

Iran's Economy Within The Framework of Covid-19 Coronavirus Pandemic

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Abstract: *Iran during the last 35 years exists under international sanctions. In 2016-2018 Iran increased oil exports from US\$ 36.49 to 61.41 billion. The sanctions and COVID-19 pandemic reduced oil exports, which is assessed to be only US\$ 8.04 billion in 2020. Sanctions caused the back effect they aimed to achieve: Iranian society lost a hope for the better future. At the same time, the sanctions were unable to reduce Iranian oil exports to zero and provoked creation of the international shadow oil market the volume of which is now 43.55% of total exports. Impact of COVID-19 pandemic caused inflation, which in beginning of October equaled 34.4%, and devaluation of Iranian Rial by 166.32%. In 2016-2018 Iranian Forex assets increased by US\$ 67.92 billion but then diminished and are suggested to reduce by US\$ 15.24 billion in 2020. Iran will be able to survive three additional years of pandemic but afterward a default will be inevitable. However, considering the tendencies of oil pricing in 2020, it may be forecasted that in 2021 even if oil exports from the country will remain of the same level, due to increase of oil prices Iran's GDP will grow by about 10%.*

Key Word: *COVID-19 pandemic; free market exchange rate; GDP; oil exports; Forex assets*

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I. Introduction

Iran is a country, which during the last 35 years exists under strict international sanctions. From the very beginning the USA and later the EU sanctions against Iran referred to an embargo ban on selling aircraft and repair parts to Iranian aviation companies¹. However, President Rouhani initiated complex reforms, which created roots of rudimentary free market relations² and dramatically changed its foreign politics³. Such a framework ultimately brought to signature of the Iran Nuclear Deal or the Joint Comprehensive Plan of Action (JCPOA), which aimed to step-by-step cancel sanctions⁴. In August 2018 President Trump restored these sanctions and imposed penalties on companies, which tried to avoid them⁵. Moreover, U.S. administration aimed to reduce Iranian oil exports to zero⁶. Hence, as we have shown in our previous article⁷, such measures caused just the back effect they aimed to achieve: they canceled the hope of Iranian civil society for the better future, gave power to Revolutionary Guard Corp lost during Mr. Rouhani's presidentship and provoked creation of the shadow international oil market.

Table 1 provides information on top 10 commodities exported from Iran in 2017, e.g. before the new sanctions were imposed, as released in our article⁷, and in 2019⁸. Thus, according to officially released data in 2019 total exports diminished by 57.05% compared with 2017 and that of mineral fuels – on 66.32%. However, these data do not match with the real framework if compared with data released by main oil importer countries. For instance, the China's crude oil imports value from Iran equaled to US\$ 10.11 billion in 2017⁷ and to US\$ 7.10 billion in 2019⁹, e.g. diminished by 29.77% and not by 52.7%, as it was released¹⁰. Below, the official and shadow oil markets are discussed in details.

Such measures allowed Iran to achieve quasi-stable economic equilibrium under the U.S. sanctions. But in the beginning of 2020 the country faced another challenge – the COVID-19 coronavirus pandemic. By October 20 according to WHO, there were 539,670 infection cases in Iran, of which 31,034 people died and 434,676 recovered. This day there was 73,960 active cases including 4,810 serious and critical ill persons¹¹. Hence, in mid-July President Rouhani said that about 25 million Iranians may have been infected with coronavirus¹². At the same time, the pandemic had a huge negative impact on the country's economy. Let consider the actual situation step-by-step.

II. U.S. Dollar to Iranian Rial Exchange Rate Dynamics

For understanding the material provided below, first of all dynamics of the Iranian Rial (IRR) exchange rate and inflation should be described. The system of exchange of Iranian Rial to any free currency, for instance, to Euro, depends on the exchange rates of these currencies to U.S. Dollar. Thus, it is necessary and sufficient to analyze the peculiarities of exchange of Iranian currency to U.S. Dollar.

Theoretically, there are three different systems of exchange of IRR into US\$¹³: a) official exchange rate of the Central Bank of Iran, b) free market exchange rate, and c) NIMA. The latter is the Persian acronym for an online currency system launched by the Central Bank of Iran (CBI) in April 2018. Simply speaking, it's a market where Iranian exporters can sell their foreign currency earnings for Iranian Rials. Free market exchange rate is fixed by private exchange agencies. Exchange rates of NIMA practically corresponds to that of the free market. The rate at the latter varies in different regions and agencies, and there is no statistics on the volume of transactions performed. Nonetheless, based on poor existing information^{14,15}, Fig. 1 explores average annual official and free market US\$ to IRR exchange rates, and Fig. 2 provides information on mean monthly exchange rates in 2020.

It could be seen that difference between official and commercial exchange rates gradually increased from 2016 to 2020: in 2016 it equaled to 28.57%, in 2017 – to 30.34%, in 2018 – to 43.29%, in 2019 – to 61.82% and in 2020 is assessed to be as high as 85.58%. At the same time, the jump-like devaluation of Iranian Rial according to the free market exchange rate by 166.32% took place in the beginning of January 2020, as afterward exchange undulations were minor (see Fig. 2). On the contrary, during the whole 2020 Iranian currency was subject to huge inflation¹⁶, as it is shown on Fig. 3. It may be seen that by the end of September the annual inflation reached 34.4%, and from May to October increased by 61.06%.

