

The JCPOA and U.S. withdrawal: Losses greater than the benefits

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Abstract

This paper examines Iran's economy from 2012 to 2022, focusing on the Iranian economy and during and following the JCPOA agreement. Using official data from the Central Bank of Iran and multivariate regression analysis in STATA 17, I evaluate 9 key economic indicators including: per capita income, minimum wage, annual inflation rate, price index of consumer goods and services, GDP, FDI, economic growth, the average cost of an urban family, and the Gini coefficient index. This article demonstrates that the benefits of signing the JCPOA for Iran were less than the losses caused by the withdrawal of the United States from this agreement. The findings indicate that although the JCPOA created hopes for economic improvement in the short term, the withdrawal of the United States and the return of sanctions had far deeper negative effects on Iran's economy, which is reflected the various economic indicators analyzed.

Keywords: Iran, JCPOA, Post-JCPOA, Iran's economy, U.S. withdrawal

Introduction

Economic sanctions as a foreign policy tool are often deployed by countries to pursue geopolitical goals where they are targeted. Sanctions can generally be divided into three types: military, diplomatic, and economic². My focus in this article is on economic sanctions

Since the Islamic Revolution in 1979, Iran has been the target of various sanctions imposed by different countries, particularly the United States³. Sanctions are mainly focused on key

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² Shirazi, H. , Azarbaejani, K. and Sameti, M. (2016). The Effect of Economic Sanctions on Iran's Export. *Iranian Economic Review*, 20(1), 111-124. doi: <https://10.22059/ier.2016.58273>

³ Islam Abdelbary and Rasha Elshawa (2023) "Economic Sanctions as a Foreign Policy Tool: A Case Study of the Iran-West Conflict", *Migration Letters*. London, UK, 20(S7), pp. 215–237. doi: <https://10.59670/ml.v20iS7.4392>.

sectors of Iran's economy such as oil and gas, industry, and foreign investment. By reducing access to financial resources and technology, sanctions have severely limited the possibility of economic development.

From the outset, the main goal of the sanctions was to limit the economic and military capabilities and to pressure the Islamic Republic of Iran to change its political and regional agenda. The Congressional Research Service in 2024 outlined the US goal of imposing sanctions on Iran as follows:

The U.S. government uses sanctions to deter, constrain, and encourage change in the adversarial behavior of the Iranian regime⁴.

Since then, sanctions on Iran have taken on new dimensions in accordance with Iran's political, economic and social conditions as well as developments in the international arena.

Methodology

The study examines the impact of the JCPOA nuclear deal and the subsequent US withdrawal from the JCPOA on the Iranian economy between 2012 and 2022 using an analytical-descriptive method and quantitative data. Data analyzed is sourced from the Central Bank of Iran, the United Nations, the World Bank and the Statistical Centre of Iran. STATA 17 software and multivariate regression were used to analyze the data.

Economic variables included in multivariate regression analysis:

- Per capita income
- Minimum wage
- Annual inflation rate
- Price index of consumer goods and services
- Gross domestic product (GDP)
- Foreign Direct Investment (FDI)
- Economic growth rate
- Average cost of an urban household
- Gini coefficient

Sampling: Data was collected as a census from official sources and no selection was made in deleting or adding years.

Methods of data analysis:

- Descriptive statistics: drawing graphs and tables to show the trend of changes in indicators.
- Multivariate regression analysis: to examine the impact of the independent variable (JCPOA and US withdrawal) on the dependent variables (economic indicators).

⁴ Congressional research service: <https://crsreports.congress.gov/product/pdf/IF/IF12452>

Literature review

According to Ustiashvili (2021; 2023), the lifting of sanctions on Iran will increase its foreign currency income; As a result, America orders its representatives in international financial institutions to oppose the termination of monetary and financial cooperation with Iran and even pass legislation against it. In this regard, Ustiashvili considers Iran's economic sanctions as extremely challenging, which have caused the free fall of the national currency and the worsening of the poverty situation in Iranian society, thus widening class-based inequalities.⁵

Jovan (2020) examined the legal status of the JCPOA and the unilateral withdrawal of the United States from it. Was the JCPOA merely a non-binding political agreement (according to the US), or an international treaty (according to Iran and other members)? He argues that since United Nations Security Council Resolution 2231 approved the JCPOA, the withdrawal of the United States from this agreement and the reimposition of sanctions was a violation of international law⁶.

