THE AZERBAIJAN ECONOMY BY 2025: CRUDE OIL PRODUCTION AND PRICES IN THE WORLD

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Abstract

Understanding the world economies requires to dive into the individual country experiences. In that context, there are group of countries, where their economic and political milestones hold many common aspects. One of this group is the cluster of the resource dependent economies. The recent researches by scholars on Azerbaijan outline and show the existence of the similar aspects of a resource dependent economy. That is why, in this research, the author attempts to make the forecast for the Azerbaijan economy by 2025 via delivering parallels with the data of the resource dependent economies. The key point in this research to find out the potential actions by the government in Azerbaijan in terms of the fiscal policy, oil export, monetary policy via learning other resource dependent economies and the trends in the world markets.

Key words

Resource Dependent Economies, Oil Prices, Oil production, Public Expenditure, Exchange rate of National Currency

JEL Classification: P48, Q41, H50, O24

Introduction

In the world crude oil market, the volatile conditions and environment induce the players: exporting countries either to be price maker (impactor) or taker. The first group of countries are the OPEC members, where they can have indirect impact on the world crude oil prices via stabilizing production level. However, for the second group of countries, particularly small players, such as Azerbaijan, the market does not offer much flexibility. In this context, learning future of the crude oil prices in the world energy markets is becoming crucial research area for the Azerbaijan economy.

Before diving to the studies, understanding the existing forecasting tools to be applied in the future of the crude oil prices could be important. However, the recent history shows that, old projections on the passed periods not always match with the reality. That means that empirical knowledge may not be only factor to be considered in the making any planning. Missing factors maybe included the international political relations, decisions, national, regional and global interest. That is why, author does not attempt to make any exact statement about the future of the world crude oil prices. In this research, the author investigates the current studies about the future of the world market and studies on the Azerbaijan "oil economy".

Testing the existing forecasts based on the current circumstances in the world oil market and measuring the worst-pessimistic scenarios on the Azerbaijan economy are the main contributions of this study. Logically, after delivering such variants, the results will help us to realize how volatile or sensitive is Azerbaijan under varied cases. That covers how the current fiscal and monetary policies are sustainable and efficient in the Azerbaijan economy. Particularly, the relations between the oil rents and public spending, "infection" level of the oil money into the current expenditure in Azerbaijan demonstrates accumulated financial assets' depletion time is not far from the now.

1. The world crude oil prices and Azerbaijan economy in the studies

The recent economic trends in the resource dependent economies motivates us to have a general investigation in the group or individual studies. Basically, understanding the root causes downs and ups in the prices are not easy job. That requires to dive into the many country cases and making parallels. In these kinds of the research's

uncial experiences may be one of the key barriers to make general judgments and issue one common recipe for the rest of the countries. However, good news is that, as the author outlined above, due to the ongoing external process and world market conditions drive the countries to react via similar and mutual behaviors. In that case, interpreting fundamental aspects and finding out the common points of the resource depending economies might be easier to scholars. The author believes that, Azerbaijan is not so non-common country as the member of the clyster of the economies that covered in this study.

Nazlioglu, Gormus and Soytas (2018) outline that oil price changes have impact on macroeconomic indicators including monetary policies, banking regulations in the resource importing countries. Similarly, learning the impact of the dramatic fluctuations in the oil prices over the exporting countries' economy is key focus area. Simply, the geopolitics, increasing oil production volume, operating new additional oil reserves, "starvation" to the oil cash even with low profitability under cost base have been the key reasons of the recent oil price drops (Khan, 2017). On the other hand, low oil prices can foster the transition process to the green targets via freezing the production volume where there is no economic value to be proceed (Harvey, 2017).

The world energy market expands quite faster while the volatility in terms of the prices. The unstable oil prices create the basis to change the market's direction to the alternatives such as natural gas. However, due to the nature of the existing oil-gas markets, oil and gas prices are quite correlated with each other (Shi and Variam, 2017). Safari and Davallou (2018) highlight that making forecasts on the world oil prices are getting more important due to their key role over the economies. The scholars list the external factors which have impact over the oil prices such as market conditions, international politics, the variety of the monetary policies.

Another important factor which has impact over the future of the oil price is the demand which holds weak elasticity in the market due to vital driver of the economies (Jianwei, Bao, and Ye, 2017). As the result of the instable oil rent flows, the resource dependent economies could not ensure efficient fiscal policy, where there exist clear connections between the oil money and current public spending. The point is that, even in the higher oil prices the governances could not achieve foster the economic development importantly, on the other hand, economies are becoming more dependent on one factor: oil price (Mehrara, 2008).