Table no 1: Top 10 Commodities & Goods Exported from Iran in 2017 and 2019 (Official Data)

Commodity & good	Exports			
	2017		2019	
	Exports value, US\$ million	Share of total, %	Exports value, US\$ billion	Share of total, %
Mineral fuels including oil	48,700.0	77.92	16,400.0	61.08
Plastics, plastic articles	3,000.0	4.80	3,100.0	11.55
Ores, slag, ash	2,200.0	3.52	1,300.0	4.84
Organic chemicals	1,800.0	2.88	1,600.0	5.96
Iron, steel	1,400.0	2.24	725.7	2.70
Fruits, nuts	934.8	1.50	835.8	3.11
Fertilizers	681.8	1.09	204.7	0.76
Salt, sulfur, stone, cement	561.3	0.90	412.1	1.53
Copper	386.2	0.62	540.6	2.01
Aluminum	305.4	0.49		
Vegetables			173.0	0.64
Subtotal	59,969.5	95.95	25,291.90	94.20
Total	62,500.00	100.00	26,849.15	100.00

Now, as it has been proven recently^{17,18}, exchange rate of U.S. Dollar to national currency of any country with the market economy in the beginning of pandemic was governed by crude oil prices. Fig. 4, for instance, demonstrates correlation (r) between crude oil average weighted weekly price, calculated based on information releasing by Statista¹⁹, and US\$ to Turkish Lira (TL) exchange rate²⁰.

It may be clearly seen that the pandemic may be divided into two periods:

1. January 21 – April 20, when the virus was less known, the mortality rate increased, huge restrictions were imposed in the majority of countries, economic development stopped, and the future of commodity and capital markets were uncertain, and
2. After April 20, when the mortality rate started to diminish, restrictions were announced to be step-by-step canceled and economics started to renew.

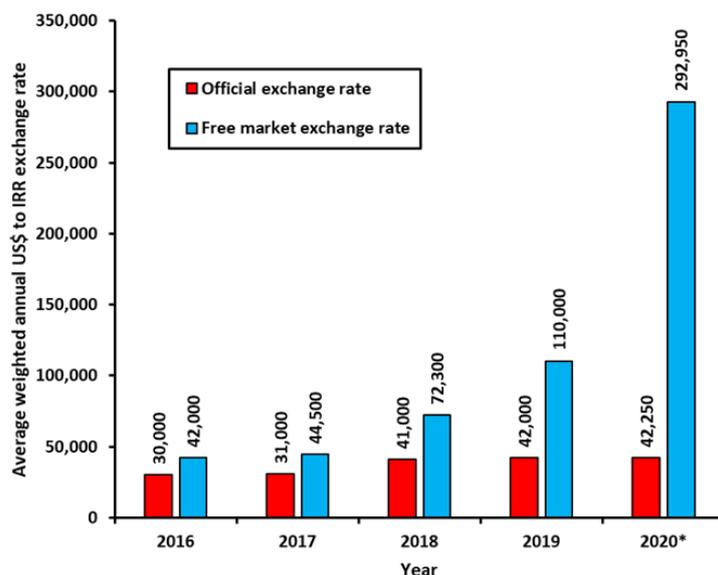


Figure no 1: Average weighted official and free market US\$ to IRR exchange rates in 2016-2020. Here and below * = forecast

Within the first period the strong and significant negative correlation between the mentioned two indicators was observed in practically all countries with the market economy: Less oil price, higher the U.S. Dollar to national currency exchange rate is. Within the second period of the pandemic this correlation disappeared. Just vice versa interdependence (Fig. 5) is characteristic for the Euro to U.S. Dollar exchange rate²¹. This phenomenon lies in the roots of commodity pricing theory, which was explored earlier²², and now there is no room to explain it in details.

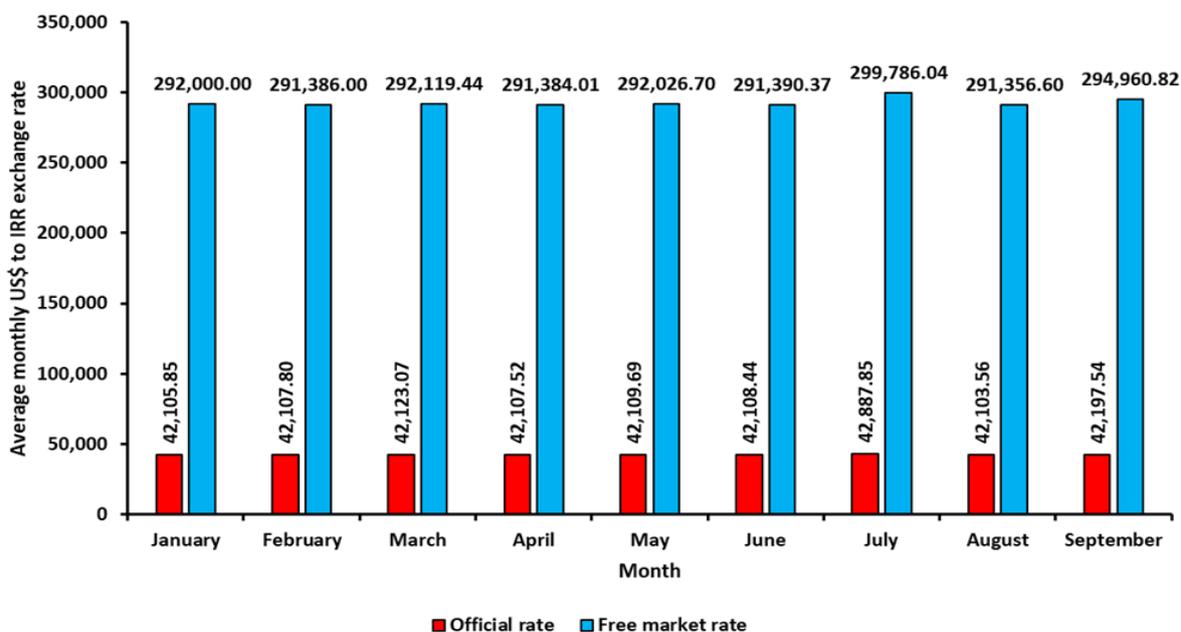


Figure no 2: Average monthly US\$ to IRR official and free market exchange rates in 2020