Gunawan, Riyanto, Irrynta (2022) argue that JCPOA was an agreement with two goals. On the one hand, limiting Iran's nuclear activities (the goal of the signatory members) and on the other hand, canceling economic sanctions (Iran's goal). In the future, however, the withdrawal of the United States from this agreement led to the ineffectiveness of the agreement. They suggest that due to the destruction of this agreement in practice, a new agreement should be signed to ensure the adherence of all parties⁷.

Caba-Maria and Musetescu (2020) discuss the impact of US sanctions on the Iranian national economy following US withdrawal from the JCPOA in 2018. Although the sanctions have proved effective against Iran's economy, they have had few political benefits for the United States, they posit. In addition, Iran has equipped itself with more flexible strategies to use commercial mechanisms⁸. In fact, in the wake of the US withdrawal from JCPOA, the alternatives of Iran were left to the European partners. Thus, France, UK and Germany empowered the Instrument in Support of Trade Exchanges (INSTEX) in January 2019 as a special mechanism that could facilitate European business with Iran, avoiding the transaction in US dollars, attempting to bypass the American sanctioning for those who make business with Iran. The mechanism operates with trade of humanitarian goods mostly: pharmaceutical, medical, and food products. In exchange, Iran can bring the following goods to Europe: carpets, pistachios, and other specific agricultural products. Towards the end 2019, another group of European countries - Belgium, Denmark, Netherlands, Norway, and Sweden – joined the INSTEX (www.euractiv.com, 2020). At its own end, Iran's approach is of "graduated pressure" since mid-2019, invoking menaces to Europe about the potential breach of the deal, if Europeans do not fight more about maintaining it (www.bourseandbazaar.com, 2019). The alternatives for

⁵ Ustiashvili, S. (2021). US Withdrawal from JCPOA and the Turmoil in Iran's Economy. *Journal of Humanities (Zomba)*. <https://doi.org/10.31578/hum.v10i1.444>

⁶ Jovan, C. V. (2020). *The United States unilateral withdrawal from the restrictions of Iran's nuclear program in jcpoa 2015 under international law*. 4(2), 247–264. <https://doi.org/10.23920/PJIL.V4I2.414>

⁷ Gunawan, Y., Riyanto, A. A. P., & Irrynta, D. (2022). Should the JCPOA be Revived? An Analysis of the Iran Nuclear Deal. *Nurani Hukum*, 5(2), 93. <https://doi.org/10.51825/nhk.v5i2.16776>

⁸ Caba-Maria, F., & Muşetescu, R.-C. (2020). *The impact of international economic sanctions on national economies. The Islamic Republic of Iran - a case in point*. 14(1), 1014–1023. <https://doi.org/10.2478/PICBE-2020-0096>

Iran moved their center of gravity towards collaborators in Europe and Asia. The year 2019 limited Iran leaders materially, but it has not brought the regime down that worked constantly to keep its functionality with any means (it has even stretched their visions). With some reforms in the macroeconomic policies (some have occurred already over the past years), the government would maintain its capacity in managing economic affairs, deviating the pursued goals of sanctions. Iran's story is still unfolding after facing longstanding sanctions, and noting the elements highlighted by the study of Dizaji & van Bergeijk (2013), economic adaptations occurred, they could attenuate negative effects accordingly after another six years from now.

