcomes are in line with my expectations because Azerbaijan is a small country and takes oil fees for granted. In other words, neither its output nor macroeconomic variables are capable of influencing world oil fees. Consequently, world oil fees have a statistically significant causal sway on all

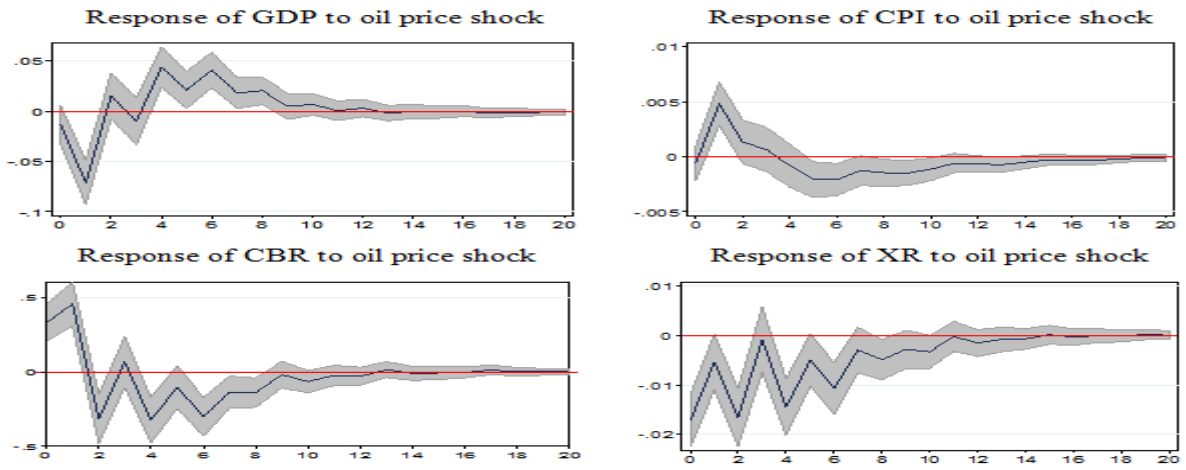
selected macro variables in Azerbaijan, and reliability tests confirm these findings with a delay of eight variables (Table 6). The following section provides additional analysis to determine if the relationship between oil fee shocks and macroeconomic activity is privative or affirmative.

Impulse Response Functions of Linear Specifications

Here I study the sway of the oil fee shock on one standard deviation on other endogenous variables of a linear model with five and six variables in terms of orthogonalized IRFs and accumulated answers for the sampling period from 2001 second quarter to 2018 fourth quarter. The discussion of IRF values and accumulated answers is based on 68% confidence intervals (CI), and impulse response prediction periods are set at 20 steps.

Figure 5 reflects the IRF of GDP, inflation, interest rate and exalteration rate after innovation with one standard deviation in the variable oil fee of the base variable VAR with five variables.

Figure 5: IRFs of five-variable linear model



Notes: Grey-shaded areas indicate 68% confidence bands, the middle lines represent the impulse response function; ordering of the variables is as (i) OP, (ii) GDP, (iii) CPI, (iv) CBR, and (v) XR.

Source: Compiled by the author based on E-views program

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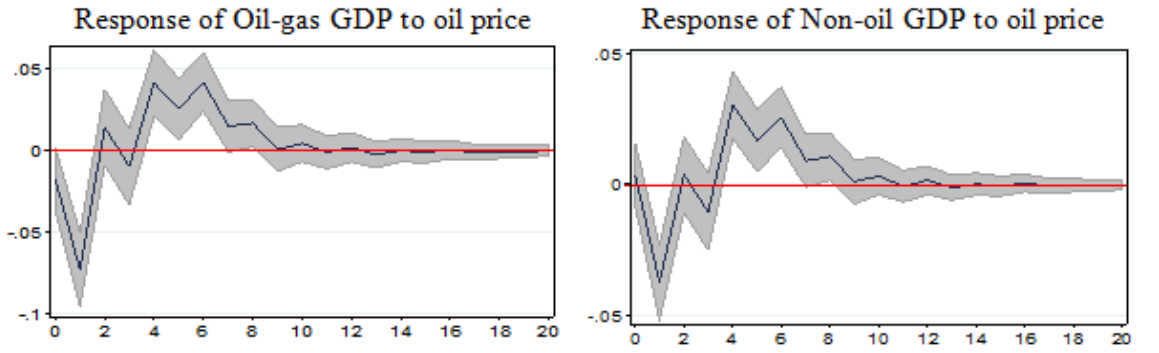
GDP growth, as might be seen, is instantly declining in response to the shock of oil fees in one standard deviation. However, according to one standard error criterion (approximately 68% CI), this response coefficient is not significant (sight Lütkepohl 2005, 119), while the second response coefficient is significant when the shock lessens GDP growth by about -7.1 percent point (pp) in the first quarter