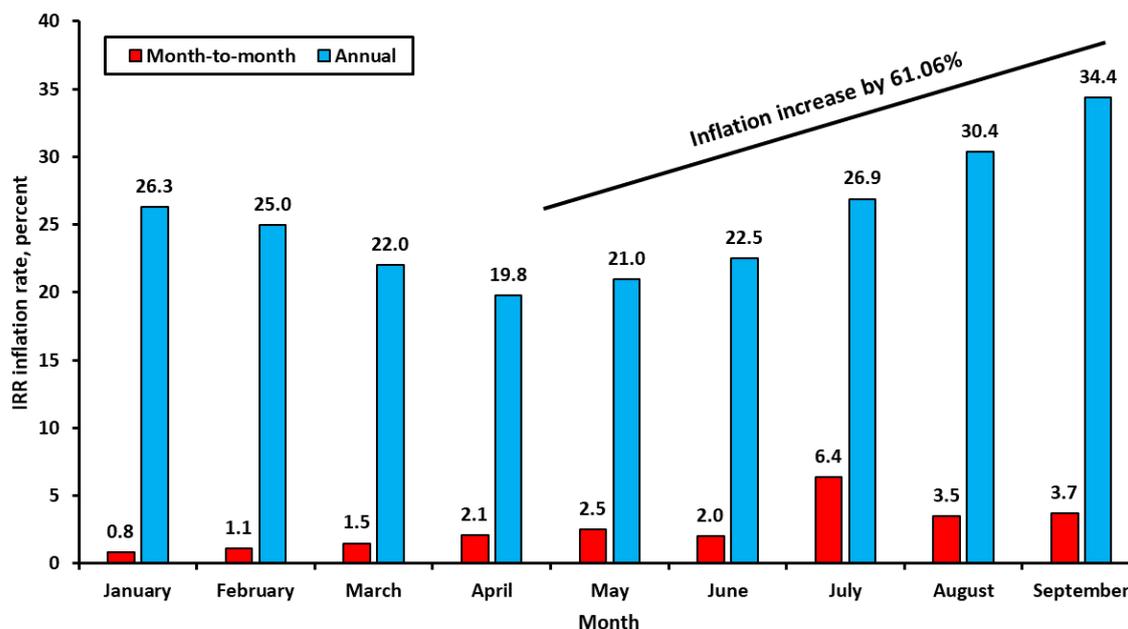


Figure no 3: Month-to-month and annual Iranian Rial inflation rate in 2020

Let see what tendencies were characteristic of the Iranian Rial. Fig. 6 demonstrates interrelation between weekly world crude oil prices and weekly average weighted U.S. Dollar to Iranian Rial official exchange rate. It may be seen that unlike open economies, in the beginning of pandemic influence of crude oil price on Iranian Rial was minor as far as the correlation coefficient, though significant and negative, is weak.

The most paradoxical fact is that the so-called free market exchange rate also does not follow the tendencies of free currencies, and in this case the negative correlation coefficient is even weaker. So, the sole conclusion, which may be made is that the economic management of the country is entirely autocratic. If small roots of real economic relations are slightly visible in the Central Bank of Iran's policy, the finance sector, which is beyond the governmental control, is entirely voluntarist.

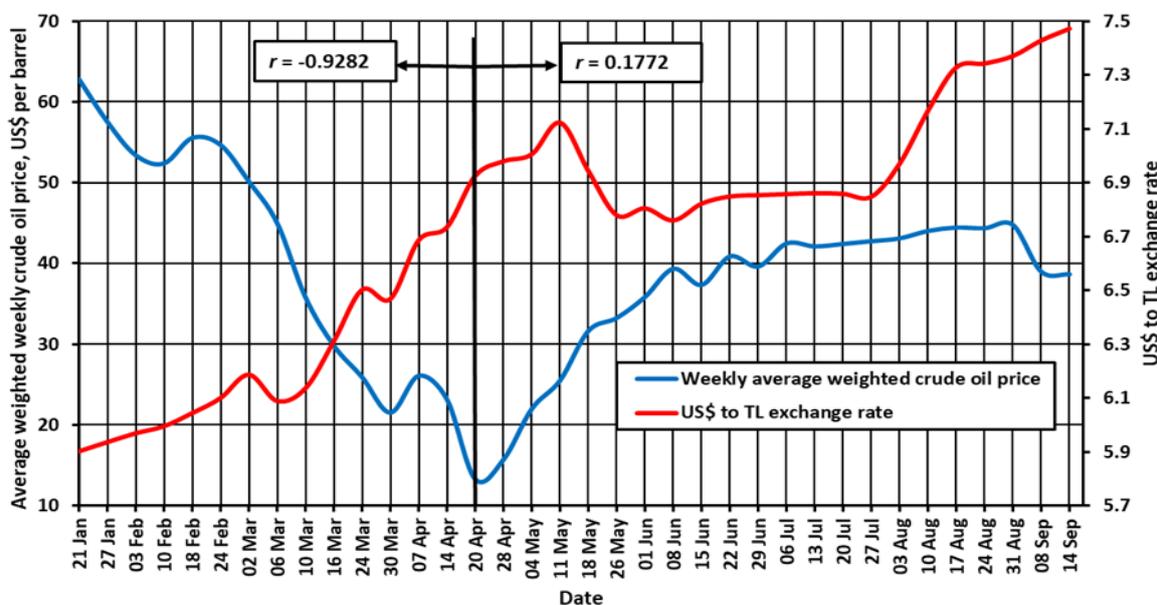


Figure no 4: Interrelation between weekly average weighted world crude oil price and U.S. Dollar to Turkish Lira exchange rate

III. Government Budget

The most enigmatic feature of Iranian economy is the fact that the country doesn't have a state budget. Parliament is approving a Government Budget, e.g. those assets, revenue and expenditure that may be disposed by the central civil power.