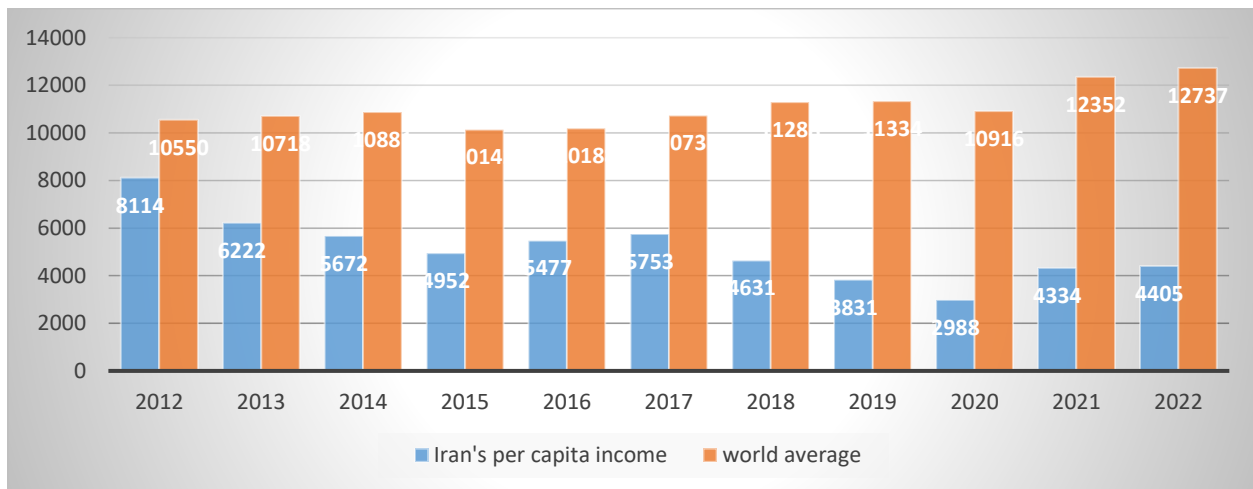
Majidi and Zarouni (2022) suggest that sanctions have limited Iran's access to financial resources and foreign currency, reduced investment, and increased inflation and unemployment. On the other hand, the sanctions have reduced Iran's dependence on oil, improved domestic production, and reduced vulnerability to internal factors such as economic structure, trade deficit, weakness in the private sector, inflation, poverty, mismanagement, corruption and economic weakness, law, economy and speculation, and not a product of external factors such as foreign direct investment low and sanctions are the most important factors. Ultimately, Majidi and Zarouni (2022) claim that in order to reduce the effects of sanctions, Iran should move towards establishing trade agreements and increase domestic efficiency⁹.

Per capita income

Between 2012 and 2022, the per capita income of Iranians has been significantly lower than the world average (Figure 1). After the signing of the JCPOA, however, especially in 2016 and 2017, Iran's per capita income increased. However, with the withdrawal of the United States in 2018, the per capita income of Iranians began to decline again, to the extent that in 2020 decreased to under \$3000.

⁹ Majidi, A., Zarouni, Z. (2022). "The Impact of Sanctions on the Economy of Iran". The Open Access Journal of Resisitive Economics, 10(1): 11-27

Figure 1: Comparison of Iran's per capita income and the world average



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. regress Intranspercapitaincome sanctions
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Source	SS	df	MS	Number of obs	=	11
Model	10842284.4	1	10842284.4	F(1, 9)	=	12.56
Residual	7771992.13	9	863554.681	Prob > F	=	0.0063
				R-squared	=	0.5825
				Adj R-squared	=	0.5361
Total	18614276.5	10	1861427.65	Root MSE	=	929.28

Intranspercapitaincome	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	-1993.867	562.7048	-3.54	0.006	-3266.793	-720.9399
_cons	6031.667	379.3755	15.90	0.000	5173.46	6889.874

Minimum wage

Due to the extreme fluctuations of the exchange rate and the decrease in the real value of the Rial against the dollar, the minimum wage has not experienced any growth since the year 2015 when the JCPOA was signed.

With the withdrawal of the United States from the JCPOA, the minimum dollar wage of Iranians has always been less than 100 dollars or a little more than this number, which shows the poor living conditions in Iran in the post-JCPOA period.

Table 1: Iranian monthly wage in Rial and Dollar

Date	Minimum monthly wage (in Rial) ¹⁰	Price of dollar (in Rial) ¹¹	Minimum monthly wage (in dollar) ¹²
2012	IRR 3,897,000	34,505	\$ 112.940
2013	IRR 4,871,250	30,103	\$ 161.819
2014	IRR 6,089,100	33,459	\$ 181.986
2015	IRR 7,124,250	34,275	\$ 207.855
2016	IRR 8,121,660	37,590	\$ 216.059
2017	IRR 9,299,310	50,010	\$ 185.949
2018	IRR 11,112,690	128,940	\$ 86.184
2019	IRR 15,168,810	156,546	\$ 96.896
2020	IRR 18,354,260	247,117	\$ 74.273
2021	IRR 26,554,950	262,902	\$ 101.007
2022	IRR 41,797,500	509,415	\$ 82.049