In fact, as the part of the world oil market, Azerbaijan has been small player and price taker. Importantly, understanding the level of the impacts of the oil price volatility on the Azerbaijan economy, scholar made varied studies. Interestingly, the world oil market is not managed by market rules (supply/demand). The volatility of the oil prices affect the resource dependent oil producer's economies regardless of their size of the production and Azerbaijan has not been out this kind of impact (Humbatova, Gasimov and Hajiyev, 2019).

In another study, Zulfigarov and Neuenkirch (2019) summarize that, the falling (increasing) oil prices caused declining (rising) output growth, cuts in the current public spending, pushed down (up) the size of the whole economy, challenges in the monetary policies due to higher dependency from the oil-gas sector. On the other hand, Mukhtarov, Mammadov and Ahmadov (2019) find out that, the oil price volatility has the positive correlations with the monetary policy and purchase value of the national currency. The scholars highlight that Azerbaijan has so close characteristics of the resource dependent economies, particularly sensitivity to any volatilities in the world oil markets. That is why, the diversification of the national economy and stabilizing monetary policy should be in the priorities of the governance in Azerbaijan.

Notably, the existing resource dependency has made the economy in Azerbaijan more passive and rely only energy rents. In this context the financing opportunities to cover current public spending via private sector's non-oil tax returns is becoming weak due closed and intercorrelated nature of the economy in Azerbaijan. This fact takes us to the result of the strong relation between volatility of the world oil prices and other tax returns in Azerbaijan (Aliyev, Ismayilov and Gasimov, 2019).

Humbatova and Hajiyev (2019) determines that the main reason for the recent changes in the macroeconomic indicators including the value of the national currency and the total output has

been the changes in the world oil market conditions and price mainly. The authors state that the minimum level of the participation of the government should be ensured in order to establish sustainable economy in Azerbaijan. Hajiyev and Rustamov (2019) determine that, the lower oil prices lead the Azerbaijan economy to higher inflation rate and falling total output.

In this study, the author brings additional approach to the future of the Azerbaijan economy via testing potential scenarios. The author's main goals are to test how sustainable is the Azerbaijan economy in the nearest future and comparing breakeven point oil price for with the global forecasts and the pessimistic numbers.

2. The comparison between resource dependent economies and Azerbaijan in the numbers

Based on the studies abovementioned, there is need to have a look to the international and local numbers in order to identifies global trends in the world oil markets and the Azerbaijan economy. Not surprisingly, Azerbaijan was in the top 20 countries where the resource sector holed one of the fifth of the total output in 2017 (Table 1). That shows that the Azerbaijan economy highly depends on the resource revenue, which motivates all sector to be more focused in one direction: non-renewable energy oil-gas sector.

Table 1. Total natural resources rents, 2017

Country Name	*(% of GDP)*
Congo, Rep.	43
Mongolia	41
Libya	38
Iraq	38
Kuwait	37
Suriname	33
Congo, Dem. Rep.	33
Timor-Leste	31
Guyana	25
Liberia	25
Equatorial Guinea	24
Mauritania	24
Saudi Arabia	24
Oman	23
Solomon Islands	23
Sierra Leone	22
Chad	22
Papua New Guinea	22
Azerbaijan	21

Source: World Bank Data. (2019). Total natural resources rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS

Obviously, in the years of the boom of the oil prices the natural resources revenue had been cruciallyhigher and vice versa. Table 2 demonstrates that more than 80% of the total resource revenue has been belonged to the oil export in the recent decades, while second major item has been natural gas, which is controlled either with the fixed prices based on the contracts. In fact, the alternative the revenue source has been the tax returns on the economy. However, the main question is to identify whether the targeted sectors by tax authorities are directly related to the oil-gas sector or not? That point is quite important to understand how the Azerbaijan economy dependent on the resource sector.

Table 2. Macroeconomic indicators of Azerbaijan, 2008-2017

Indicator Name	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total natural resources rents (% of GDP)	41	28	32	35	31	27	23	15	15	21
Oil rents (% of GDP)	37	25	29	32	28	24	20	12	13	18
Natural gas rents (% of GDP)	4	4	3	3	4	3	3	2	2	3
Tax revenue (% of GDP)	16	14	12	12	13	13	14	16	15	13

Source: World Bank Data, (2019). Azerbaijan. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/country/azerbaijan?view=chart

The efficient management of the fiscal policy in a resource dependent economy requires deep understanding, research of a specific country before making any final budget planning. Table 3 displays the general overview of the state budget of Azerbaijan in 2018 as the percentage of the total revenue and spending respectively. Obviously, more than one of the third of the total revenue collected from the tax returns. This fact could be classified as the positive sign of a sustainable economy, however, that is not simple as the first look. When we check the biggest portion of the source of the revenue, which is classified as the other returns hold more than half of the income of the budget. On the other hand, the main part of this revenue are transferred from the State Oil Fund of Azerbaijan. This number proves the level dependence on the oil-gas sector.