after the shock. However, in the fourth quarter, the fee shock raises GDP growth by 4.4 pp, where it achieves the most significant affirmative sway. Answers to the shock remain affirmative and significant until the eighth quarter, until the sway decreases and gradually almost completely disappears after about three years. Inflation rises by about 0.5 pp one period after the shock of oil fees per standard deviation. The CBAR immediately raises the interest rate, as well as one, 3 and 5 quarters after the shock, in order to suppress inflation, which leads to a privative response to inflation four to ten quarters after the innovation in oil fees. Lower inflation leads to a more flexible monetary policy position six to ten quarters after the shock. After the shock, the manat instantly depreciates and reaches the most significant privative sway (-2 pp) up to eight periods after the shock. Due to the depreciation of manat, foreign goods become more expensive due to lofty import fees. More expensive imports of raw materials, intermediaries and capital hinder the country's industrial and non-industrial sectors due to the significant dependence of these sectors on foreign goods.

Figure 6 reflects the IRF after the shock by one standard deviation in the oil fee variable for the base VAR with six variables, where the quarterly growth of real GDP in the oil and gas sector and the quarterly growth of real GDP in the non-oil sector are included as separate variables.

Figure 6: IRFs of six-variable linear model



Notes: Grey-shaded areas indicate 68% confidence bands; the middle lines represent the IRFS; ordering of the variables is as (i) OP, (ii) OG, (iii) NOG, (iv) CPI, (v) CBR, and (vi) XR.

Source: Compiled by the author based on E-views program

Commonly, quarterly GDP growth in both sectors answers equally. After one quarter, we sight a significant decline in both sectors, and after two, four or nine

quarters; real GDP growth rises in response to the shock of oil fees. It should be stated, however, that the magnitude of answers varies significantly across sectors. The privative response of the oil and gas sector to the shock of oil fees is approximately two times greater (-7.3 percentage points) than the privative response of the rest of the economy (-3.7 percentage points). While the maximum affirmative sways are 4, 2 pp (oil and gas sector) and 3.0 percentage points (non-oil sector), indicating that the oil and gas sector has a general sway on real GDP growth.

Table 7 further shows the corresponsive cumulative answers of linear models with five and six variables after 100% innovation in oil fees. The shock of 100% of the fee of oil leads to a loss of the growth rate of total GDP by about 15%, of the oil and gas sector by 6%, while the growth rate of the remaining economy is approximately 6% in total over twenty periods. However, due to CI, these answers are significant only until the third quarter, where the growth rate of total GDP, the oil and gas sector and the non-oil sector will decrease by 51%, 50% and 31% in total due to 100% of the oil fee. As in Table 7, the values of the accumulated response of GDP growth in the oil and gas sector (-50%) and the non-oil sector of the economy (-31%) differ markedly in Table 7, which once again confirms the fact that the overall sway on real GDP growth is due to the oil and gas sector.

Table 7: Cumulative answers of five and six-variable linear models

Periods	**Five-variable VAR Model**				**Six-variable VAR Model**				
	GDP	CPI	CBR	XR	OG	NOG	CPI	CBR	XR
Quarter 1	**-0.26**†	0.02	1.30	**-0.07**†	**-0.32**†	**-0.14**†	0.01	1.35	**-0.07**†
Quarter 3	**-0.50**†	0.002	1.78	**-0.10**†	**-0.51**†	**-0.30**†	0.02	1.68	**-0.11**†
Quarter 8	0.02	**-0.05**†	-2.48	**-0.27**†	0.13	0.15	**-0.04**†	-3.31	**-0.27**†
Quarter20	-0.14	**-0.07**†	-1.58	**-0.25**†	-0.05	0.05	**-0.06**†	-2.45	**-0.26**†

Source: Compiled by the author based on E-views program

State: CBR is given in first distinction; the remaining variables are in first log-distinction forms. † denotes the significance of the cumulative answers of the variables to a 100% oil fee shock.