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. regress Minimummonthlywageindollar sanctions
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Source	SS	df	MS	Number of obs	=	11
Model	21937.1304	1	21937.1304	F(1, 9)	=	26.72
Residual	7388.61891	9	820.957657	Prob > F	=	0.0006
				R-squared	=	0.7481
				Adj R-squared	=	0.7201
Total	29325.7493	10	2932.57493	Root MSE	=	28.652

Minimummon~r	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	-89.6862	17.34986	-5.17	0.001	-128.9343	-50.43808
_cons	177.768	11.69728	15.20	0.000	151.3069	204.2291

Inflation rate

Iran's annual inflation from 2012 to 2017 has faced a decrease every year compared to the previous year (with a few exceptions) (Figure 2). From 2018 and with the withdrawal of the United States from the JCPOA until 2020, however, Iran's inflation increased sharply. Indeed, inflation rate increased from under 10% in 2016 to over 30% in 2018¹³.

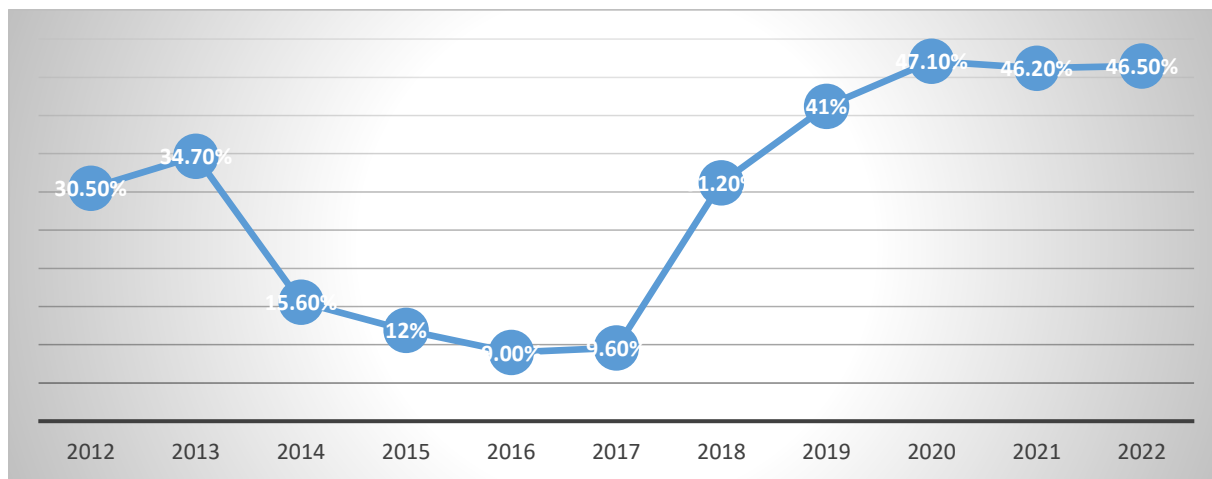
¹⁰ Source: <https://www.isna.ir/news/1401031913233>

¹¹ Source: https://www.tgju.org/profile/price_dollar_rl/charts

¹² The minimum wage in dollars is calculated based on the minimum wage approved by the government in the last week of the year, divided by the dollar price in the last week of the current year.

¹³ https://www.cbi.ir/Inflation/Inflation_FA.aspx

Figure 2: Annual inflation rate



. regress Annualinflationrate sanctions

Source	SS	df	MS	Number of obs	=	11
Model	.154916667	1	.154916667	F(1, 9)	=	17.27
Residual	.080727333	9	.008969704	Prob > F	=	0.0025
Total	.235644	10	.0235644	R-squared	=	0.6574
				Adj R-squared	=	0.6194
				Root MSE	=	.09471