Table 2 describes general features of the 2020-2021 government budget as approved by the parliament²³. It may be seen that both revenue and expenditure exceed 2 trillion Iranian Rials, and the budget deficit equals to about 486 billion IRR or to 22.48% of the revenue. Even these official figures are negative as far as have caused huge inflation, which by October 1 reached 34.4% (see Fig. 3). Fig. 7 demonstrates revenue sources to the government budget. It is clearly visible that the sole article of free currency revenue to the budget are oil sales. Other sources rise cashflow in Iranian Rials.

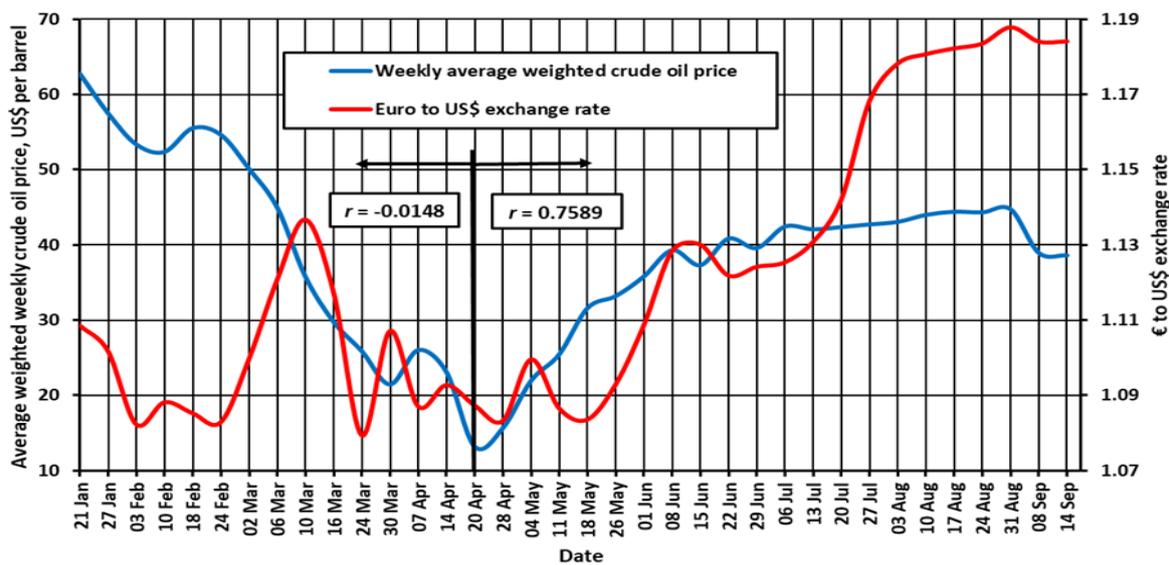


Figure no 5: Interrelation between weekly average weighted crude oil price and Euro to U.S. Dollar exchange rate

At the first glance, the situation is not ideal but supportable – the government dispose more than 2 trillion IRR. Hence, recalculation of these figures in U.S. Dollars according to official and free market exchange rates reveals an absolutely dramatic situation (Fig. 8): Considering that in 2020 population of Iran was 84,267,476 people²⁴, budgetary revenue was approved as US\$ 607.86 per capita according to the official exchange rate, and to US\$ 87.58 per capita according to the free market exchange rate.

Table no 2: 2020-2021 government budget of Iran

Item	Unit of measure	Value
Government debt to GDP	%	44.2
Government revenue	IRR billion	2,161,900
Government expenditure	IRR billion	2,648,012
Budget balance	IRR billion	-486,112

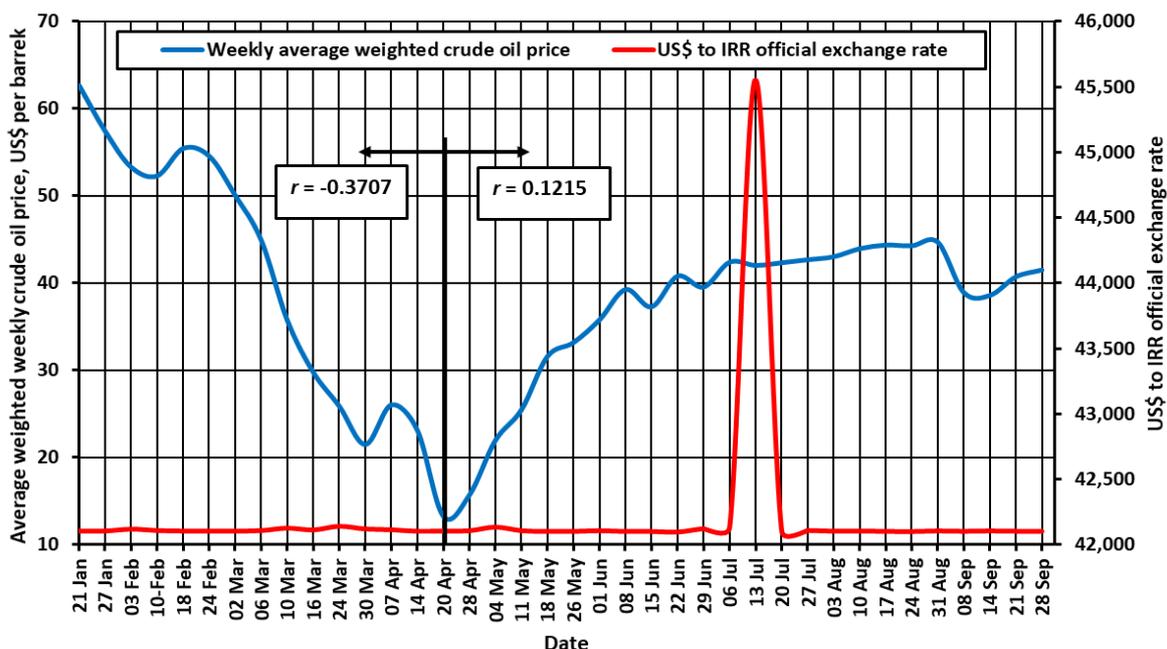


Figure no 6: Interrelation between average weighted weekly world crude oil price and average weighted weekly U.S. Dollar to Iranian Rial exchange rate