Oil fee shocks also have a major cumulative impact on the variables of the CPI, CBR and XR models with five and six variables with variable values. More precisely, a 100% jump in oil fees cumulatively lessens the CPI, CBR and XR

variables by about 8%, 1.59% and 26% in the five-variable model and by about 7%, 2.5% and 27%, accordingly model with six variables. Thanks to CI, the accumulated CPI answers to the 100% oil fee shock in both models are significant after the eighth quarter. Interest rate answers in both models are not relevant, while exchange rate answers are significant throughout the forecast period.

Variance Decompositions of Linear Specifications

By decomposing the variance, we might predict the proportion of the alteration in the variables when a shock is applied to the variable oil fees and each of the other macro variables included in the system.

As per Table 8, oil fee shocks play a significant role in the variability of all macro variables in the system. It is remarkable that in the case of GDP, oil fee shocks are the most significant source of shock, except for GDP itself, which is about 19%, while oil fee shocks account for about 10% of the CPI variation. In the case of the CBR and XR variables, the fee of oil is the second largest source of shock, in addition to the variables themselves, accounting for approximately 23% and 22%, accordingly.

Table 8: Variance decomposition of five and six-variable linear models

Five-variable VAR Model					**Six-variable VAR Model**				
Short and long-run variance of the macroeconomic variables due to oil fee shocks									
Periods	GDP	CPI	CBR	XR	OG	NOG	CPI	CBR	XR
Quarter 1	0.02	0.01	0.11	0.14	0.02	0.01	0.02	0.11	0.14
Quarter 5	0.15	0.08	0.22	0.22	0.15	0.12	0.06	0.20	0.20
Quarter 10	0.18	0.11	0.22	0.21	0.11	0.15	0.11	0.22	0.20
Quarter 15	0.18	0.11	0.22	0.21	0.17	0.15	0.11	0.21	0.21
Quarter 20	**0.18**	**0.11**	**0.22**	**0.21**	**0.17**	**0.15**	**0.11**	**0.21**	**0.21**

Source: Compiled by the author based on E-views program

State: CBR is given in first distinction; the remaining variables are in first log-distinction forms.

In the six-variable model, oil fee shocks are also significant in the variance of the OG and NOG variables. For the OG variable, the fee of oil is the most significant source of shock, except for the OG variable itself, which is approximately 18%. In the case of the NOG variable, the oil fee is in third place, accounting for approximately 16% of the variance. Moreover, the oil fee is

significant in the fluctuations of the variables CPI, CBR and XR of the model with six variables, which is about 10%, 22% and 20% of the variance, accordingly.

The economic explanation of the conclusions drawn from the four stages might be generalized on the basis of the economic nature of Azerbaijan, which in some studies is the so-called "subsidized economy" or "delivery-based economy" (sight, for example, Bayramov and Abbas 2017 and Bayramov and Orujova 2017). The decline in GDP growth in the oil and gas sector one period after the shock might be explained by a decrease in oil revenues as an outcome of lower oil fees on the world oil market. The corresponsive decline in GDP growth in the non-oil economy might be explained by its structure, since it is mainly subsidized by government spending accumulated from oil revenues and taxes. The sharp decline in oil revenues makes the government unable to subsidize the non-oil sector and lessens government spending on supporting the non-oil sector in the initial periods. Consequently, a decrease (rise) in the oil and gas sector also causes a decrease (rise) in the non-oil sector. The growth of non-oil GDP is directly constrained by the reduction of government spending due to oil revenues, and indirectly by the depreciation of the exchange rate, which leads to a rise in the cost of imported goods. Tightening monetary policy in response to rising inflation causes additional damage to the non-oil sector. After a couple of quarters, oil revenues rise after rising oil fees, and GDP growth recovers in both sectors, with the oil and gas sector stimulating the recovery of the remaining economy.

Empirical Outcomes of Non-Linear Specifications

In the former section, it was pointed out that there is a significant correlation between alterations in oil fees and the economic activity of Azerbaijan, and the sway of fee shocks is linear. However, much of the literature discussed confirms the possibility of an asymmetric or non-linear sway of oil fees. This section is devoted to the analysis of two non-linear specifications of world oil fees and the assessment of the sway of asymmetric and net oil fee shocks on the economic activity of Azerbaijan. A Granger causality check shows that both the asymmetric and the net oil fees lessen Granger - all macroeconomic variables included in the

system (Table 9). More precisely, we might reject zero in favor of the alternative hypothesis that asymmetric and net oil fees lessen Granger GDP, OG variables at 1% and NOG at 5% significance. Moreover, an asymmetric and net decline in oil fees according to the Granger-CPI and the Central Bank of the Russian Federation at 1% and XR at a significance level of 5%.