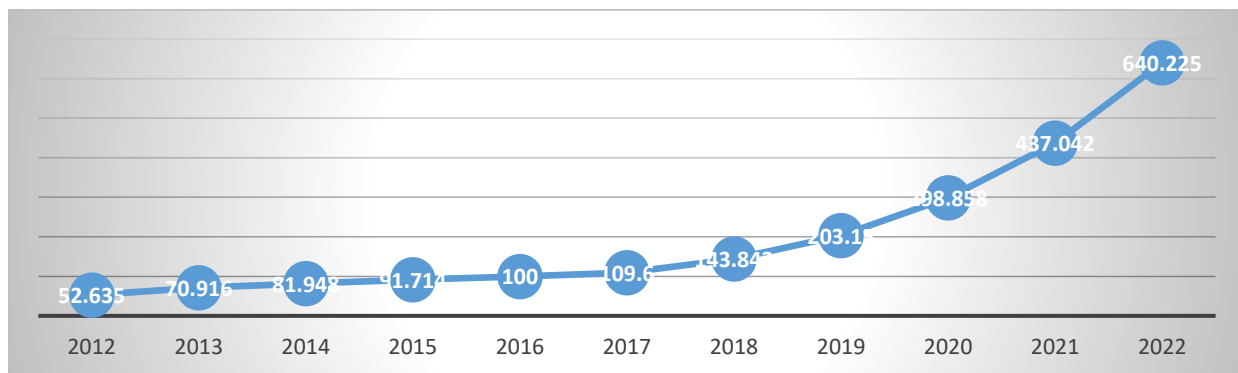
Annualinfl~e	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	.2383333	.0573489	4.16	0.002	.1086012	.3680655
_cons	.1856667	.0386646	4.80	0.001	.0982013	.273132

Price of Consumer goods and services

Figure 3 shows that the sharp growth of the price index of consumer goods and services has risen quickly from 2018 onwards – following the withdrawal of the United States – indicating the increasing rate of impoverishment in Iran¹⁴.

¹⁴ https://www.cbi.ir/Inflation/Inflation_FA.aspx

Figure 3: Price index of consumer goods and services



. regress Priceindexofconsumergoodsan sanctions

Source	SS	df	MS	Number of obs	=	11
Model	184582.905	1	184582.905	F(1, 9)	=	10.35
Residual	160472.581	9	17830.2868	Prob > F	=	0.0105
				R-squared	=	0.5349
				Adj R-squared	=	0.4833
Total	345055.486	10	34505.5486	Root MSE	=	133.53

Priceindex~n	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	260.1546	80.85649	3.22	0.011	77.24448	443.0647
_cons	84.46883	54.51343	1.55	0.156	-38.84912	207.7868

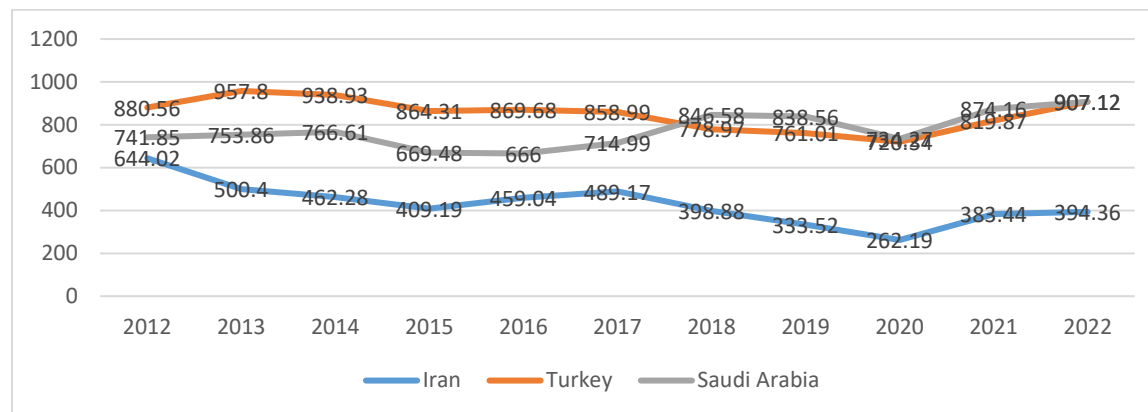
GDP

Iran's national GDP has decreased from more than 644 billion dollars in 2012 to less than 395 billion dollars in 2022 (Figure 4). In order to clearly demonstrate piecemeal Iranian economic development, the data of two regional rivals of Iran, namely Turkey and Saudi Arabia, are included in the data analysis.

In 2018, following the withdrawal of the United States from the JCPOA, national GDP decreased by more than 40%. However, Iran's GDP gradually increased in 2021 and 2022¹⁵.