Table 3. Revenues and Expenditures of state budget, Azerbaijan, 2018

Revenues-total	**100.0%**
profit tax of natural entities	4.4%
profit tax of legal entities	11.1%
tax on land	0.2%
property tax	0.8%
value added tax	19.0%
Excise	3.2%
tax on mining	0.6%
tax related with foreign economic activities	5.1%
other taxes	2.5%
other returns	53.0%
Expenditures-total	**100.0%**
national economy	34.4%
Education	8.7%
health care	3.1%
social protection and security	9.5%
culture, art, information, physical training and activities not included in other categories	1.3%
Science	0.5%
court authority, law enforcement agencies	5.8%
legislation, executive and governmental authorities	2.8%
other expenditures	34.0%

Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en

In the public spending split, the structure shows that, key priorities as part of any sustainable economy: education, health care, social protection and security have not been key agenda in the state budget of Azerbaijan. Generally, the poor classification and lack of the systematic details of the public spending make the challenges to ensure the guarantee for the permanent economic growth in an economy.

Table 4. The structure of the export, Azerbaijan, 2018

Commodities	% of the total export
Crude petroleum, according to the reports of SOCAR and AIOC	83.12%
Natural gas, according to the reports of SOCAR and AIOC	8.67%
Heavy distillates or gas oils for other purposes	1.68%
Kerosene fuel for jet engine	0.89%

Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Trade. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/trade/?lang=en

Apparently, the structure of the total export illustrates the clear picture of a resource dependent Economy (Table 4). In 2018, the resource sector had more than 90% share of the total export numbers.

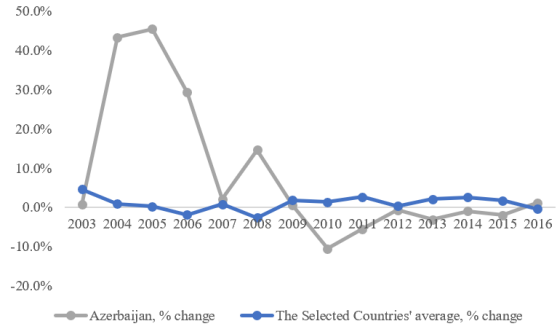
Table 5. Oil production, thousands of tons, 2003-2017

Years	Azerbaijan	% change	The Selected Countries' average	% change
2003	15,327		91,501	
2004	15,425	0.6%	95,666	4.6%
2005	22,104	43.3%	96,454	0.8%
2006	32,146	45.4%	96,595	0.1%
2007	41,548	29.3%	94,740	-1.9%
2008	42,401	2.1%	95,428	0.7%
2009	48,595	14.6%	92,823	-2.7%
2010	48,824	0.5%	94,457	1.8%
2011	43,662	-10.6%	95,674	1.3%
2012	41,220	-5.6%	98,205	2.6%
2013	40,929	-0.7%	98,467	0.3%
2014	39,640	-3.2%	100,450	2.0%
2015	39,230	-1.0%	102,936	2.5%
2016	38,443	-2.0%	104,666	1.7%
2017	38,881	1.1%	104,149	-0.5%

Source: OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from:https://data.oecd.org/energy/crude-oil-production.htm

Table 5 and Figure 1 show the oil production volume and their percentage changes for the selected 37 resource dependent economies (average) and Azerbaijan. The production level has not similar trend with the world average. In the earlier years, the reason for the sharp increase in Azerbaijan were new launched pipelines and projects. Generally, the oil production volume has reached its maximum point when there were higher oil prices. However, the limitation over the production capabilities does not allow to increase the level much more point. Differently, the world oil production showed the quite flat trend in the last decades.