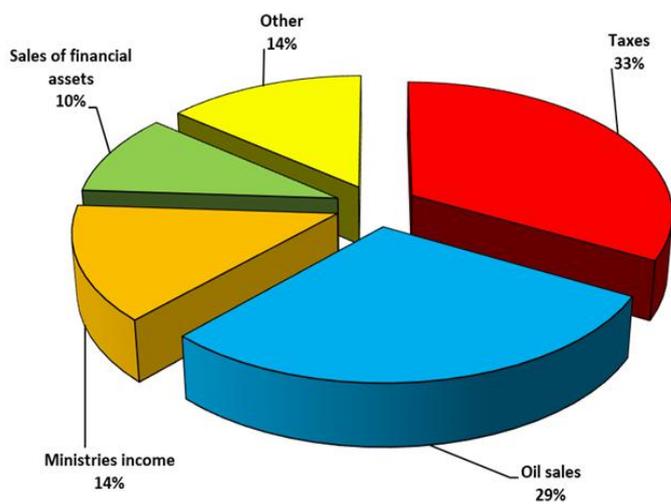


Figure no 7: Revenue structure to of the 2020-2021 Iranian government budget

IV. Oil sector

As it was mentioned in Introduction, official data on oil exports from Iran do not correspond to the real situation and describes only officially registered exports. Thus, the sole possibility to assess the real volume (official + shadow) and value of exported crude oil is usage of the simple technology elaborated by one of co-authors in 2011²². Then, oil exports value from Iran equals to⁷:

$$V = E \cdot P_A = (C_P - C_C) \cdot P_A, \quad (1)$$

Where: V = annual crude oil exports value, US\$, E = crude oil annual exports volume, t, P_A = average annual world oil price, US\$ per t, C_P = annual crude oil production volume, t, C_C = annual crude oil consumption volume, t.

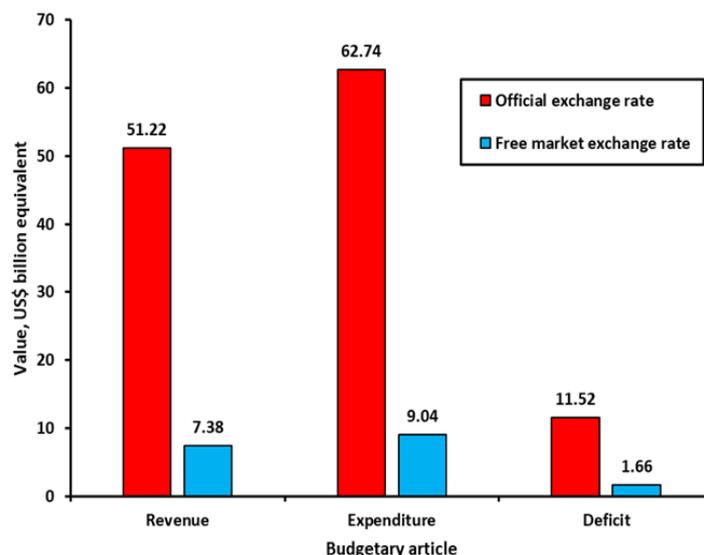


Figure no 8: Basic articles of Iran's 2020-2021 government budget recalculated according to official and free market exchange rates of Iranian Rial

The most relevant data on oil production and consumption in the world including Iran are annually published by BP International²⁵. Average weighted annual crude oil prices were calculated based on IMF primary commodity prices²⁶.

Table no 3: Monthly Iran's oil production in 2020 and forecast for the end of year

Oil production value, US\$	Oil price, US\$ per barrel	Production, million barrels		Value, US\$ billion
		per day	per month	
January	60.11	2.082	64.54	3.88
February	53.95	2.070	57.96	3.13
March	34.67	2.025	62.78	2.18
April	19.54	1.973	59.19	1.16
May	28.07	1.954	60.57	1.70
June	38.57	1.947	58.41	2.25
July	42.40	1.930	59.83	2.54
August	44.09	1.940	60.14	2.65
September	39.70	1.950	58.50	2.32
Total 9 months			541.92	21.80
Forecasted October-December	42.27	2.010	184.92	7.82
Forecasted annual			726.84	29.62

Table 3 provides generalization of existing data¹⁶ on monthly oil production in Iran in 2020, and our forecast for October-December and for the end of 2020. Monthly oil prices were recalculated from average weighted weekly prices¹⁹ for different blends (Fig. 9). Real oil exports from Iran is much over than officially reported²⁷. Analysis of official and real data on oil exports is of great importance for assessment of existing economic situation in Iran. So, Fig. 10 contains results of the in-depth study performed by us. Based on this data Table 4 provides information on volume and value of Iran's oil production, consumption and exports in 2016-2020. Fig. 11 generalizes value and volume of Iran's assessed crude oil exports. It may be clearly seen that if the U.S. sanctions have diminished Iran's revenue from exports by 48.56%, impact of COVID-19 coronavirus pandemic was much more severe and is suggested to decrease exports value by 73.03%. And such a framework arises extremely huge challenges for Iranian society.