¹⁵ <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2023&locations=IR-TR-SA&start=1960&view=chart>

Figure 4: national gross domestic (GDP)



. regress GDP sanctions

Source	SS	df	MS	Number of obs	=	11
Model	53102.835	1	53102.835	F(1, 9)	=	10.54
Residual	45348.6054	9	5038.73393	Prob > F	=	0.0101
				R-squared	=	0.5394
				Adj R-squared	=	0.4882
Total	98451.4404	10	9845.14404	Root MSE	=	70.984

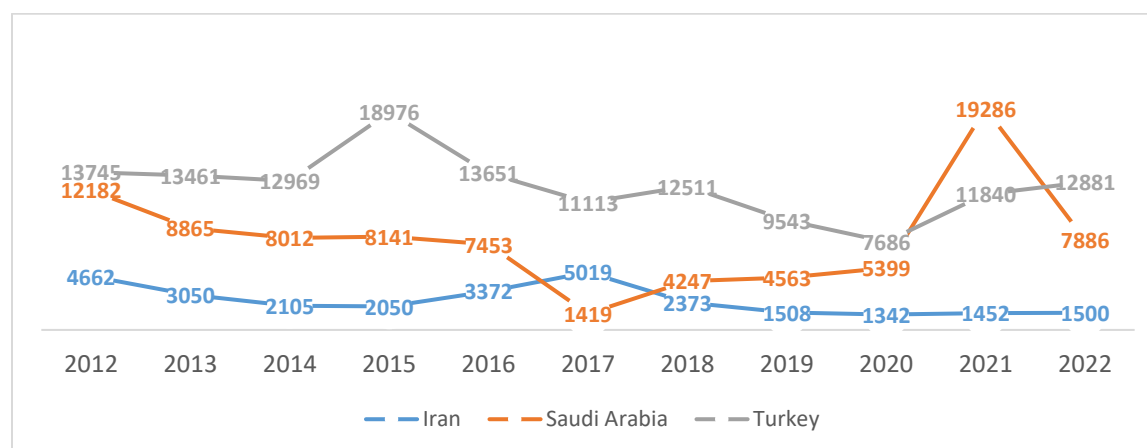
GDP	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	-139.5387	42.98297	-3.25	0.010	-236.7729	-42.30443
_cons	494.0167	28.97911	17.05	0.000	428.4614	559.572

Foreign Direct Investment (FDI)

In the years following the signing of the JCPOA, Iran experienced a temporary increase in FDI. However, Figure 5 that the trend of FDI in Iran in 2018 has decreased by more than 50% compared to 2017 and has gradually stabilized at 1.5 billion dollars and less¹⁶. By contrast, Turkey and Saudi Arabia maintained higher levels of FDI over the same period.

¹⁶ <https://unctad.org/data-visualization/global-foreign-direct-investment-flows-over-last-30-years>

Figure 5: Foreign direct investment (FDI)



. regress FDI sanctions

Source	SS	df	MS	Number of obs	=	11
Model	8269750.3	1	8269750.3	F(1, 9)	=	8.72
Residual	8531589.33	9	947954.37	Prob > F	=	0.0161
				R-squared	=	0.4922
				Adj R-squared	=	0.4358
Total	16801339.6	10	1680133.96	Root MSE	=	973.63

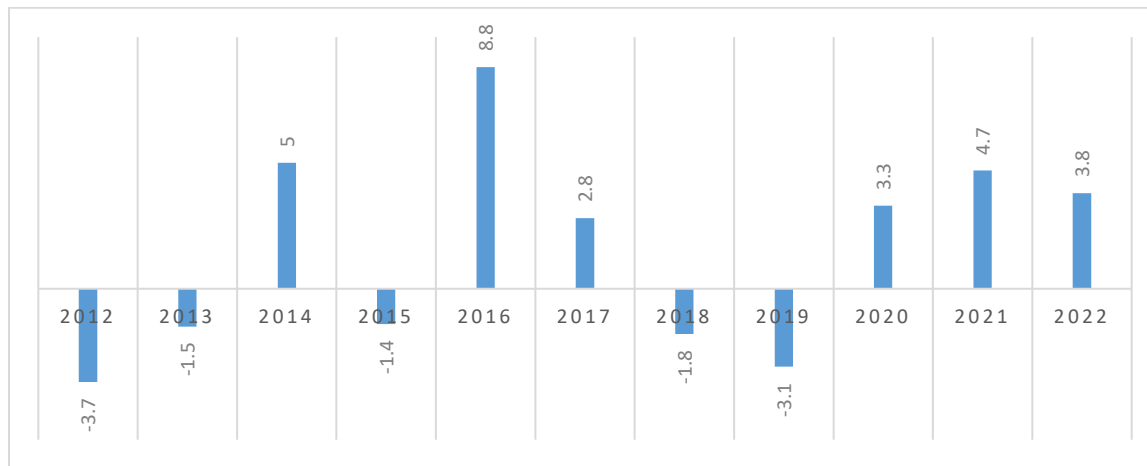
FDI	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	-1741.333	589.5619	-2.95	0.016	-3075.015	-407.6516
_cons	3376.333	397.4826	8.49	0.000	2477.165	4275.501