Figure 1. Oil production, thousands of tons, 2003-2017



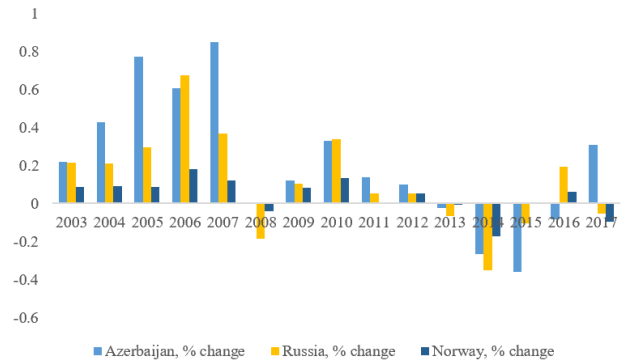
Source: OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.oecd.org/energy/crude-oil-production.htm

The author attempts to compare the Azerbaijan economy with one of the best successful cases: Norway and neighbor country: Russian Federation in terms of the fiscal policy (Table 6 and Figure 2). In the early years, Azerbaijan directed the "oil money" to the public spending dramatically and that is the main reason for the immediate ascending trends. In Norway that trend seems quite flat due to efficient fiscal policy management via applying the golden rule, which prevents any booms and shock might be caused from the volatility in the world oil market. Not surprisingly, as the former soviet union country and member of the CIS states, Russian Federation had similar patterns with the Azerbaijan experience.

Table 6. Public expenditure, mln USD

Years	Azerbaijan	% change	Russian Federation	% change	Norway	% change
2003	1,441		154,363		109,503	
2004	1,753	21.7%	187,575	21.5%	118,903	8.6%
2005	2,499	42.5%	226,631	20.8%	129,861	9.2%
2006	4,424	77.1%	292,973	29.3%	140,962	8.5%
2007	7,104	60.6%	490,290	67.3%	166,144	17.9%
2008	13,120	84.7%	670,950	36.8%	185,918	11.9%
2009	13,067	-0.4%	545,508	-18.7%	178,075	-4.2%
2010	14,658	12.2%	600,824	10.1%	192,867	8.3%
2011	19,489	33.0%	803,221	33.7%	218,261	13.2%
2012	22,169	13.7%	845,995	5.3%	218,832	0.3%
2013	24,401	10.1%	889,981	5.2%	230,165	5.2%
2014	23,853	-2.2%	831,798	-6.5%	228,637	-0.7%
2015	17,448	-26.8%	539,473	-35.1%	188,691	-17.5%
2016	11,142	-36.1%	483,189	-10.4%	188,661	0.0%
2017	10,221	-8.3%	576,820	19.4%	199,853	5.9%

Figure 2. Public expenditure, mln USD



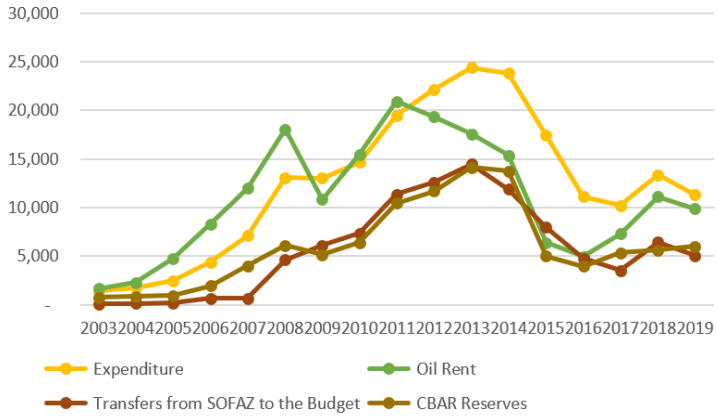
Source: International Monetary Fund - IMF. (2019). Government Finance Statistics. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.imf.org/?sk=5804C5E1-0502-4672-BDCD-671BCDC565A9; The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en; World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Table 7 and Figure 3 explains the crucial characteristics of the macroeconomic indicators and situation in the Azerbaijan economy. Public spending trend has been already illustrated and explained in above. The key measurement: the amount of the oil rent moves in a line with the production level and volatility of the oil price in the world market. The foreign currency reserves' balance of the Central Bank of Azerbaijan changed quite similarly with rest of the factors. Importantly, the pattern of the direct transfers from the State Oil Fund, which can be classified as the infecting of the oil money, fluctuated with the same order with the world oil price changes. In brief, the numbers and visualized trends prove that the fiscal policy hugely is dependent on the volatility in the world oil market.