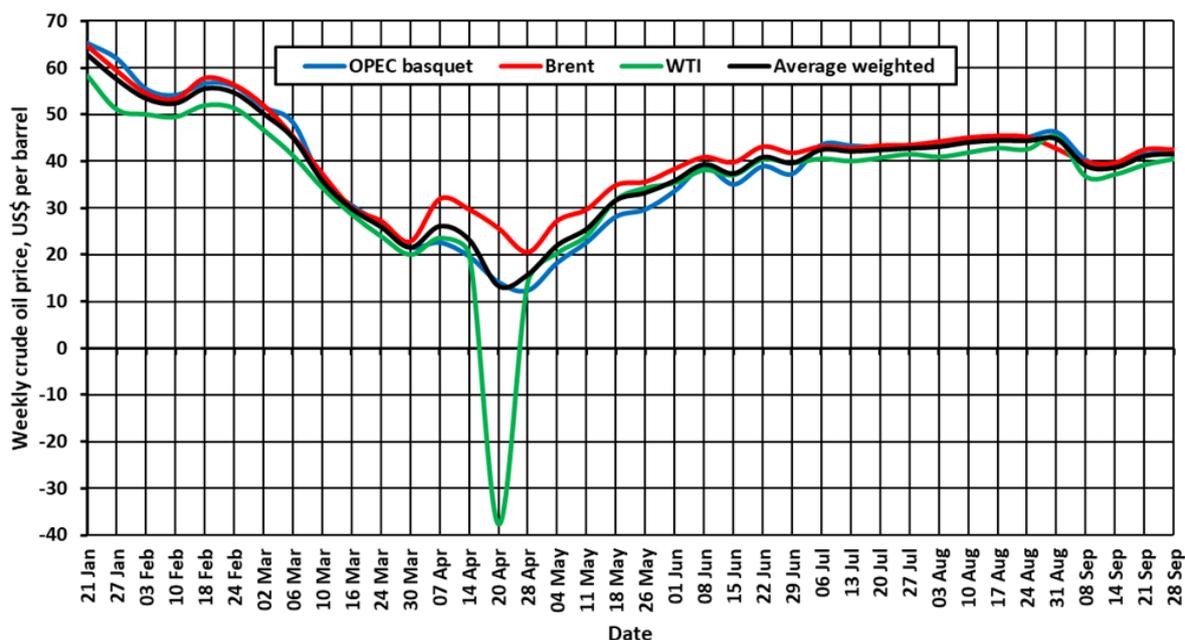


Figure no 9: Weekly oil prices of major world blends in 2020

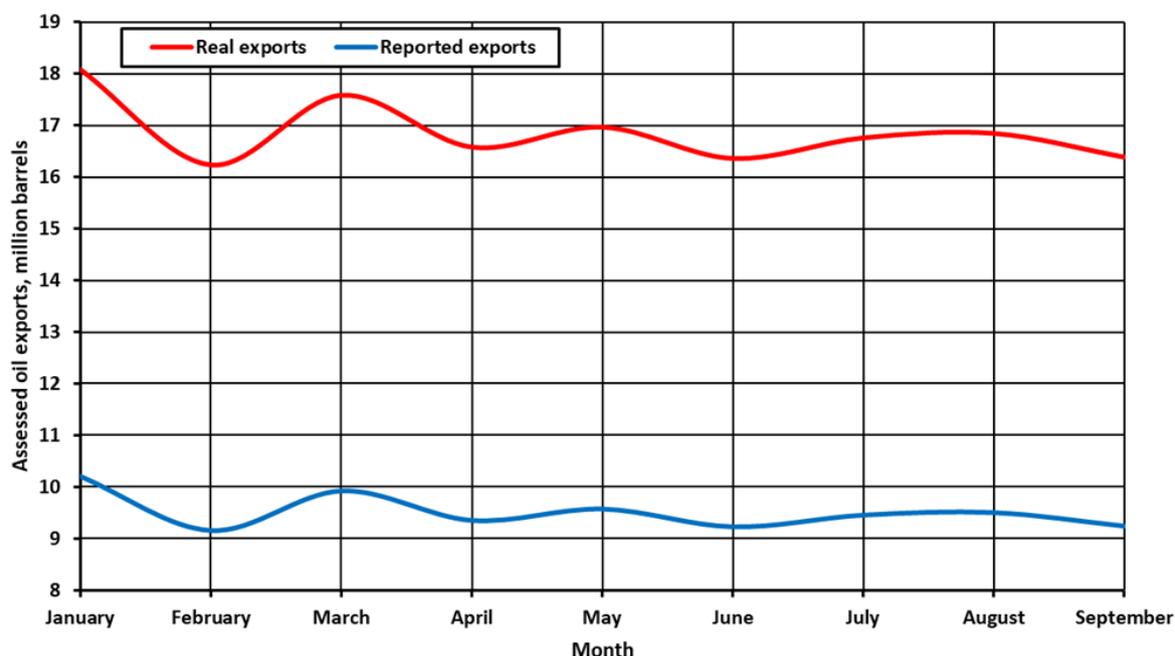


Figure no 10: Assessed real and reported oil exports from Iran in January – September, 2020

V. Assessment of the general economic situation in Iran

In our recent publication²⁸ we have proven that Iran's social & economic framework and well is entirely determined by the oil sector. Fig. 12 displays correlation between Iran's GDP, as released by the World Bank Group²⁹ and Statista³⁰. It may be seen that the forecast for the year 2020 is pessimistic: GDP is suggested to diminish by 22.38%. That is why a strong deficit of Forex assets is originated in Iran. Hence, the country needs freely converting money for imports of a huge number of strategic commodities and consumer goods starting with aircrafts, cars, their repair parts, weapon, cyanide, etc., and finishing by cell phones and software.