Table 9: Outcomes of Granger Causality test: Asymmetric and Non-Linear Cases

Null Hypothesis:	**Mork**		**Hamilton**	
	Tests with 4 lags	Rob. tests with 8 lags	Tests with 4 lags	Rob. tests with 8 lags
	p-value		**p-value**	
AOPD/NOPD does not Granger Cause GDP	0.006**	0.052*	0.004**	0.014**
GDP does not Granger Cause AOPD/NOPD	0.947	0.998	0.8305	0.982
AOPD/NOPD does not Granger Cause OG	0.007**	0.046**	0.002**	0.015**
OG does not Granger Cause AOPD/NOPD	0.953	0.996	0.8446	0.985
AOPD/NOPD does not Granger Cause NOG	0.015**	0.132	0.005***	0.047**
NOG does not Granger Cause AOPD/NOPD	0.975	0.988	0.911	0.977
AOPD/NOPD does not Granger Cause CPI	0.002***	0.021**	0.002**	0.018**
CPI does not Granger Cause AOPD/NOPD	0.126	0.306	0.058*	0.206
AOPD/NOPD does not Granger Cause CBR	0.017**	0.005***	0.015**	0.008***
CBR does not Granger Cause AOPD/NOPD	0.926	0.981	0.902	0.987
AOPD/NOPD does not Granger Cause XR	0.002***	0.038**	0.018**	0.165
XR does not Granger Cause AOPD/NOPD	0.970	0.992	0.861	0.974
AOPI/NOPI does not Granger Cause GDP	0.402	0.482	0.360	0.576
GDP does not Granger Cause AOPI/NOPI	0.128	0.610	0.576	0.553
AOPI/NOPI does not Granger Cause OG	0.408	0.452	0.376	0.498
OG does not Granger Cause AOPI/NOPI	0.164	0.482	0.606	0.433
AOPI/NOPI does not Granger Cause NOG	0.552	0.801	0.437	0.642
NOG does not Granger Cause AOPI/NOPI	0.247	0.360	0.611	0.674
AOPI/NOPI does not Granger Cause CPI	0.418	0.556	0.341	0.702
CPI does not Granger Cause AOPI/NOPI	0.125	0.101	0.143	0.248
AOPI/NOPI does not Granger Cause CBR	0.146	0.254	0.122	0.420
CBR does not Granger Cause AOPI/NOPI	0.132	0.326	0.520	0.482
AOPI/NOPI does not Granger Cause XR	0.111	0.358	0.285	0.615
XR does not Granger Cause AOPI/NOPI	0.058*	0.050*	0.022**	0.121

Source: Compiled by the author based on e-views program

States: *, ** and *** indicates that F-statistics is significant at 10%, 5% and 1% levels, accordingly. AOPD and AOPI mean asymmetric rise and decrease in oil fees, while NOPD and NOPI mean net decease and rise in oil fees

Next test outcomes show that we might not accept the alternative hypothesis that asymmetric and net oil fees raise Granger-other macro-variable systems. However, the exchange rate has a causal sway on the asymmetric and net rise in oil fees at 10% and 5%, accordingly. As indicated in the former section, they do not meet the expectations of the study. I rechecked the Granger causality test by including eight lags for the variables to test the reliability of this relationship. The outcomes show that the XR Granger causes an asymmetric variable in rising oil fees at only 10%; this causal sway of XR on the net rise in oil fees is not statistically significant. Ultimately, we might conclude that neither asymmetric nor net oil fees raise Granger-macro variables, and the causal sway of the exchange rate on rising oil fees is not significant.

Therefore, an asymmetric and net rise in oil fees does not have a significant causal sway on variables; despite this, an asymmetric and net decline in oil fees is statistically significant in Granger, causing all macro variables from Azerbaijan.