Table 7. Azerbaijan in numbers, mln USD

Years	Expenditure	Oil Rent	Transfers from Fund to Budget	CBAR Reserves
2003	1,441	1,667	117	757
2004	1,753	2,277	152	877
2005	2,499	4,761	175	962
2006	4,424	8,300	683	1,967
2007	7,104	12,007	683	4,015
2008	13,120	18,090	4,627	6,137
2009	13,067	10,870	6,114	5,162
2010	14,658	15,502	7,369	6,408
2011	19,489	20,946	11,391	10,482
2012	22,169	19,371	12,608	11,695
2013	24,401	17,566	14,467	14,152
2014	23,853	15,398	11,904	13,758
2015	17,448	6,388	7,976	5,017
2016	11,142	4,989	4,780	3,974
2017	10,221	7,302	3,544	5,335
2018	13,371	11,136	6,446	5,622
2019	11,335	9,881	5,081	6,004

Figure 3. Azerbaijan in numbers, mln USD



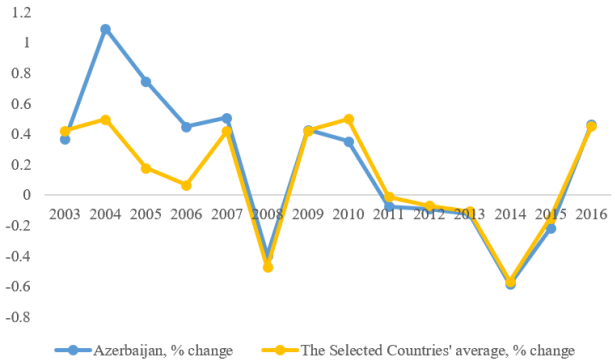
Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en
Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf
Central Bank of Azerbaijan – CBAR. (2019). Monetary indicators. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/page-42/monetary-indicators?language=en

Table 8 and Figure 4 compares the amount of the oil rent and their percentage change between 2003 and 2017 years for the selected countries (average) and Azerbaijan. Excluding early years, Azerbaijan experience quite similar position in the money in from the oil export in comparison with the average trend for the selected resource dependent economies.

Table 8. Oil Rent, mln USD

Years	Azerbaijan	% change	The Selected Countries' average	% change
2003	1,667		12,158	
2004	2,277	36.6%	17,284	42.2%
2005	4,761	109.1%	25,817	49.4%
2006	8,300	74.3%	30,341	17.5%
2007	12,007	44.7%	32,311	6.5%
2008	18,090	50.7%	45,775	41.7%
2009	10,870	-39.9%	24,003	-47.6%
2010	15,502	42.6%	34,080	42.0%
2011	20,946	35.1%	51,051	49.8%
2012	19,371	-7.5%	50,410	-1.3%
2013	17,566	-9.3%	46,851	-7.1%
2014	15,398	-12.3%	41,786	-10.8%
2015	6,388	-58.5%	18,024	-56.9%
2016	4,989	-21.9%	15,280	-15.2%
2017	7,302	46.4%	22,149	45.0%

Figure 4. Oil Rent, mln USD



Source: World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Data and Methodology

In this study the author has collected the data for the 37 resource dependent economies including Azerbaijan from the publicly available sources (Table 9). The key challenges were the adaptation and consolidation of the data in order to make parallels, carrying out the relevant analyses and forecasts.

Table 9. Historical average crude oil price per barrel

Year	USD
2003	28.12
2004	36.01
2005	50.71
2006	61.08
2007	69.08
2008	94.45
2009	61.06
2010	77.45
2011	107.46
2012	109.45
2013	105.87
2014	96.29
2015	49.49
2016	40.76
2017	52.43
2018	69.78
2019	64.30

Source: OPEC, (2019). Basket Prices. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.opec.org/basket/basketDayArchives.xml

In addition to that, the author has evaluated the break even point for the Azerbaijan oil sector, where under that level, the production will not be economically efficient. Unlikely other scholars, the author has utilized the official forecasts by OPEC until 2025 in the understanding the future of the Azerbaijan economy and resource dependent economies (Table 10).

Table 10. Average forecasted crude oil price per barrel, Brent, Dubai and West Texas Intermediate, nominal US dollars, $/bbl

Year	Nominal USD per Barrel
2020	65.00
2021	65.50
2022	66.00
2023	66.50
2024	67.00
2025	67.50

Source: World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf

And finally, the author made his own pessimistic judgment about the future of the world oil price via understanding stress level of the sensitivity of the Azerbaijan economy to the volatilities (Table 11).

Table 11. Oil prices based on the worst scenarios

Years	USD per Barrel
2020	45
2021	40
2022	35
2023	30
2024	25
2025	22

Source: The Author's own forecast

As the basic approach, the author has forecasted the changes of the selected indicators: oil rents, oil production, public spending, direct transfers from the State oil fund, foreign currency reserves. As the forecasting tool, the author has applied the MS office excel, Forecast function (Microsoft Office Support, 2019, a) which estimates the future trends based on the statistics.