A sizable amount of free currency originates from two basic sources: a) oil exports and b) difference between the official and free market exchange rates: Iran is selling free currency in exchange agencies under the free market exchange rate, and buying it in the Central bank under the official exchange rate. Thus, more the

difference between the two systems of exchange rate is established, more free currency earns the state structures. Based on data mentioned above, Fig. 13 provides our assessment of the U.S. Dollars earned by the state-related structures in 2016-2020.

Table no 4: Production, consumption, and exports of Iranian oil in 2016-2020

Index	Year	Value	
		Million t	US\$ billion
Production	2016	216.14	57.57
	2017	235.49	78.25
	2018	224.68	95.77
	2019	160.83	67.19
	2020*	99.16	29.62
Consumption	2016	79.17	21.09
	2017	79.46	26.40
	2018	80.60	34.36
	2019	89.45	37.37
	2020*	72.52	21.58
Exports	2016	136.98	36.49
	2017	156.02	51.84
	2018	144.08	61.41
	2019	71.38	29.82
	2020*	27.78	8.04

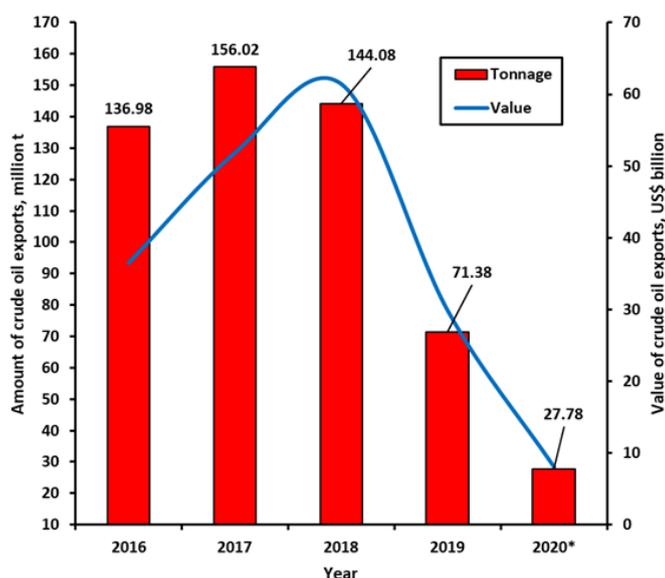


Figure no 11: Iranian crude oil exports volume and value in 2016-2020

It is visible that the free currency income increased till the end of 2018 but then the U.S. sanctions diminished them roughly twice and afterward the COVID-19 coronavirus pandemic determined reduce of this income to less than US\$ 10 billion. So, the country is obliged to spend its free currency assets allocated abroad.

Volume of these assets is strictly classified. According to expert assessment, in 2007 these assets were about US\$ 62 billion³¹. By the beginning of 2019, according to different appraisals, these assets were between 100 and 125 US\$ billions³². According to CIA Factbook³³, Iran's Forex reserves equaled US\$ 132.6 billion in 2017 but diminished to US\$ 86 billion by February 2020. Now, the regularities discovered in this article had a huge impact on the dynamics of assets disposed by Iran abroad. Each year the country needs a gross amount of free currency to import goods to Iran for avoiding civil social unrest. Our in-depth analysis has demonstrated that Iran spends from US\$ 25 to 40 billion annually for performing these imports. Fig. 14 demonstrates

movement of free currency assets allocated by Iran in about 145 banks in 60 countries³⁴. Analysis was based on the balance between assessed Iran's free currency income and expenditure.

Thus, at our opinion, within 2020 the Forex assets diminished by US\$ 15 billion and today Iran disposes about US\$ 84 billion. This appraisal in principle corresponds with admissible accuracy to data released by CIA.

Thus, it may be concluded that Iran will be able to survive three unhappy years like 2020 and even worst. Afterward a default will be inevitable. However, considering the tendencies of oil pricing in 2020 (see Fig. 9), it may be forecasted that 2021 will not be economically an ideal year for both Iran and the world but even if oil exports from the country will remain on the same level, due to increase of oil prices Iran's GDP will grow by about 10% comparing with 2020.

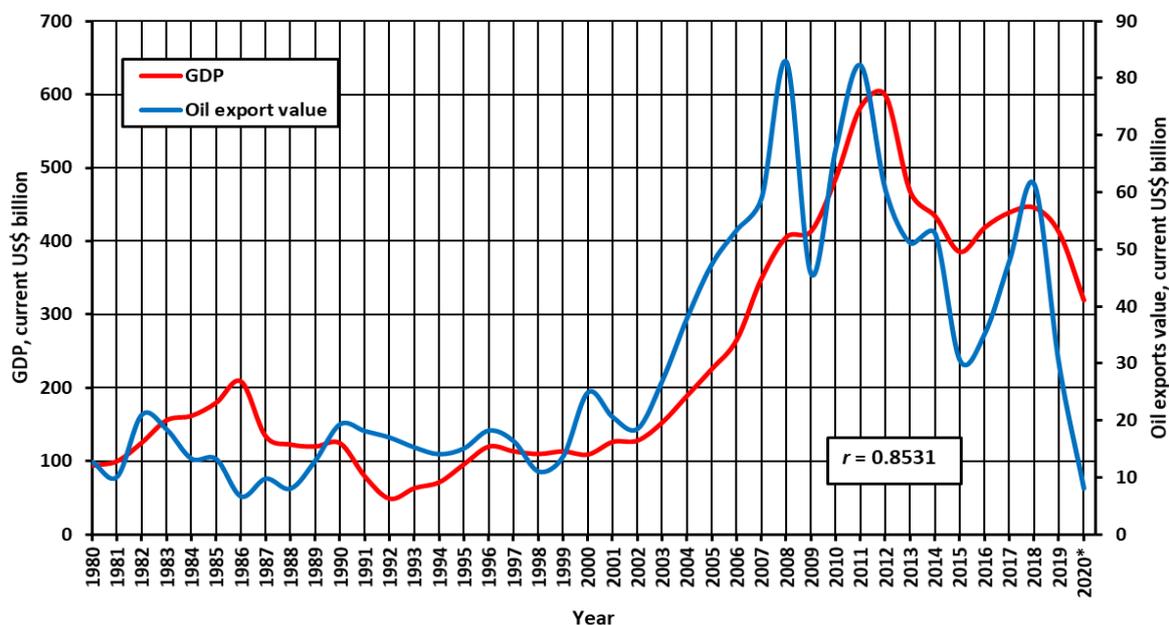


Figure no 12: Interrelation between Iran's GDP and crude oil exports in 1980-2019 and forecast for 2020