Impulse Response Functions for Non-linear Specifications

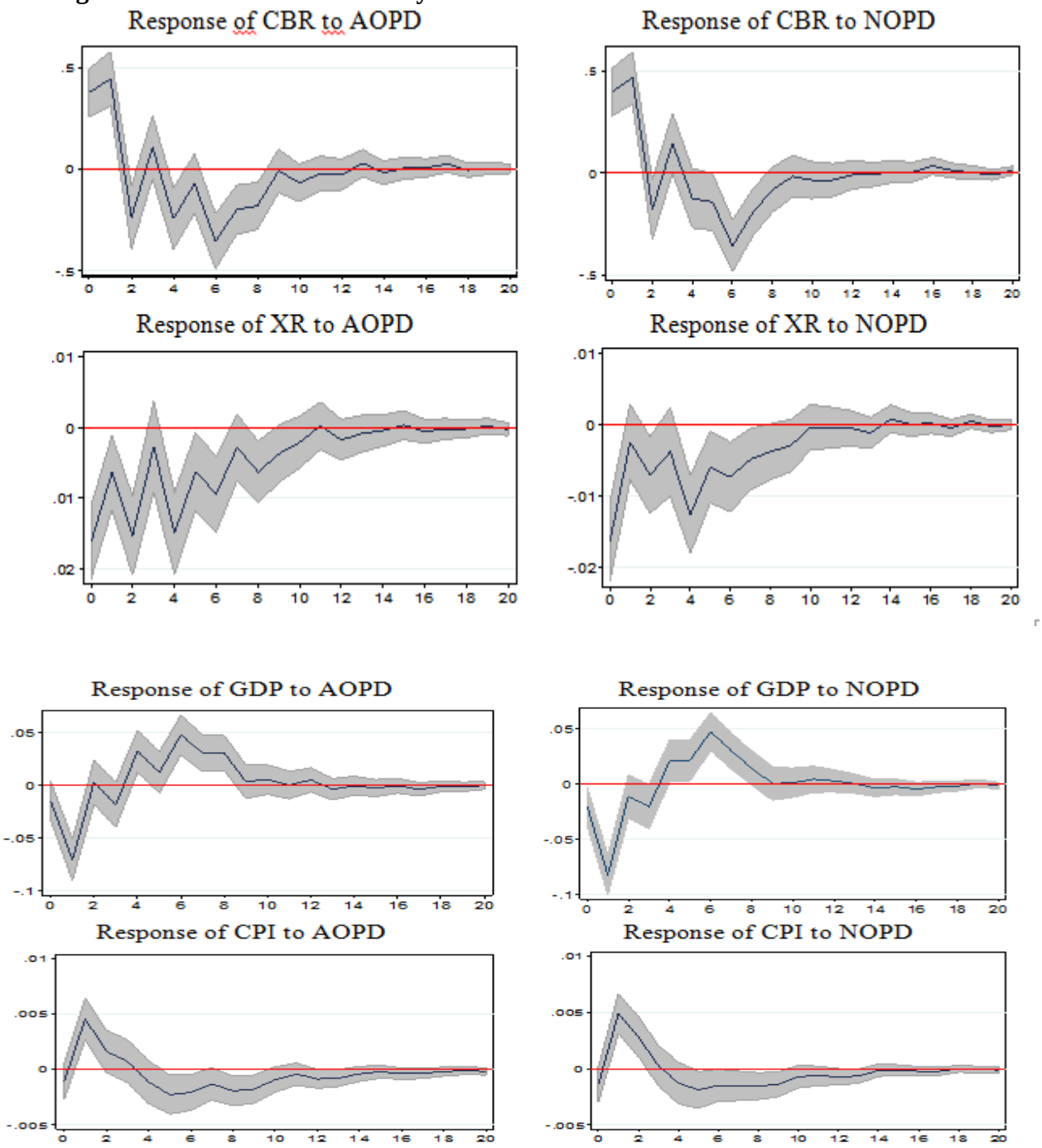
This section discusses the sway of oil fees on macroeconomic variables in terms of impulse response functions and accumulated answers for asymmetric and non-linear specifications. Due to the limited scope of the study, I consider only the first model with five variables in the analysis.

Figure 7 shows the orthogonalized IRF of GDP, inflation, interest rate and exchange rate after a privative innovation with one standard deviation in asymmetric and net alterations in oil fees.