FORECAST (x, given_y's, given_x's) **(1)**

After calculating future values, the author has applied the basic correlation via MS excel, Pearson functions (Microsoft Office Support, 2019, b) which finds out

PEARSON (group of independent values, group of dependent values) **(2)**

The main reason in the application of the correlation is to understand relations between fiscal policy and the volatility in the world oil market.

Results

Table 12 shows that the oil production level will be less fluctuated if the world oil prices will be Close to the current official forecast by OPEC.

Table 12. Oil production based on the forecasted prices

Years	Azerbaijan	% change
2018	32,651	
2019	35,086	7.46%
2020	35,257	0.49%
2021	35,378	0.35%
2022	35,500	0.34%
2023	35,622	0.34%
2024	35,744	0.34%
2025	35,865	0.34%

Source: The Autor's own calculation based on the data:
OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.oecd.org/energy/crude-oil-production.htm
World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf

In case of the falling pessimistic scenarios there will be downturn in the volume of the oil Production (Table 11&13).

Table 13. Oil production based on the worst scenarios, thousands of tons

Years	Azerbaijan	% change
2020	30,388	
2021	29,171	-4.01%
2022	27,954	-4.17%
2023	26,736	-4.35%
2024	25,519	-4.55%
2025	24,789	-2.86%

Source: The Autor's own calculation based on own forecast and the data:
OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from:
https://data.oecd.org/energy/crude-oil-production.htm

Table 14 demonstrates that the oil rent will be stable if the world oil prices will be not be far from the current official forecast by OPEC.

Table 14. Oil rent based on the forecasted prices, mln USD

Years	Azerbaijan	% change	The Selected Countries' average	% change
2018	11,136		31,377	
2019	9,881	-11.27%	28,763	-8.33%
2020	10,042	1.63%	29,098	1.16%

2021	10,156	1.14%	29,336	0.82%
2022	10,271	1.13%	29,575	0.81%
2023	10,385	1.11%	29,813	0.81%
2024	10,499	1.10%	30,051	0.80%
2025	10,614	1.09%	30,290	0.79%

Source: The Autor's own calculation based on the data:
World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

The most importantly, the author finds out that, 22 USD is the breaking even point for the oil sector in Azerbaijan and in the lowest pessimistic scenario the economy may experience crucial challenges. In comparison, even in the lowest pessimistic cases, the average oil rents in the world oil market will not go down as fast as Azerbaijan (Table 15).

Table 15. Oil rent based on the worst scenarios, mln USD

Years	Azerbaijan	% change	The Selected Countries' average	% change
2020	5,464		19,562	
2021	4,320	-20.95%	17,178	-12.19%
2022	3,175	-26.49%	14,795	-13.88%
2023	2,031	-36.04%	12,411	-16.11%
2024	886	-56.36%	10,027	-19.21%
2025	200	-77.48%	8,596	-14.27%

Source: The Autor's own calculation based on own forecast and the data:
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Table 16 displays that there will be nor crucial changes in the fiscal policies if the world oil prices will be around the current official forecast by OPEC.

Table 16. Public expenditure based on the forecasted prices, mln usd

Years	Azerbaijan	% change	Russia	% change	Norway	% change
2018	13,371		546,303		180,211	
2019	11,335	-15.23%	503,281	-7.88%	174,074	-3.41%
2020	11,498	1.44%	508,794	1.10%	174,860	0.45%
2021	11,615	1.01%	512,716	0.77%	175,420	0.32%
2022	11,731	1.00%	516,639	0.77%	175,980	0.32%
2023	11,848	0.99%	520,561	0.76%	176,539	0.32%
2024	11,964	0.98%	524,484	0.75%	177,099	0.32%
2025	12,081	0.97%	528,407	0.75%	177,658	0.32%

Source: The Autor's own calculation based on the data:
World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf
International Monetary Fund - IMF. (2019). Government Finance Statistics. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.imf.org/?sk=5804C5E1-0502-4672-BDCD-671BCDC565A9

The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en
Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

The author realizes that, the public spending is directly derived and financed by mainly the current money inflow from the oil-gas sector in Azerbaijan (Table 7). In order to understand that connection, the author has made simple calculation: the fixed public spending need is identified as 12 billion USD between 2020 and 2025. In that case, the results show that under the pessimistic scenario, oil rents will not be enough to be finances. That means, either the governance should go for the cuts in the fiscal policy (Table 18), which is becoming more challengeable year by year due the increasing social needs and claims. If that doesn't work, the governance will tend to utilize the accumulated, future generations' share from the SOFAZ via making direct transfers to the state budget. If that really happens, the governance may go for default in 2024 which will create the basis for the long-term painful borrowings (Table 17).