Economic growth

As shown in Figure 6, Iran's economic growth in 2012 to 2015 declined – except for the 5% growth in 2013. This index increased in 2016 and 2017 following the improvement of relations between the Islamic Republic of Iran and the Western bloc to the extent that, in 2016, more than 8.5% economic growth was recorded. In 2018 and 2019, however, Iran's economic growth faced a decrease, but from 2020, it stabilized at above 3.5%¹⁷.

¹⁷ <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=IR>

Figure 6: Economic growth rate



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. regress Economicgrowth sanctions
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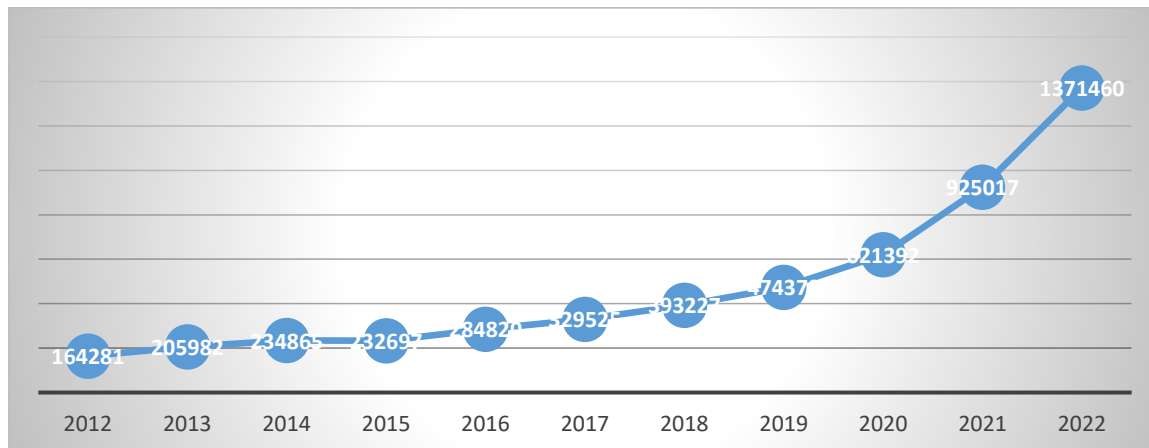
Source	SS	df	MS	Number of obs	=	11
Model	.224121212	1	.224121212	F(1, 9)	=	0.01
Residual	162.261333	9	18.029037	Prob > F	=	0.9137
				R-squared	=	0.0014
				Adj R-squared	=	-0.1096
Total	162.485455	10	16.2485455	Root MSE	=	4.2461

Economicgr~h	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	-.2866667	2.571118	-0.11	0.914	-6.102939	5.529606
_cons	1.666667	1.733447	0.96	0.361	-2.254664	5.587997

The cost of an urban household

The JCPOA has produced limited improvements in the Gini coefficient and the average cost of an urban household, reflected in Figures 7 and 8.