GDP growth is immediately slowing after a privative innovation with a standard deviation in asymmetric and net oil fees. The most significant privative consequences of both jumps in oil fees occur in the first quarter, after the initial privative jump, and significantly slow down GDP growth with slightly variable values. The answers become affirmative and significant after four and eight quarters, when the shock reaches its greatest affirmative sway in the sixth quarter, and then almost completely disappears after about three years. Due to the fact that the economy is centered on government spending, a privative shock in oil fees

hinders the growth of GDP, as well as the subsidized non-oil sector, due to a significant reduction in oil revenues in the first three periods. In addition, the affirmative response of GDP growth to a privative fee shock in subsequent periods may be tied with significant government spending received from the assets of the oil fund to help restore economic growth.

Figure 7: IRFs of variables to asymmetric and net oil fee decreases



Source: Compiled by the author based on e-views program

States: The areas shaded in gray indicate the asymptotic confidence bands of 68%, the middle lines represent the impulse response function; the left side of the figure shows the answers of variables to AOPD, the right side to NOPD, accordingly. The order of the variables:

(i) AOPD, (ii) AOPI, (iii) GDP, (iv) CPI, (v) CBR and (vi) XR; (i) NOPD, (ii) NOPI, (iii) GDP, (iv) CPI, (v) CBR and (vi) XR.

Inflation rises sharply after both privative jumps in oil fees in the first quarter, while the CBAR answers to lower oil fees by tightening monetary policy immediately and after one quarter. After that, inflation decreases and remains privative for four to nine quarters. The exchange rate immediately depreciates as privative fee shocks, and the most significant sways occur immediately after the initial shock. Both privative answers remain significantly variable from zero during the entire forecasting period until they almost disappear. A significant drop in the exchange leads to a significant depreciation of the national currency (and, in bond with government policy, which is not considered a variable in this study, a significant reduction in government revenues in foreign currency).

As per Table 10, these asymmetric reductions in oil fees and net decreases in oil fees are the main source of variance of all macro variables included in the system, especially in GDP, in relation to which they take the first place (except for the variable itself) contributing about 20% and 23 % accordingly. In addition, both of these variable oil fees also play a significant role in the volatility of inflation, interest rates and exchange rate variables. More precisely, an asymmetric decline in oil fees is approximately 11%, 23% and 21% deviations in the variables of CPI, CBR and XR, separately, while a net decrease in oil fees is approximately 12%, 22% and 14% of deviations in Variables CPI, CBR and XR, accordingly.

When oil revenues decline due to falling oil fees, the government is struggling with a resource shortage to clear the domestic foreign exchange market and protect the exchange rate. The depreciation of the national currency leads to lofty import fees and lofty fees for foreign goods. Due to the country's strong dependence on imports of raw materials, intermediaries, capital and consumables, industrial production and the non-tradable sector are declining, while inflation is increasing significantly.

In the case of affirmative shocks, Table 10 gives that the indicated asymmetric and net variables for increasing oil fees play an insignificant role in the

variance of all macroeconomic variables relative to asymmetric and net variables for decreasing oil fees. More precisely, an asymmetric rise in oil fees explains less than 5% of the deviation from other variables, including GDP, while a net rise in oil fees explains less than 10% of the deviation from other variables, including GDP.

Table 10: Variance decomposition of asymmetric and non-linear specifications

Periods	**Asymmetric oil fee decrease and rise** Mork (					**Net oil fee decrease and rise** Hamilton (				
	variance shock	GDP	CPI	CBR	XR	variance shock	GDP	CPI	CBR	XR
Quarter 1	AOPD	0.12	0.02	0.13	0.13	NOPD	0.01	0.02	0.15	0.11
Quarter 5	AOPD	0.14	0.06	0.21	0.18	NOPD	0.21	0.11	0.18	0.12
Quarter 10	AOPD	0.17	0.12	0.22	0.20	NOPD	0.21	0.11	0.21	0.13
Quarter 15	AOPD	0.21	0.10	0.21	0.20	NOPD	0.21	0.11	0.21	0.13
Quarter 20	AOPD	**0.21**	**0.12**	**0.22**	**0.20**	NOPD	**0.22**	**0.11**	**0.21**	**0.13**
Quarter 1	AOPI	0.01	0.01	0.01	0.02	NOPI	0.02	0.02	0.02	0.01
Quarter 5	AOPI	0.03	0.02	0.03	0.02	NOPI	0.08	0.03	0.06	0.03
Quarter 10	AOPI	0.04	0.03	0.05	0.02	NOPI	0.07	0.03	0.06	0.04
Quarter 15	AOPI	0.04	0.02	0.03	0.02	NOPI	0.07	0.03	0.06	0.04
Quarter 20	AOPI	**0.05**	**0.02**	**0.03**	**0.02**	**NOPI**	**0.07**	**0.03**	**0.06**	**0.04**