Table 17. Public Expenditure, worst, Azerbaijan, with fixed expenditure, mln USD

Years	Fixed expenditure	Oil rent	SOFAZ Reserves
			45,000
			Transfers from SOFAZ to the Budget
2020	12,000	5,464	(6,536)
2021	12,000	4,320	(7,680)
2022	12,000	3,175	(8,825)
2023	12,000	2,031	(9,969)
2024	12,000	886	(11,114)
2025	12,000	200	(11,800)
		Balance	(10,925)

Source: The Autor's own calculation based on own forecast and the data:
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
State Oil Fund of the Republic of Azerbaijan. (2019). Recent Figures. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/en/report-and-statistics/recent-figures
State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf

Table 18. Public Expenditure, worst, Azerbaijan, declining expenditure, mln USD

Years	Expenditure	Oil Rent	Transfers from SOFAZ to the Budget	CBAR Reserves
2018	13,371	11,136	6,446	5,622
2019	11,335	9,881	5,081	6,004
2020	6,840	5,464	2,274	2,575
2021	5,675	4,320	1,547	1,859
2022	4,511	3,175	819	1,143
2023	3,346	2,031	92	427
2024	2,181	886	(635)	(289)
2025	1,483	200	(1,072)	(719)

Source: The Autor's own calculation based on own forecast and the data:
The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en
Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf
Central Bank of Azerbaijan – CBAR. (2019). Monetary indicators. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/page-42/monetary-indicators?language=en

Table 19 reconfirms that the revenue from the oil-gas sector has positive correlation with public spending in Azerbaijan. The coefficient with the total expenditure is 0.78, which support the author's earlier statement on the huge dependency on the resource sector. Interestingly, the spending over the court authority and law enforcement agencies is among the highest correlated categories with the oil money inflow.

Table 19. Correlations Coefficients, Azerbaijan

Oil Rent correlation with	Pearson
Total Expenditure	0.78
national economy	0.78
Education	0.85
health care	0.77
social protection and security	0.72
culture, art, information, physical training and activities not included in other categories	0.65
Science	0.47
court authority, law enforcement agencies	0.79
legislation, executive and governmental authorities	0.69
other expenditures	0.68

Source: The Autor's own calculation based on the data:
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en

Importantly, the governance' approach to transfer or infect the oil money to the current public spending has the positive correlation with the oil rent (Table 20).

Table 20. Azerbaijan

	Pearson
Oil rent & Transfers	0.76

Source: The Autor's own calculation based on the data:
World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from:

https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf

Conclusion

Understanding the resource dependent economies and identifying similarities between Azerbaijan and the selected countries is the fundamentals of this study. The author points out that, this research area has been investigated via varied methodologies by the scholars all over the world. And there are need further research as much as done until today.

This study is one of the thousands of the researches which attempted to make judgements on the nearest future of the world oil market conditions and the Azerbaijan economy. Regardless of the future volatility of the oil prices, the author reconfirmed that, there are need to immediate reformations in terms of the fiscal and monetary policies in Azerbaijan, where we are not so far from the potential pessimistic future.

One of the key red point, result in this study is existence of the higher risk of the full utilization of the accumulated financial assets through the oil-gas sector via infecting the public spending. That is why, the author crucially highlights that, the governance should be prepared via efficient solution for any pessimistic conditions.

Most of the findings over the Azerbaijan economic indicators leads to have a general idea: the Azerbaijan economy is becoming more resource dependent economy year by year. That prevents the economy to ensure and maintain sustainable output growth and prevent any side effects of the volatilities in the world oil market. Another key find is that, the oil rents are key financing drivers for the current public spending via having positive correlation.

In fact, there is not exact answer to the questions about the future of the world oil market. However, what is clear that, not only the market rules, but also other non-market factors will play crucial role to draw the future. Regardless the future, the governance in Azerbaijan has to take immediate actions via fast forwarding plans to mitigate and eliminate visible negative side effects over the volatiles.

References

Aliyev, K., Ismayilov, A. and Gasimov, I. (2019). Modelling Elasticity of Non-Oil Tax Revenues to Oil Price Changes: is There U-Shaped Association? Evidence from Azerbaijan. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 67 (3), 799-810.