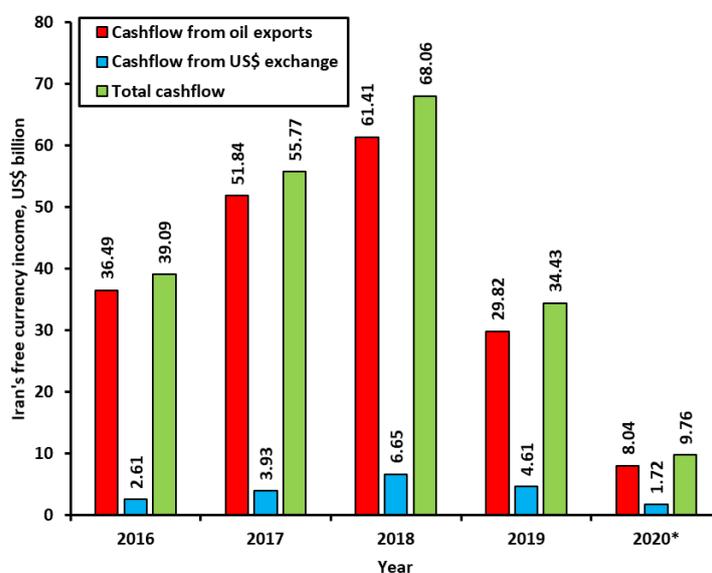


Figure no 13: Iran's free currency income in 2016-2018

VI. Conclusions

Iran is a country, which during the last 35 years exists under strict international sanctions. At the same time, Iran is one of the main oil exporters, and the country's economy is entirely determined by the oil sector. President Rouhani initiated complex reforms, which created roots of rudimentary free market relations and dramatically changed its foreign politics, which ultimately brought to signature of the Iran Nuclear Deal.

In 2016-2018 Iran increased oil exports from US\$ 36.49 to 61.41 billion. However, the U.S. sanctions imposed in late 2018 and then COVID-19 coronavirus pandemic dramatically decreased oil exports value, which is assessed to be only US\$ 8.04 billion in 2020.

Sanctions imposed by President Trump on Iran aimed to diminish Iranian support of terroristic organizations but they caused just the back effect: Weak Iranian civil society, which was extremely enthusiastic with President Rouhani's reforms, lost a hope for the better future. At the same time, the sanctions were unable to reduce Iranian oil exports to zero and provoked creation of the international oil shadow market the volume of which is assessed to be 43.55% of total oil exports (see Fig. 10).

Impact of COVID-19 coronavirus pandemic was extremely vulnerable. It motivated sever inflation, which in beginning of October equaled 34.4%, devaluation of Iranian Rial at the free market by 166.32% comparing 2019, unemployment, etc.

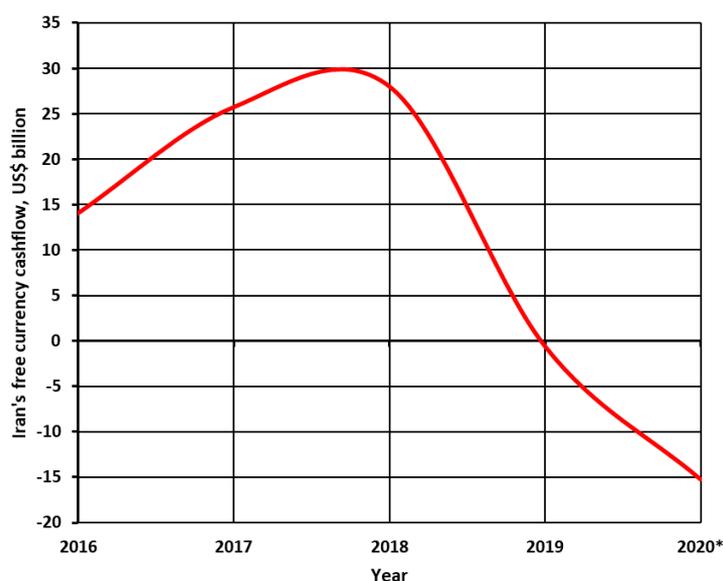


Figure no 14: Assessed free currency cashflow of Iran in 2016-2020

Analysis of free currency cashflow in 2016-2020 demonstrated that Iranian Forex assets increased by US\$ 14.09 billion in 2016, by US\$ 25.77 billion in 2017, by US\$ 28.16 billion in 2018 but then diminished by US\$ 0.57 billion in 2019 and are suggested to reduce by US\$ 15.24 billion in 2020. Correspondingly, today these assets are assessed to be about US\$ 84 billion.

Thus, it may be concluded that Iran will be able to survive three unhappy years like 2020 and even worst. Afterward a default will be inevitable. However, considering the tendencies of oil pricing in 2020, it may be forecasted that 2021 will not be economically an ideal year for both Iran and the world but even if oil exports from the country will remain of the same level, due to increase of oil prices Iran's GDP will increase by about 10% comparing with 2020.

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