Source: Compiled by the author based on e-views program

State: R is shown in the first distinction; the remaining variables are in the first log-distinction forms. Because of that, the decomposition of the variance confirms former findings showing that privative oil fee shocks are more informative in explaining the variance of other macro variables in the system relative to affirmative oil fee shocks. It is worth noting that both privative definitions of oil fees seemed to have more or less the same explanatory power during the sampling period of the study. While the determination of the net rise in oil fees by Hamilton (2017) seems to be stronger in explanation, most macroeconomic variables system related to the asymmetric specification of rising oil fees put forward by Mork (2011).

When oil revenues decline due to falling oil fees, the government is struggling with a resource shortage to clear the domestic foreign exchange market and protect the exchange rate. The depreciation of the national currency leads to lofty import fees and lofty fees for foreign goods. Due to the country's strong dependence on imports of raw materials, intermediaries, capital and consumables, industrial production and the non-tradable sector are declining, while inflation is increasing significantly.

CONCLUSION AND SUGGESTIONS

In the exploration the effect of oil value stuns on corporate venture and Azerbaijan economy has been examined. This paper adds to this rare writing by broadening the examination of the connection between oil value stuns and financial movement to the instance of Azerbaijan.

In the subsequent part, we analyzed the reaction of corporate speculation to the vulnerability of oil costs, particularly considering the conceivable unbalanced effects. Asymmetry test results show that, from the absolute example, regardless of whether the oil value rises or falls, or the oil cost is sequential, these components don't have a significant sway on how the vulnerability of oil costs affects corporate venture, that is, there is no asymmetry.

On account of high asset godsends in the most recent decades, Azerbaijan had the option to accomplish high monetary development. In any case, the oil value droop of 2014 demonstrated that Azerbaijan's economy is both vigorously subject to vitality trades and works dependent on enormous government uses driven by State Oil Fund resources. In the third part the effects of oil value stuns on quarterly GDP development, swelling, loan cost and conversion scale factors utilizing vector autoregressive models for the period 2001 q2-2018 q4 was broke down.

The key discoveries of the exploration are as per the following: Firstly, there is a noteworthy direct connection between oil value stuns and the monetary action of Azerbaijan. Direct oil cost stuns hamper total GDP development, and GDP development in oil-gas and non-oil segments in the initial 75%, while expanding them in the fourth and 6th quarters with developing reactions. The decrease in the oil-gas area can be clarified by a decrease of oil incomes because of the loosening oil costs on the planet advertise. The relating decrease in GDP development in the non-oil economy can be clarified by its organization, as it is driven by government uses sponsored predominantly from oil salary. The sharp decrease in oil incomes constrains the administration's ability to finance the rest of the economy. Henceforth, downturns (rises) in the oil and gas part likewise brief comparing downturns (rises) in the non-oil area. After a few quarters, oil incomes increment

in the wake of higher oil costs and GDP development recuperates in the two parts, with the oil and gas area driving the recuperation in the rest of the economy. Besides, oil cost stuns influence fundamentally the expansion, loan fee and conversion standard, prompting expanded swelling, fixed money related approach and devaluation of the swapping scales in the nation. Devaluation of the manat prompts progressively costly outside products. A fixing of fiscal approach in light of the expansion in swelling also hurts the non-oil segment.

The aftereffects of non-straight details are as per the following: Both, negative and positive oil value stuns significantly affect all factors remembered for the framework, however the extents are very unique. Negative oil value stuns have a noteworthy unfavorable effect on financial movement with a bigger greatness than the positive effect of oil value stuns' constructive outcome. This implies negative stuns have a progressively recessionary effect on the economy of Azerbaijan than the expansionary impact of positive oil value stuns. At last, positive and negative oil value stuns lead to the gratefulness and deterioration of the conversion scale and higher swelling. The valuation for the manat, taken together with high swelling, shows that the Dutch Disease disorder is relevant to Azerbaijan.