Central Bank of Azerbaijan – CBAR. (2019). *Currency.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom

Central Bank of Azerbaijan – CBAR. (2019). *Monetary indicators.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/page-42/monetary-indicators?language=en

Hajiyev, N. and Rustamov, A. (2019). How Oil Price Drops are Reflected by Imported Inflation in Azerbaijan? *International Journal of Energy Economics and Policy*, 9 (2), 182-193. (article in journal)

Harvey, L.D. (2017). Implications for the floor price of oil of aggressive climate policies. *Energy Policy*, 108 (1), 143-153.

Humbatova, S.I., Gasimov, R.K. and Hajiyev, N.G.O. (2019). The Impact of Oil Factor on Azerbaijan Economy. *International Journal of Energy Economics and Policy*, 9 (4), 381-387. (article in journal)

Humbatova, S.I. and Hajiyev, N.Q.O. (2019). Oil Factor in Economic Development. *Energies*, 12 (8), 1573.

International Monetary Fund - IMF. (2019). *Government Finance Statistics.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.imf.org/?sk=5804C5E1-0502-4672-BDCD-671BCDC565A9

Jianwei, E., Bao, Y. and Ye, J. (2017). Crude oil price analysis and forecasting based on variational mode decomposition and independent component analysis. *Physica A: Statistical Mechanics and its Applications*, 484 (1), 412-427.

Khan, M.I. (2017). Falling oil prices: Causes, consequences and policy implications. *Journal of Petroleum Science and Engineering*, 149 (1), 409-427.

Microsoft Office Support (2019,a). *Forecast Function.* [on-line] [acc.: 2010-01-10]. Retrieved from: https://support.office.com/en-us/article/FORECAST-function-50CA49C9-7B40-4892-94E4 7AD38BBEDA99

Microsoft Office Support (2019, b). *Pearson Function.* [on-line] [acc.: 2010-01-10]. Retrieved from: https://support.office.com/en-us/article/pearson-function-0c3e30fc-e5af-49c4-808a-3ef66e034c18

Mehrara, M. (2008). The asymmetric relationship between oil revenues and economic activities: The case of oil-exporting countries. *Energy Policy*, 36 (3), 1164-1168.

Mukhtarov, S., Mammadov, J. and Ahmadov, F. (2019). The Impact of Oil Prices on Inflation: The Case of Azerbaijan. *International Journal of Energy Economics and Policy*, 9 (4), 97-102.

Nazlioglu, S., Gormus, A. and Soytas, U. (2018). Oil Prices and Monetary Policy in Emerging Markets:Structural Shifts in Causal Linkages. *Emerging Markets Finance and Trade*, 55 (1), 105-117.

OPEC, (2019). *Basket Prices.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.opec.org/basket/basketDayArchives.xml

OPEC. (2019). *Crude Oil Production*. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.oecd.org/energy/crude-oil-production.htm

Safari, A. and Davallou, M. (2018). Oil price forecasting using a hybrid model. *Energy*, 148 (1), 49-58. (article in journal)

Shi, X. and Variam, H.M. (2017). East Asia's gas-market failure and distinctive economics - A case study of low oil prices. *Applied energy*, 195 (1), 800-809. (article in journal)

State Oil Fund of the Republic of Azerbaijan - SOFAZ. (2018). *Annual Report.* [on-line] [acc.: 2019-01-10].

Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf

State Oil Fund of the Republic of Azerbaijan - SOFAZ. (2019). *Recent Figures.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/en/report-and-statistics/recent-figures

The State Statistical Committee of the Republic of Azerbaijan. (2019). *Finance.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en

The State Statistical Committee of the Republic of Azerbaijan. (2019). *Trade.* [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/trade/?lang=en

World Bank Commodity Price Forecast. (2019). *Average forecasted crude oil price per barrel.* [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf

World Bank Data. (2019). *Azerbaijan*. [on-line] [acc.: 2019-01-10]. Retrieved from:https://data.worldbank.org/country/azerbaijan?view=chart

World Bank Data. (2019). *GDP*. [on-line] [acc.: 2019-01-10]. Retrieved from:https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

World Bank Data. (2019). *Oil Rents (% of GDP).* [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS

World Bank Data. (2019). *Total natural resources rents (% of GDP).* [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS

Zulfigarov, F. and Neuenkirch, M. (2019). Azerbaijan and its Oil Resources: Curse or Blessing? Universitat Trier, *Research Papers in Economics*, 11/19. [on-line] [cit.: 2010-01-10]. Retrieved from: https://www.uni-trier.de/fileadmin/fb4/prof/VWL/EWF/Research_Papers/2019-11.pdf

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