Figure 7: The average cost of an urban household in Rials

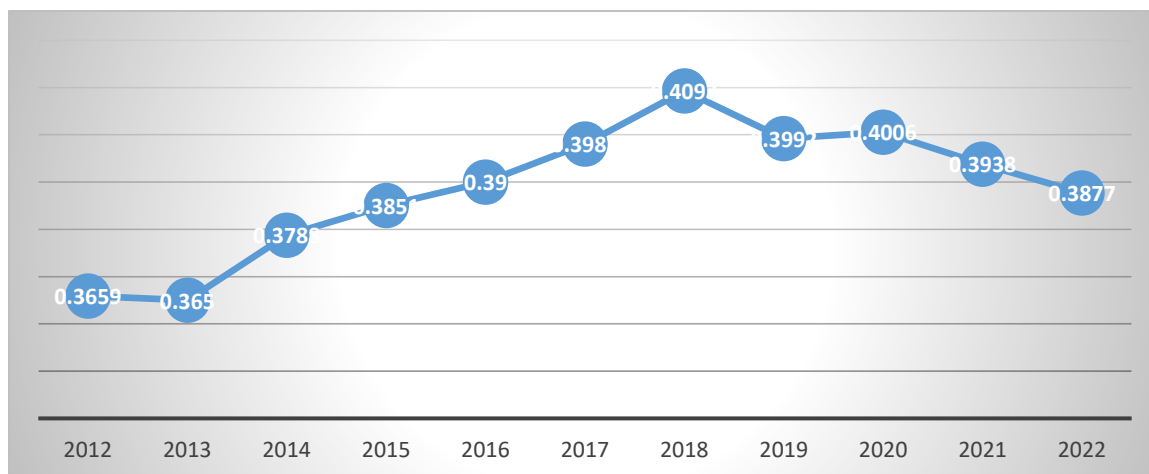


. regress Theaveragecostofanurbanhou sanctions

Source	SS	df	MS	Number of obs	=	11
Model	7.2353e+11	1	7.2353e+11	F(1, 9)	=	9.97
Residual	6.5335e+11	9	7.2595e+10	Prob > F	=	0.0116
				R-squared	=	0.5255
				Adj R-squared	=	0.4728
Total	1.3769e+12	10	1.3769e+11	Root MSE	=	2.7e+05

Theaverage~u	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	515066.7	163150.7	3.16	0.012	145994.1	884139.3
_cons	242028.3	109996.2	2.20	0.055	-6800.363	490857

Figure 8: Gini Coefficient



. regress GiniCoefficient sanctions

Source	SS	df	MS	Number of obs	=	11
Model	.000848324	1	.000848324	F(1, 9)	=	6.71
Residual	.001137016	9	.000126335	Prob > F	=	0.0292
				R-squared	=	0.4273
				Adj R-squared	=	0.3637
Total	.00198534	10	.000198534	Root MSE	=	.01124

GiniCoeffi~t	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
sanctions	.0176367	.0068061	2.59	0.029	.0022402	.0330331
_cons	.3804833	.0045887	82.92	0.000	.370103	.3908636

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The JCPOA did not achieve lasting success, in part because Iran’s nuclear activities were not the root cause of its tensions with the Western world, especially the United States of America. The nuclear issue served as a pretext, while deeper disputes drove mistrust. In the United States, the JCPOA was questioned by Republicans and in Iran by fundamentalists. In a speech to pro-Israel group AIPAC, Trump declared to dismantle the deal, once he gets into the president office, “my number one priority is to dismantle the disastrous deal with Iran”¹⁸.

In addition, the following two quotes from two American representatives a few months after signing the JCPOA:

Representative for Illinois's sixth congressional district, Peter Roskam (2007-2019), told CNN: *he expects that in addition to legal action Republicans will move to pass new sanctions legislation*¹⁹.

John Boehner speaker of the United States House of Representatives (2011-2015) vowed: *the fight was just beginning...This is a bad deal with decades-long consequences for the security of the American people and our allies, and we'll use every tool at our disposal to stop, slow and delay this agreement from being fully implemented*²⁰.

Conclusion

Iran's economy has faced persistent challenges in the past decades. The JCPOA nuclear agreement, signed in 2015 with the hope of reducing international tensions and increasing

¹⁸ Jabbar, T. F.(2024). Spectacle of Iran’s Nuclear Deal: From Settlement to Withdrawal to Re-negotiation. Contemporary Issues in Social Sciences and Management Practices, 3(2), 24-35

¹⁹ <https://edition.cnn.com/2015/09/10/politics/iran-nuclear-deal-vote-congress>

²⁰ Ibid

foreign investment, faced the sudden withdrawal of the United States in 2018, producing serious consequences for Iran's economy.

The obtained results show that the economic conditions of Iran, especially since 2018, have undergone negative developments. These developments are mainly due to the withdrawal of the United States from the JCPOA, which has caused a significant drop in economic indicators.

The negative impact of the withdrawal of the United States from the JCPOA was greater than the positive impact of the JCPOA signing for Iran. For example, the highest level of per capita income of Iranians during the JCPOA years (2015, 2016, & 2017) occurred in 2017, which is not much different from the lowest per capita income before the signing of the JCPOA.