The reasoning of models either economic or mathematical point of view can closely be related to the relative proximity of the economic growth rate with oil production and price rate. Unlike world economic situation, as noted above, there is no absolute dependency close to between world oil production and consumption as well as the relative dependency among world oil production, consumption and world GDP and in general, dependency between oil price and these factors (world oil production, consumption and world GDP), especially in the last decade. That’s why our Azerbaijan also witnesses the reverse processes. Although economic growth and demand act as an important factor in the world oil price, it can be inferred that the economic growth observed in Azerbaijan, one of the world’s smallest exporter of oil production in the world, is largely dependent on oil production and oil prices.

The key discoveries of the examination are as per the following: Firstly, there is a huge straight connection between oil value stuns and the financial movement of Azerbaijan. Straight oil cost stuns hamper total GDP development, and GDP development in oil-gas and non-oil divisions in the initial seventy five percent, while expanding them in the fourth and 6th quarters with developing reactions. The decrease in the oil-gas part can be clarified by a decrease of oil incomes because of the loosening oil costs on the planet showcase. The comparing decrease in GDP development in the non-oil economy can be clarified by its arrangement, as it is driven by government uses sponsored for the most part from oil pay. The sharp decrease in oil incomes constrains the administration's ability to finance the rest of the economy. Henceforth, downturns (rises) in the oil and gas segment additionally brief comparing downturns (rises) in the non-oil segment. After a few quarters, oil incomes increment in the wake of higher oil costs and GDP development recoups in the two areas, with the oil and gas segment driving the recuperation in the rest of the economy. Besides, oil cost stuns influence fundamentally the swelling, loan cost and conversion scale, prompting expanded expansion, fixed money related arrangement and devaluation of the swapping scale in the nation. Deterioration of the manat prompts increasingly costly remote merchandise. A fixing of money related strategy in light of the expansion in swelling also hurts the non-oil part.

The aftereffects of non-straight details are as per the following: Both, negative and positive oil value stuns significantly affect all factors remembered for the framework, however the extents are very extraordinary. Negative oil value stuns have a critical unfriendly effect on monetary movement with a bigger size than the positive effect of oil value stuns' constructive outcome. This implies negative stuns have an increasingly recessionary effect on the economy of Azerbaijan than the expansionary impact of positive oil cost stuns. At long last, positive and negative oil value stuns lead to the thankfulness and devaluation of the conversion standard and higher swelling. The energy about the manat, taken together with high expansion, shows that the Dutch Disease condition is relevant to Azerbaijan.

From this investigation, we present various recommendations for additional thought:

- Oil costs assumed a key job in intensifying the parity of installments unevenness prompting the emergency. This will proceed to reinforce, and China and India will assume an undeniably significant job as net exporters of petrodollars. Successful petrodollar intervention is a difficult issue for the money related segment and possibly financial steadiness when all is said in done.- Policies to combat oil addiction through substitution, efficiency and conservation can reduce the impact at the micro and macro levels of the risks associated with the price of oil and help address global imbalances.

• The work analyzed the special role of activating the processes of transnationalization of local business, emphasized the need to overcome the negative attitude of state and public organizations of various countries to the activities of corporate within the fuel and energy complex and the private sector of Azerbaijan, in particular, analyzed the situation in which it is possible to launch the mechanisms and tools positioning within the global economic space.

Based on this, the practice of positioning is exclusively local and sporadic. Rarely are long-term programs that are needed to develop an enterprise implemented. As the study showed, to optimize current practice, accurate ideas about the features of positioning are required.

From this analysis, we present a number of suggestions for further consideration:

- Oil prices played a key role in worsening the balance of payments imbalance leading to the crisis. This will continue to strengthen, and China and India will play an increasingly important role as net exporters of petrodollars. Effective petrodollar mediation is a serious problem for the financial sector and potentially economic stability in general.

- Policies to combat oil addiction through substitution, efficiency and conservation can reduce the impact at the micro and macro levels of the risks associated with the price of oil and help address global imbalances.

• The work analyzed the special role of activating the processes of transnationalization of local business, emphasized the need to overcome the negative attitude of state and public organizations of various countries to the activities of corporate within the fuel and energy complex and the private sector of Azerbaijan, in particular, analyzed the situation in which it is possible to launch the mechanisms and tools positioning within the global economic space.

Based on this, the practice of positioning is exclusively local and sporadic. Rarely are long-term programs that are needed to develop an enterprise implemented. As the study showed, to optimize current practice, accurate ideas about the features of positioning are required.

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Internet resources

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